DRAFT ENVIRONMENTAL IMPACT STATEMENT

for the

Jewish Home Lifecare, Manhattan
Replacement Nursing Facility Project
Borough of Manhattan, New York County, New York

(North Side of West 97th Street Midblock between Columbus Avenue and Amsterdam Avenue)

Prepared for Lead Agency:

New York State Department of Health
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AKRF, Inc.

In association with:

Sam Schwartz Engineering D.P.C.

March 2014

Date DEIS Accepted as Complete: March 21, 2014

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Executive Summary

Introduction

This Environmental Impact Statement ("EIS") is being undertaken pursuant to the *State Environmental Quality Review Act ("SEQRA")*, which is codified at Article 8 of the New York *Environmental Conservation Law ("ECL")*, as well as the implementing regulations, promulgated at Part 617 of Title 6 of the *New York Codes, Rules and Regulations ("N.Y.C.R.R.")* and the *SEQRA* regulations of the New York State Department of Health ("NYSDOH") at Part 97 of Title 10 of the *N.Y.C.R.R.* Collectively, these provisions of law and regulation set forth the requirements for the *State Environmental Quality Review ("SEQR")* process for the Proposed Action. As set forth in a letter from NYSDOH to Jewish Home Lifecare, Manhattan ("JHL") dated May 6, 2013, the environmental review of the Jewish Home Lifecare, Manhattan Replacement Nursing Facility Project ("Proposed Project") follows *SEQRA*, and the 2012 *City Environmental Quality Review ("CEQR") Technical Manual*[1] is generally used as a guide with respect to environmental analysis methodologies and impact criteria for evaluating the effects of the Proposed Project, unless NYSDOH determines otherwise.

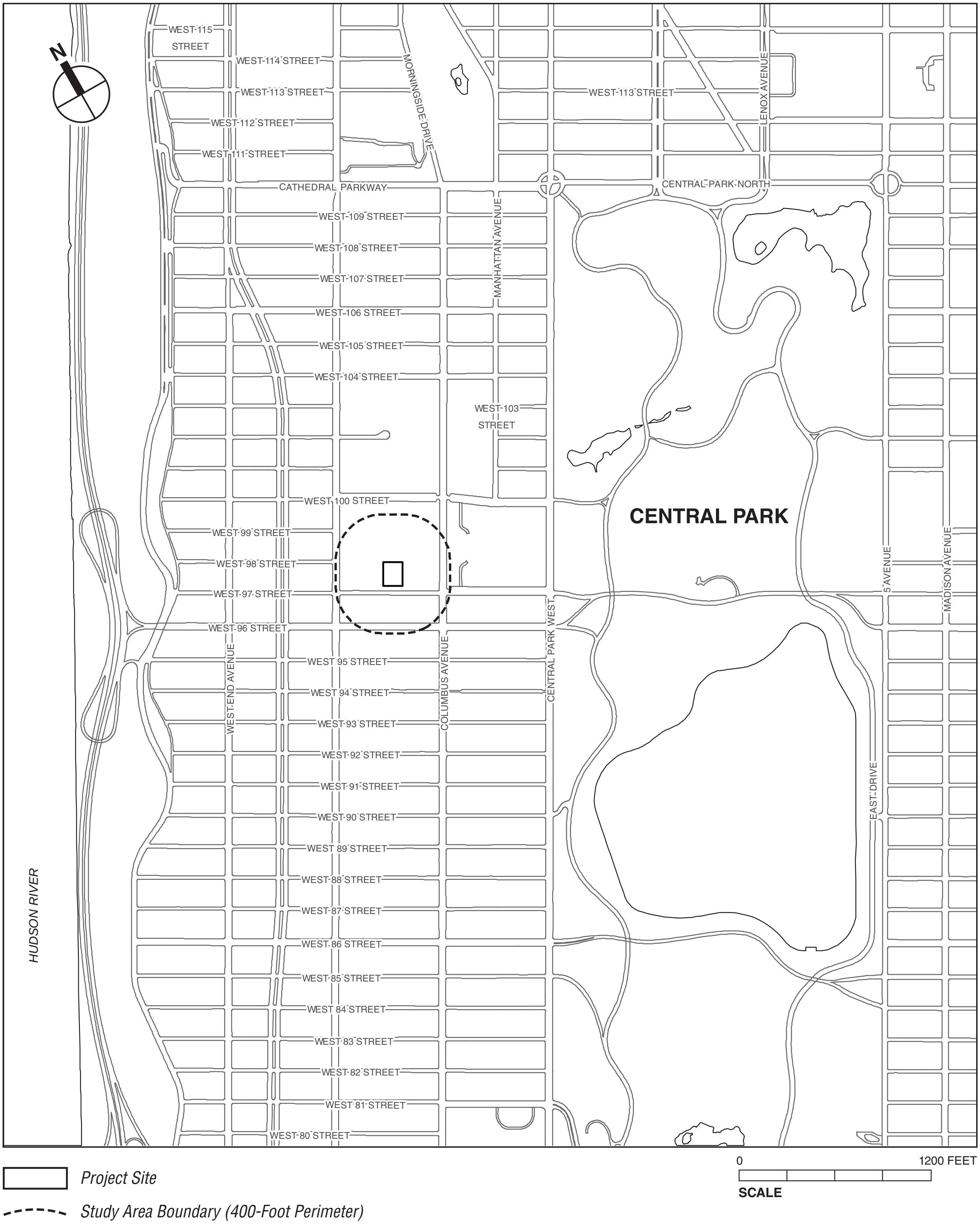
The Proposed Project is also being reviewed in conformance with the *New York State Historic Preservation Act of 1980 ("SHPA")*, especially the implementing regulations of Section 14.09 of the *Parks, Recreation, and Historic Preservation Law ("PRHPL")*. Additionally, the Proposed Project will be reviewed in conformance with the *State Smart Growth Public Infrastructure Policy Act ("SSGPIPA")*.

Project Description

NYSDOH has received a request from JHL, a member of the Jewish Home Lifecare System, for authorization to construct a replacement nursing facility (the "Proposed Project"). For purposes of *SEQR*, the Proposed Action would consist of NYSDOH's approval of a construction application filed pursuant to Section 2802 of the *Public Health Law ("PHL")* that would consist of JHL's plan to construct a new, as-of-right facility at 125 West 97th Street in Manhattan's Upper West Side neighborhood (the "Project Site," see Figure S-1 and Figure S-2). Following the construction of the new facility, JHL would close the current location of its Manhattan Division, which is located at 120 West 106th Street in the borough of Manhattan, New York County, New York.

Proposed Program. The Proposed Project would result in the construction of a LEED-certified replacement facility with 100 fewer beds than the current location. Upon completion of the Proposed Project, the total NYSDOH-certified bed complement at JHL would be reduced from 514 beds to 414 beds. More specifically, the Proposed Project would replace the existing,

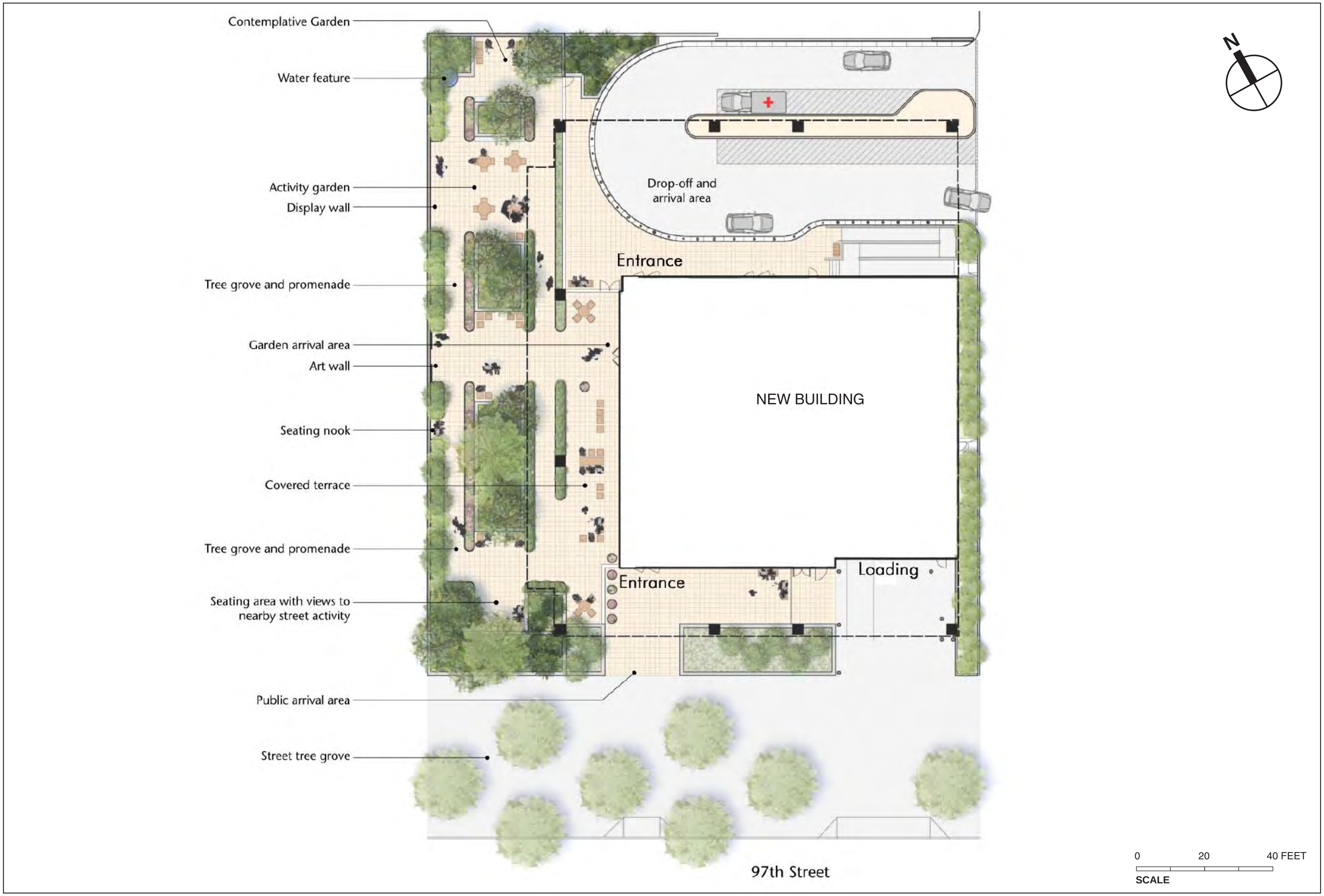
[1] The City of New York, Mayor's Office of Environmental Coordination, *City Environmental Quality Review Technical Manual*, 2012 Edition, Revised June 5, 2013.



Project Site

Study Area Boundary (400-Foot Perimeter)

Project Location
Figure S-1



SOURCE: Perkins Eastman

NOTE: FOR ILLUSTRATIVE PURPOSES ONLY

Proposed Site Plan
Figure S-2

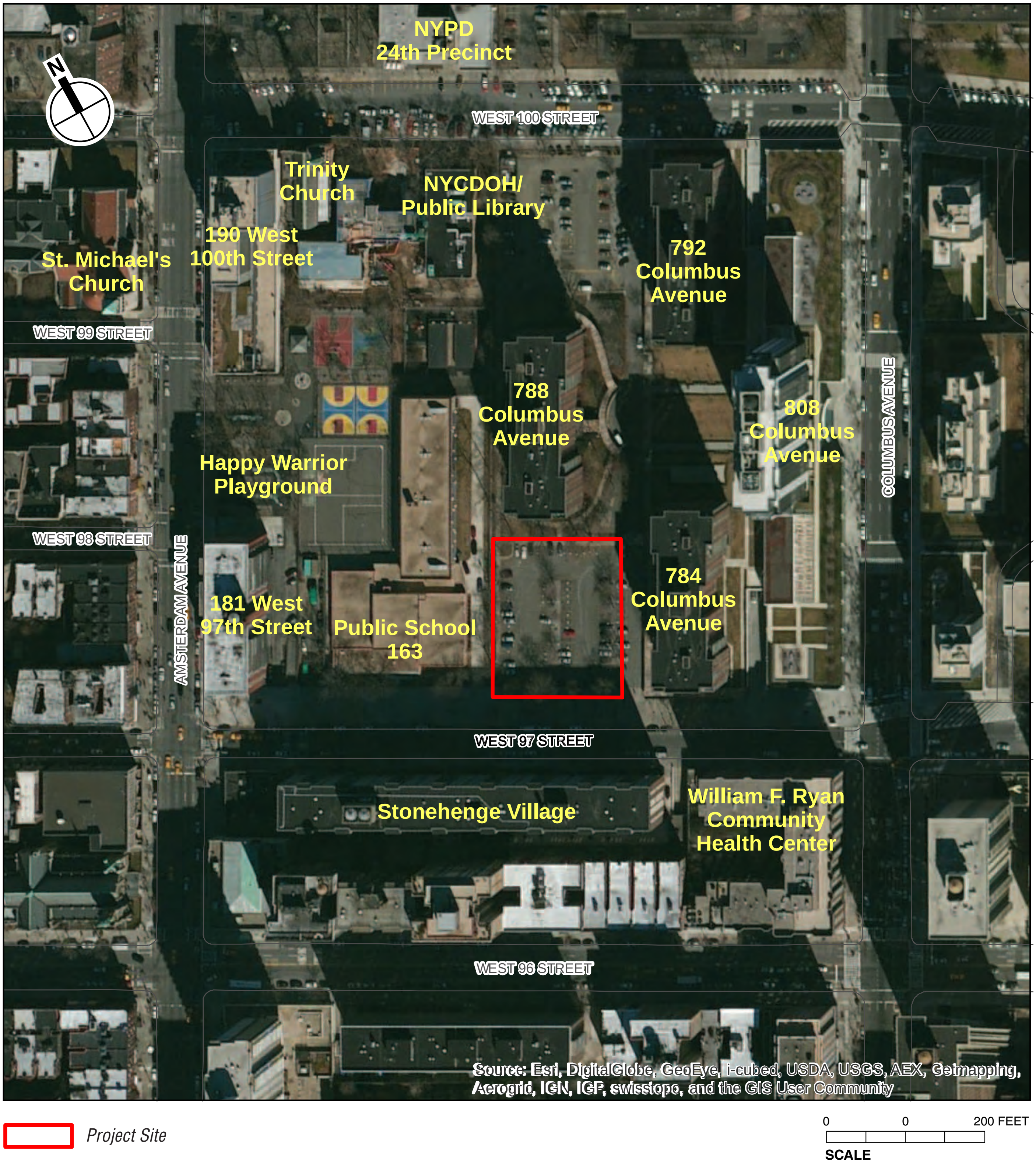
approximately 31,804-square-foot ("sf"), 88-space, surface accessory parking lot on the Project Site with a new, 20-story (plus cellar floor), approximately 376,000-gross-square-foot ("gsf") building. Users of the existing surface parking lot would receive substitute nearby parking within the Park West Village ("PWV") complex (the property owner commenced construction of the relocated surface parking lot in March 2014). As shown in Figure S-3, the proposed building would have three access areas: (1) a public pedestrian entrance on West 97th Street with access to the reception, main lobby, and resident and family areas, for residents, visitors, staff, and the general public; (2) a public vehicular entrance on the north side of the building to the same areas via a covered, semicircular driveway for patient drop off and pick up, including ambulette and taxi access, utilizing the existing driveway along the eastern end of the Project Site for access from West 97th Street; and (3) loading and service access on West 97th Street. The ground-floor level would include an approximately 8,700-gsf landscaped area along the west side of the Project Site, of which about 1,850 gsf would be covered by the building above. This area would be accessible for JHL residents, visitors, and employees, as well as PWV residents, who would access it using a keycard.

The Proposed Project would also comply with the street tree planting requirements of the *Zoning Resolution of the City of New York ("Zoning Resolution")* for the zoning lot, and would also replace trees removed from the Project Site during construction. As part of the Builders Pavement Plan ("BPP") and Forestry Application, as currently contemplated, approximately 3 existing street trees would be removed and 5 would be protected along the West 97th Street frontage of the Project Site. Approximately 18 trees would be planted along the boundary of the zoning lot, including along West 97th and West 100th Streets, and Columbus Avenue, and additional trees would be planted off-site at the direction of the New York City Department of Parks and Recreation ("NYCDPR"). The size and species of the proposed replacement trees would be determined by NYCDPR. Trees that are currently located on the Project Site would be removed during the construction of the Proposed Project, and new trees would be planted within the PWV property.

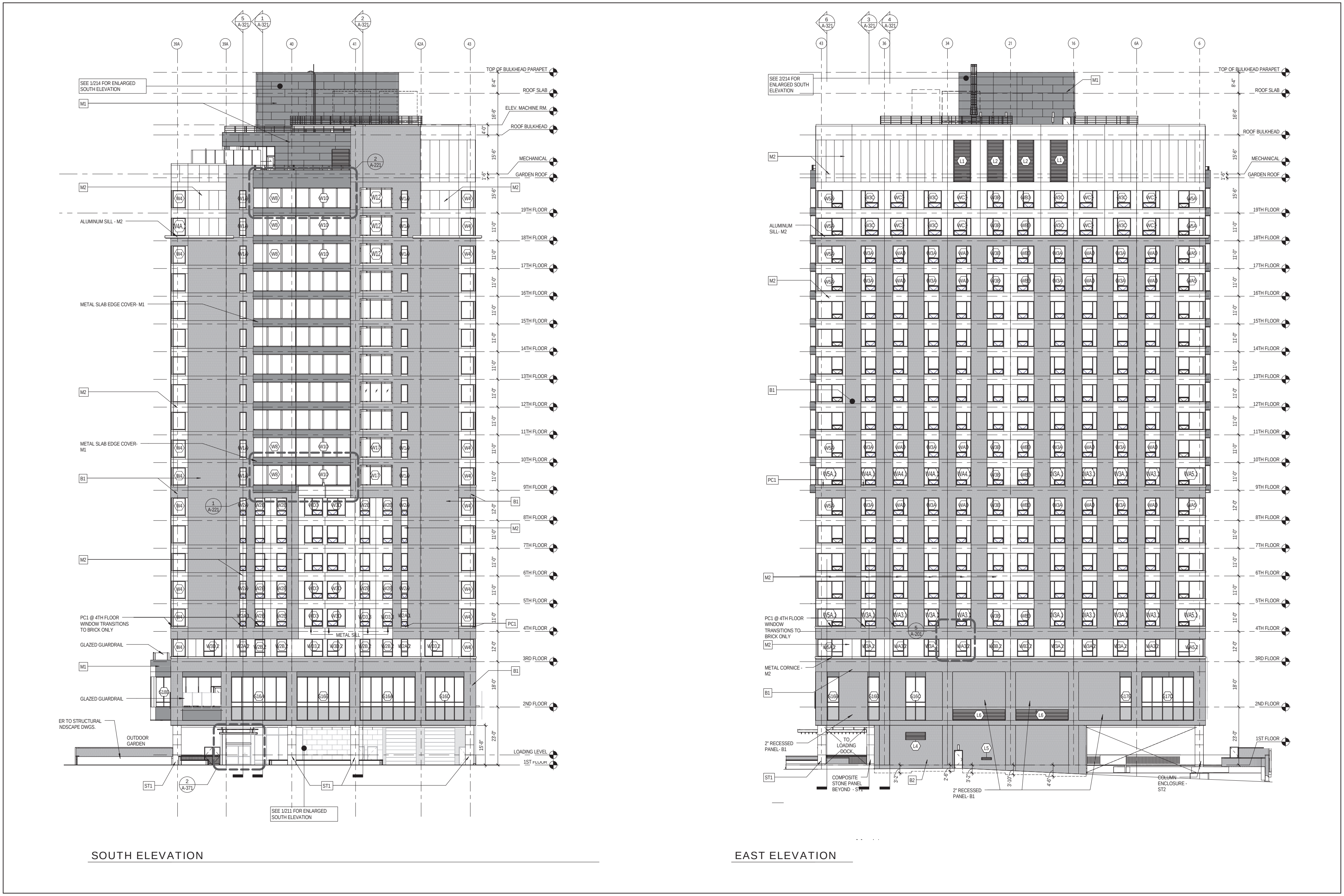
The Proposed Project would include a total of 414 beds, with 264 long-term-care beds located on the 9th floor through the 19th floor. Each floor would house 24 beds that include two "Green House" homes, complete with living and dining areas, a kitchen, private bedrooms and bathrooms with showers, and staff support areas. Another 150 post-acute (short-term rehabilitation) beds would be located on the 4th floor through the 8th floor, along with community dining and decentralized therapy and activity space. The remaining floors would contain shared common areas, administrative offices, and service and support areas. The building would have 1 cellar level and 1 mechanical story, and would include an approximately 1,950-gsf rooftop garden for JHL residents and their visitors. The proposed building would be up to approximately 275 feet in height (see Figure S-4 and Figure S-5).

The Proposed Project would employ approximately 625 full-time-equivalent ("FTE") employees at the proposed facility. The new facility would decertify 100 beds from the current complement of 514 beds, for a new total reduced bed count of 414.

Site Access and Circulation. As noted above, the PWV property owner would relocate the Project Site's surface parking to another location within the PWV complex (the property



Project Site and Context
Figure S-3



SOURCE: Perkins Eastman

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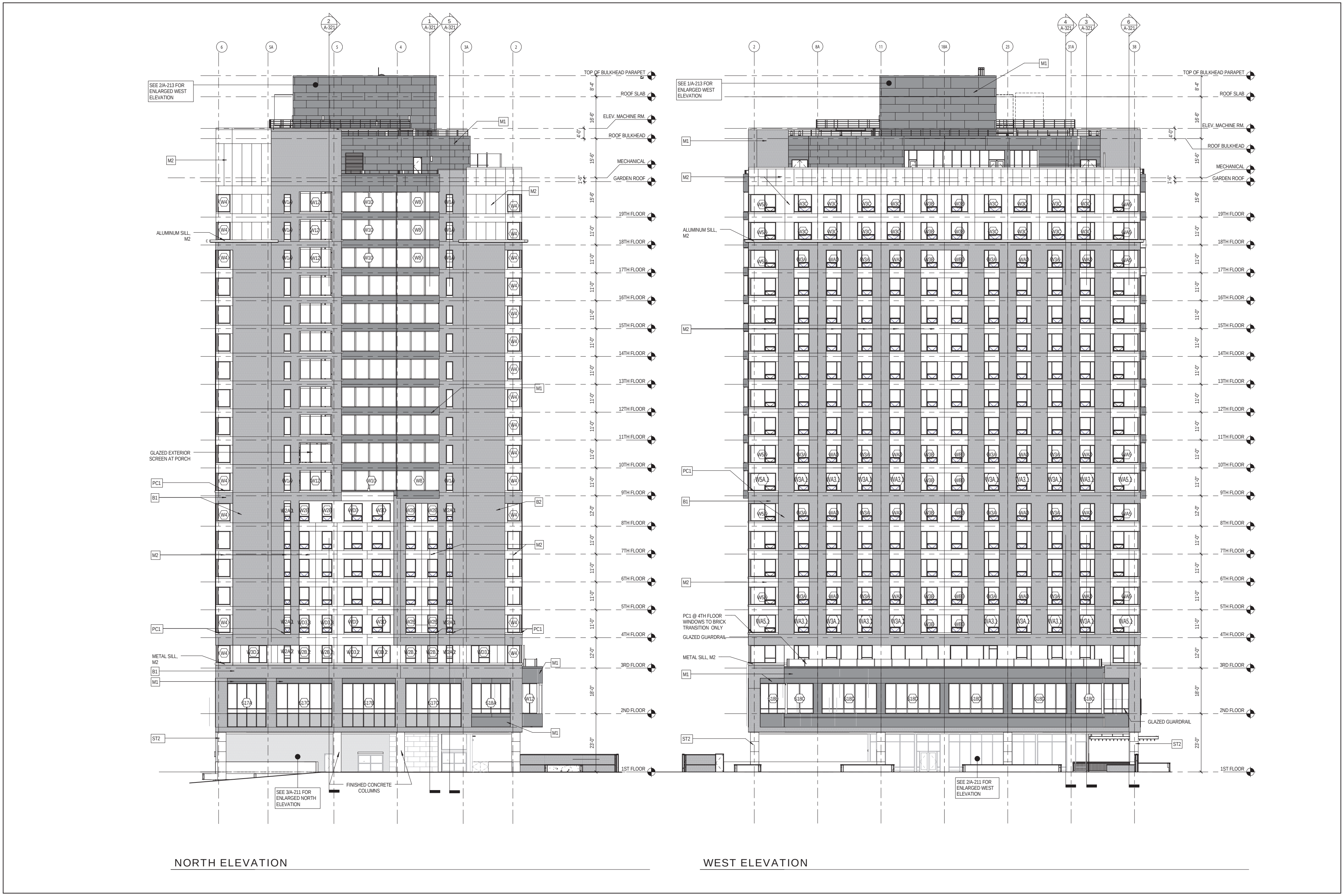
Proposed South and East Elevations

Figure S-4



SOURCE: Perkins Eastman

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Proposed North and West Elevations

Figure S-5

owner commenced construction of the relcoated surface parking lot in March 2014). The configuration of Park West Drive, the north-south access road within the PWV complex, may be modified as part of the PWV property owner's planning for the complex, but will continue to function as a discontinuous two-way access road for PWV parkers. These potential changes, if implemented, would occur independently of the Proposed Project.

The proposed JHL facility would make use of the shared Park West Drive to access a private loop roadway allowing for pick-up and drop-off activity. The actual pick ups and drop offs would occur on the private loop roadway separate from Park West Drive. Pick-up and drop-off activities are not anticipated to affect traffic along Park West Drive.

Project Build Year. Construction of the Proposed Project is expected to begin in 2014 and would last approximately 30 months. It is expected that construction would be completed in a single phase, and that occupants would move into the new facility over the course of approximately 4 to 10 months. Therefore, for the purposes of this assessment, a 2018 analysis (Build) year is assumed.

Project Site

The Proposed Project would be located on Block 1852, Lot 5 located at 125 West 97th Street in the borough of Manhattan, New York County, New York. The approximately 0.73±-acre Project Site is located on the southern portion of the superblock bounded by West 100th Street to the north, West 97th Street to the south, Columbus Avenue to the east, and Amsterdam Avenue to the west (see Figure S-1 and Figure S-2). The Project Site is currently occupied by an 88-space, surface, accessory parking lot and trash removal area serving the neighboring PWV residential complex. Both existing uses would be relocated by the PWV property owner prior to the completion of the Proposed Project.

Proposed Action

As described above, the Proposed Action would consist of NYSDOH's approval of a construction application filed pursuant to Section 2802 of the *PHL*. The approval is a discretionary action that requires review under *SEQRA*. The environmental review is being undertaken pursuant to *SEQRA*, which is codified at Article 8 of the *ECL*, and its implementing regulations, promulgated at Part 617 of Title 6 of the *N.Y.C.R.R.* In addition, NYSDOH has promulgated its own implementing regulations at Part 97 of Title 10 of the *N.Y.C.R.R.*. There are no other discretionary actions associated with the Proposed Project.

The Proposed Project will also be reviewed in conformance with *SHPA*, especially the implementing regulations of Section 14.09 of *PRHPL*, as well as with *SSGPIPA*. The compatibility of the Proposed Project with the ten criteria of the *SSGPIPA* will be detailed.

Other Approvals

A New York City Planning Commission ("CPC") certification pursuant to Section 22-42, "Certification of Certain Community Facility Uses," of the *Zoning Resolution* was approved on March 26, 2012. Section 22-42 of the *Zoning Resolution* requires that, prior to any development, enlargement, extension or change in use involving a nursing home or health-related facility in a residence district, the CPC must certify to the New York City Department of Buildings ("NYCDOB") that none of the findings set forth in Section 22-42 of the *Zoning Resolution* exist in the Community District within which such use is to be located. If any of the findings are found to exist, a special permit pursuant to Section 74-90 of the *Zoning Resolution* is required for the development, extension or enlargement or change of use. The findings that would trigger a special permit are: (1) that the ratio between the number of existing and approved beds for nursing homes compared with the population of the Community District is relatively high compared with other Community Districts; (2) there is a scarcity of land for general community purposes within the Community District; and (3) the incidence of nursing home construction in the past three years warrants review.

The CPC determined that none of these findings exist in Community District 7 and issued the certification. A foundation permit was obtained from NYCDOB.[2]

Future Without the Proposed Project

In the future without the Proposed Project, (the "No-Build Condition"), the Project Site would remain in its current state and continue to function as a parking area. JHL would maintain its existing 514 beds in three distinct buildings on the West 106th Street campus. The existing facility would continue to operate inefficiently, housed in outdated buildings with a physical plant in need of major infrastructure replacement.

No other development projects are currently anticipated to be built within the 400-foot study area by 2018.

Need and Public Purpose

JHL is a member of Jewish Home Lifecare System (the "System"), which operates a geographically-diverse continuum of services for the elderly and disabled in the New York metropolitan area, covering the counties of Manhattan, the Bronx, and Westchester. The System serves nearly 12,000 individuals per year.

The existing nursing facility, located at 120 West 106th Street, is located in outdated buildings constructed between 1898 and 1964, which are at the end of their useful lives and operate at 65 percent efficiency. The existing facility presents physical challenges that negatively impact residents' quality of life, mobility, privacy, and independence; the buildings operate inefficiently, are antiquated and require major infrastructure replacement.

JHL's Proposed Project would result in a modern nursing-care facility of 414 beds on the Project Site, and would permanently decertify 100 beds from the current complement of 514 NYSDOH-certified beds at the existing facility. This plan is the result of over eight years of planning to identify the best location and best model of care for the JHL facility. Throughout

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[2] NYCDOB Permit Number 120797888-01-EQ-FN, issued October 23, 2013.

this planning process, JHL coordinated with NYSDOH on the programming and identification of the proposed location. The Proposed Project would enable JHL to continue serving the residents in the community and in the borough in a new, state-of-the-art facility. The proposed facility would provide an innovative model of long-term care called "Green House" living. The Green House design would create a small home environment that allows more enhanced, focused attention and care between residents and staff and allow for greater independence. The new, LEED-certified facility would be groundbreaking as the first true urban Green House model to be developed in New York City and New York State and one of the first nationwide. Of the total of 414 beds, the Proposed Project would include 264 long-term-care beds located on the 9th floor through the 19th floor. Each floor would house 24 beds that include two "Green House" homes, complete with living and dining areas, a kitchen, private bedrooms and bathrooms with showers, and staff support areas. The facility would also accommodate the significant shift that is occurring from long-term care to short-stay, post-acute rehabilitation needs, with 36 percent of the beds in the proposed facility dedicated to post-acute (short-term rehabilitation) beds. The Proposed Project would result in infill development in a dense urban setting with a diverse mixture of uses and proximity to multiple subway and bus lines.

Regulatory Framework

Upon receipt of a request from JHL to construct a replacement nursing facility, NYSDOH determined that it should assume lead agency status and conduct a coordinated review among the involved agencies. Accordingly, JHL submitted an *Environmental Assessment Statement ("EAS")* on May 22, 2013, to initiate the *SEQR* process. NYSDOH issued the *EAS* and a lead agency request letter to the involved agencies and interested parties on June 5, 2013. There being no objections, NYSDOH assumed the lead agency role on July 5, 2013. Based on an initial evaluation of the Proposed Project, NYSDOH made a preliminary determination that the Proposed Project is a Type I action pursuant to 6 *N.Y.C.R.R.* 617.4(b)(6)(v) of the *SEQR* implementing regulation pertaining to Article 8 of the ECL and 10 *N.Y.C.R.R.* 97.14(b)(1)(v) of NYSDOH's regulations implementing *SEQR*. NYSDOH issued a *Positive Declaration Notice of Intent to Prepare a Draft Environmental Impact Statement Determination of Significance ("Positive Declaration")* under *SEQR* on June 5, 2013. The *Draft Scoping Document* for the DEIS was distributed on June 5, 2013, to the involved agencies and interested parties for review and comment. The final notice of the *Positive Declaration* and *Draft Scoping Document* was published in the *Environmental Notice Bulliten ("ENB")* on August 7, 2013; a Notice of Public Scoping Meeting was published in the August 17, 2013 edition of the *New York Daily News*. A public scoping meeting was held for the Proposed Project at 6:30 p.m. on September 17, 2013, at Public School 163 ("P.S. 163"), allowing all involved agencies, interested parties and members of the public an opportunity to provide oral comments on the scope of the DEIS. The comment period for the *Draft Scoping Document* was extended beyond the customary 10-calendar-day period, and written comments were accepted through October 4, 2013. After all comments were considered, NYSDOH prepared and issued a *Final Scoping Document* on January 28, 2014.

Analysis Framework

Based on the Proposed Project described above, the impact thresholds presented in the *CEQR Technical Manual*, and the comments received during the public scoping process, the EIS assessed the potential of the Proposed Project to result in significant adverse impacts to the following areas: Land Use, Zoning, and Public Policy, Shadows, Historic and Cultural Resources, Hazardous Materials, Water and Sewer Infrastructure, Transportation, Air Quality, Greenhouse Gas Emissions, Noise, Public Health, Neighborhood Character, Construction, Mitigation and Alternatives. Based on the impact guidance thresholds in the *CEQR Technical Manual*, the following technical areas do not require detailed analyses because the Proposed Project is not likely to result in any significant adverse impacts (as those terms are used under the *CEQR Technical Manual*) in these areas: Socioeconomic Conditions, Community Facilities and Services, Open Space, Urban Design and Visual Resources, Natural Resources, Solid Waste and Sanitation Services, and Energy. Screening level analyses for these technical areas were prepared as part of the *EAS* completed for the Proposed Project. In addition, because the Project Site is not located within the state and/or city's respective coastal zones, an assessment of the Proposed Project's consistency with the Waterfront Revitalization Program ("WRP") is not required.

Land Use, Zoning, and Public Policy

The potential impacts of the Proposed Project on land use, zoning, and public policy for the Project Site and for the 400-foot study area surrounding the Project Site were analyzed. The assessment concluded that the Proposed Project would be compatible with uses in the study area, and would not result in any significant adverse impacts to land use, zoning, or public policy.

Land Use. Overall, the Proposed Project would result in a new land use on the Project Site, but would be in keeping with residential uses in the study area, and would be compatible with community facility uses — including the William F. Ryan Community Health Center located at 110 West 97th Street and P.S. 163 Alfred E. Smith School — as well as commercial uses. The Proposed Project would not alter the mix of uses in the study area, which include residential uses as well as community facilities. Accordingly, the study area would continue to include a mix of residential, commercial, community facility, parking, and open space uses. Therefore, the Proposed Project would not result in any significant adverse impacts related to land use.

Zoning. The Proposed Project would not affect the existing zoning of the Project Site or study area, and would comply with the *Zoning Resolution*. The Proposed Project would result in the construction of an as-of-right building that is consistent with and permitted under existing zoning. In addition, the Proposed Project would comply with Section 22-42, "Certification of Certain Community Facility Uses," of the *Zoning Resolution*, which requires that, prior to any development, enlargement, extension or change in use involving a nursing home or health-related facility in a residence district, the CPC must certify to the NYCDOB that none of the findings set forth in Section 22-42 of the *Zoning Resolution* exist in the Community District within which such use is to be located. The CPC determined that none of the findings existed for Community District 7 and the certification was approved on March 26, 2012.

Public Policy. PlaNYC's has sustainability goals in several areas that are relevant to the Proposed Project, including air quality, water quality and land use, open space, natural resources, and transportation. The Proposed Project was found to be consistent with these PlaNYC objectives.

The purpose of *SSGPIPA* is to maximize the social, economic, and environmental benefits from public infrastructure development through minimizing unnecessary costs of sprawl development. A Smart Growth Impact Statement Assessment Form ("SGISAF") was completed for the Proposed Project. Based on the SGISAF assessment, the Proposed Project would be generally consistent with *SSGPIPA* and would generally support the ten relevant smart growth criteria established by the legislation.

Based on the information presented above demonstrating consistency with PlaNYC and the *SSGPIPA*, the Proposed Project would not result in any significant adverse impacts related to public policy. Overall, the Proposed Project would not result in any significant adverse impacts to land use, zoning, or public policy.

Shadows

According to the *CEQR Technical Manual*, a shadows assessment is required if the project would result in structures of 50 feet or more, or if the Project Site is located adjacent to, or across the street from, a sunlight-sensitive resource. Sunlight-sensitive resources can include parks, playgrounds, gardens, and other publicly-accessible open spaces; sunlight-dependent features of historic resources; and important natural features such as water bodies. The Proposed Project would result in an approximately 275-foot-tall nursing-care facility on the Project Site. Shadows cast by the Proposed Project could reach the Happy Warrior Playground, the Holy Name of Jesus Church, the Broadway Malls, and the southern façades of St. Michael's Church and Trinity Lutheran Church.

The detailed analysis showed that two sunlight-sensitive resources would receive project-generated incremental shadow.

The 10 minutes of incremental shadow on the windows of Saint Michael's Church, that would occur on the December 21 analysis day only, would be too limited in duration and size to cause an adverse impact.

The Happy Warrior Playground would receive 2¼ hours of incremental shadow in the morning of the March 21/September 21 analysis day, and about 4½ hours of new shadow in the morning and early afternoon of the December 21 analysis day.

On the March 21/September 21 analysis day, the new shadow would not fall on any trees or other vegetation, only on the asphalt play area. According to the *CEQR Technical Manual*, the loss of direct sunlight on paved or hardscape open spaces that accommodate active uses — such as basketball or tennis courts — is not generally considered significant, although it depends on the specific nature and rates of utilization of each individual case. In any event, large areas of sunlight would remain on portions of the playground during the affected period. Therefore, the new shadow would not cause significant impact to the use of the space on this analysis day.

December 21 is not within New York City's growing season. The trees and other vegetation do not have leaves and cannot photosynthesize, and, following *CEQR Technical Manual* guidelines, shadows and sunlight cannot have a significant effect on vegetation in this season.

Large areas of the playground would be shaded by the proposed building as well as existing buildings from the start of the analysis day until late morning on the December 21 analysis day. However, the use of the playground in winter is likely somewhat limited due to the cold weather. In the late morning and early afternoon, when the school could use the playground for recess on school days, large areas of the open space would be in sun. The areas of new shadow could reduce the attractiveness of the playground during the first two hours of winter mornings on nonschool days, but by 11:00 a.m. and onwards into the afternoon much of the playground would be in sun. Therefore, it is unlikely that the incremental shadow would significantly alter the public's use of the resource. The *CEQR Technical Manual* states that a significant adverse impact generally occurs when there is substantial reduction in the usability of open space as a result of increased shadow. This would not be the case with Happy Warrior Playground, where the greatest shadow impacts occur in winter, and therefore, the Proposed Project would not result in a significant adverse shadow impact.

Historic and Cultural Resources

This analysis considered the potential for the Proposed Project to affect historic and cultural resources on the Project Site and in the surrounding area. Historic and cultural resources include both archaeological and architectural resources.

In a letter dated December 13, 2013, the New York State Office of Parks, Recreation, and Historic Preservation ("OPRHP") determined that the Proposed Project would not result in an impact upon cultural resources in or eligible for inclusion in the State and/or National Register of Historic Places. Therefore, no additional analysis is required for archaeological resources, and the Proposed Project is not expected to result in any significant adverse impacts to archaeological resources.

There are no known or potential architectural resources on the Project Site. Consequently, the proposed redevelopment of the Project Site would not have an effect on any on-site architectural resources. In addition, none of the known or potential architectural resources in the study area are located within 90 feet of the Project Site. Hence, no such resources could be potentially physically affected during construction-period activities on the Project Site.

In the wider study area, however, there are three known architectural resources within and immediately adjacent to the study area, including the former East River Savings Bank, Trinity Lutheran Church of Manhattan, and St. Michael's Church. In addition, three buildings in the surrounding area have been identified as potential architectural resources, including the Church of the Holy Name of Jesus, a 3-story building at 766 Amsterdam Avenue, and a group of four 5-story flats at 768-774 Amsterdam Avenue.

The Proposed Project would not have direct impacts on these architectural resources in the study area. However, the potential for indirect, contextual impacts to the study area as a result of the Proposed Project was also examined and considered. The *CEQR Technical Manual* criteria for indirect, contextual impacts are:

- Isolation of a property from, or alteration of, its setting or visual relationships with the streetscape, including changes to the resource's visual prominence;
- Introduction of incompatible visual, audible, or atmospheric elements to a resource's setting; and/or
- Elimination or screening of publicly-accessible views of the resource.

The Proposed Project would not isolate any architectural resource from its setting or visual relationship with the streetscape, or otherwise adversely alter a historic property's setting or visual prominence. The proposed building would be of a comparable height, bulk, and footprint to other modern structures in the surrounding area — including the 29-story building fronting onto Columbus Avenue and the 15-story building at the northwest corner of the project block — as well as the surrounding 16-story PWV structures. The proposed institutional/community facility use of the building would be comparable to the use of many of the historic buildings in the study area.

The Proposed Project would not introduce incompatible visual, audible, or atmospheric elements to a resource's setting and would not eliminate or screen significant publicly-accessible views of any architectural resource.

The Proposed Project would also not cast any incremental shadows on the stained-glass windows of Trinity Lutheran Church or the Holy Name of Jesus Church. While incremental shadows would be cast for 10 minutes on a small portion of the windows on the south façade of St. Michael's Church, the shadows would be too limited in duration and size to adversely affect this sun-sensitive feature of the architectural resource.

The proposed development could potentially be visible from the two potential architectural resources facing Amsterdam Avenue (766 and 768-744 Amsterdam Avenue), and the upper floors of the development could potentially be visible from the sidewalks adjacent to the other known and potential resources in the study area. This potential limited visibility would not be anticipated to adversely affect these resources, as they have limited visual relationships with the Project Site, and as discussed above, the height and bulk of the Proposed Project would be of a comparable height, bulk, and footprint to other modern structures in the surrounding area. Additionally, the Proposed Project would not obstruct significant views of any architectural resource or adversely alter the visual setting of any architectural resources in the study area.

Overall, the Proposed Project would not be expected to result in any significant adverse impacts to architectural resources on the Project Site or in the study area.

Hazardous Materials

This chapter assesses the potential presence for subsurface (i.e., soil, and groundwater) contamination at the Project Site and the potential presence of hazardous materials in current (or debris from former) site structures that could be affected by the construction and operation of the Proposed Project. The potential for impacts related to hazardous materials can generally occur when elevated levels of hazardous materials (i.e., above guidance values) exist on a site and an action would create pathways (particularly during construction) for exposure, to either humans or the environment; or when an action would introduce new activities or processes using hazardous materials and the risk of human or environmental exposure would be increased.

The Proposed Project would involve subsurface disturbance for the construction of the proposed new building and outdoor improvements. Soil that would be disturbed by the Proposed Project includes widespread historical fill materials (with lead levels typical of those found in such materials — see “Public Health,” below), limited petroleum-contaminated soil, for which Spill №. 1306324 has been reported to the New York State Department of Environmental Conservation (“NYSDEC”), and some soil exceeding the hazardous waste threshold for barium (“Ba”) content. The Proposed Project would disturb these materials, potentially increasing pathways for human exposure. However, impacts would be avoided by implementing the following measures as a part of construction of the Proposed Project: A NYSDOH-approved Remedial Action Plan (“RAP”) and associated Construction Health and Safety Plan (“CHASP”) would be prepared for implementation during the subsurface disturbance associated with the Proposed Project. During subsurface disturbance, excavated soil would be handled and disposed of in accordance with applicable regulatory requirements and the requirements of the receiving facility, which may be in another state. Spill №. 1306324 would be remediated in accordance with NYSDEC requirements sufficient to close the spill. And finally, if dewatering is required, it would be performed in accordance with New York City Department of Environmental Protection (“NYCDEP”) sewer use requirements. These requirements require testing to ensure contaminated groundwater is treated before it can be discharged to the sewer system. Although the data from the Phase II Environmental Site Assessment (“ESA”) subsurface investigation suggests treatment would not be necessary, since dewatering can draw water from off-site areas, additional testing would be required as a part of the NYCDEP approval process. If treatment would be required, it would be in enclosed containers with any residuals disposed off site in accordance with the same regulatory requirements as the excess soil.

Once operational, the Proposed Project would use a variety of chemical products related to day-to-day functions and would produce regulated medical waste (“RMW”). To ensure the safety of workers, residents, and the general public, management of RMW would be undertaken in compliance with applicable federal and state regulatory requirements, including those related to generator permits, storage, signage, employee training, recordkeeping and reporting, and off-site transportation/disposal.

Thus, with the above measures in place during construction, significant adverse impacts related to hazardous materials would not be expected due to construction or operation of the Proposed Project.

Infrastructure

The infrastructure analysis evaluated the potential for the Proposed Project to result in significant adverse impacts on the city’s water supply, as well as its wastewater and storm water conveyance and treatment infrastructure.

The estimated amount of water supply demand by the Proposed Project would be approximately 117,509 gallons per day ("gpd"). The sanitary sewage generated from domestic water use on the Project Site would be approximately 53,587 gpd. This volume would represent approximately 0.05 percent of the average daily flow of 113 million gallons per day ("mgd") at the North River Waste Water Treatment Plant ("WWTP"), and would not result in an exceedance of the plant's permitted capacity, which is 170 mgd. In addition, this amount would not be a net new increase in sewer demand because JHL currently generates a comparable amount at its existing West 106th Street campus, where sewage is also conveyed to the WWTP. Therefore, the Proposed Project would not create a significant adverse impact on the city's sanitary sewage treatment system.

As a result of the Proposed Project, the weighted runoff coefficient of combined sewer overflow ("CSO") outfall subcatchment area NR-026 would increase slightly, from 0.85 to 0.93, since a large portion of the Project Site would be covered by impervious building rooftop instead of the current partially pervious pavement. Therefore, under the most extreme rainfall scenario analyzed in the NYCDEP Flow Volume Calculation Matrix, nearly 50,000 gallons of storm water would be generated on the Project Site, as compared to the existing and No-Build conditions.

To offset this increase, in addition to required measures to reduce water consumption and sanitary sewer discharges (such as low-flow fixtures), the Proposed Project would incorporate Best Management Practices ("BMPs") designed to control storm water runoff from the Project Site. For the Proposed Project, such measures are anticipated to include controlled drainage on the roof and first floor garden levels and plantings throughout the Project Site. With the BMPs, the overall volume of sanitary sewer discharge and storm water runoff, and the peak storm water runoff rate would be reduced to allowable flow requirements. [3]

Therefore, as sewer conveyance near the Project Site and wastewater treatment capacity at the North River WWTP is sufficient to handle the wastewater flow that would result from the Proposed Project, there would not be any significant adverse impacts on wastewater treatment or storm water conveyance infrastructure.

Transportation

Although the results of the screening analysis determined that a detailed analysis is not warranted based on *CEQR* threshold criteria, a detailed transportation analysis was nonetheless performed as per *CEQR Technical Manual* guidelines, as congestion was noted along West 97th Street between Amsterdam and Columbus Avenues. The transportation analysis examined the potential for traffic, parking, transit, and pedestrian impacts and assessed the potential vehicular and pedestrian safety issues associated with the Proposed Project in Manhattan.

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[3] NYCDEP's storm water performance standards require that the release rate of storm water flow from a project site be no more than the greater of 0.25 cubic feet per second ("cfs") of the drainage plan allowable flow or 10 percent of the allowable flow or, if the allowable flow is less than 0.25 cfs, no more than the allowable flow.

Traffic Flow and Operating Conditions. The Proposed Project would add vehicle trips to the study area. The Proposed Project is forecast to result in significant adverse traffic impacts at the West 97th Street and Amsterdam Avenue and West 97th Street and Columbus Avenue intersections in the 2018 Build year for the Proposed Project during the Weekday a.m., Weekday midday, and Weekday p.m. peak hours. See "Mitigation Measures" below, for measures to mitigate the Proposed Project's traffic impacts.

Parking Conditions. The Proposed Project would generate demand for no more than 82 parking spaces. The results of the parking analysis show that there is sufficient off-street parking within a one-quarter-mile radius of the Project Site to accommodate the parking demand generated by the Proposed Project. Therefore, no significant parking impacts were identified.

Vehicular and Pedestrian Safety Assessments. Upon review of the two study intersections, the intersection of West 97th Street and Columbus Avenue met the criteria for a high pedestrian/bicycle crash location. The Proposed Project would increase the level of vehicular activity at this intersection. However, the New York City Department of Transportation ("NYCDOT") has already implemented a range of significant pedestrian and bicycle safety improvements on Columbus Avenue, including at this intersection. Building on the improvments implemented by NYCDOT, additional safety improvements are proposed for this intersection. These improvements include extending the Leading Pedestrian Interval across Columbus Avenue and installing "Turning Vehicles Yield to Pedestrians" signage on the southbound and westbound approaches and "Signal Ahead" warning signs ahead of the westbound approach.

Air Quality

A stationary source screening analysis was performed that applied the thresholds included in the *CEQR Technical Manual* to evaluate the potential for significant adverse impacts to air quality from operation of the heating, ventilation and air conditioning ("HVAC") system at the Proposed Project. The primary pollutant of concern would be nitrogen dioxide ("NO_2") from the combustion of natural gas fuel.

The analysis determined that the use of natural gas would not result in any significant stationary source air quality impacts because the proposed building and the proposed stack heights would remain within *CEQR Technical Manual* guidelines. Therefore, no significant adverse impacts are expected, and no further analysis is required.

The Proposed Project would also include one 1,250-kilowatt ("KW") diesel emergency generator located on the roof of the proposed building, south of the HVAC system. As with emergency generators in most buildings in New York City, the proposed generator would be tested at regular intervals to ensure its availability and reliability in the event of an actual emergency. The proposed generator would not be operated continuously and would not constitute a significant long-term source of air pollution.

Based on the above information, the Proposed Project would not result in any significant adverse stationary source air quality impacts.

Greenhouse Gas Emissions

The greenhouse gas ("GHG") emissions analysis examined whether there would be GHG emissions generated by the construction and operation of the Proposed Project. In addition to the GHG emissions estimate, measures that would be implemented to limit those emissions were discussed and evaluated.

Without the energy-efficiency measures — as part of the building's Leadership in Energy & Environmental Design ("LEED") certification — that are still being evaluated for the Proposed Project, GHG emissions from the Proposed Project are estimated to be 6,059 metric tons ("mtons") per year, including 3,617 mtons from building operations, and 2,443 mtons from mobile sources. Energy measures to be implemented under LEED are expected to reduce energy expenditure by at least 10 percent, and might be as much as 20 percent; this would reduce the total GHG emissions.

The implementation of the various design measures and features described would result in development that is consistent with the city's emissions reduction goal, as demonstrated by the review of the PlaNYC goals of (1) building efficient buildings; (2) using clean power; (3) transit-oriented development and sustainable transportation; (4) reducing construction operation emissions; and (5) using building materials with low carbon intensity, as defined in the *CEQR Technical Manual*.

Noise

The noise analysis presented in this section considers noise associated with the operation of the Proposed Project resulting from mobile and stationary sources, as well as the level of window/wall attenuation that would be necessary to ensure that noise levels within the proposed building on the Project Site meet *CEQR Technical Manual* interior noise level requirements. The effects of the construction of the Proposed Project on community noise levels are discussed below in "Construction."

The Proposed Project would not result in a significant increase in noise levels at any nearby noise receptor locations. In addition, the projected exterior noise levels at the Project Site are less than those for which the *CEQR Technical Manual* specifies a required level of window/wall attenuation. It is expected that standard construction techniques, and the provision for an alternate means of ventilation, would result in acceptable interior noise levels at the Proposed Project. Therefore, operation of the Proposed Project would not result in any significant adverse noise impacts.

Public Health

The *CEQR Technical Manual* defines as its goal with respect to public health "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," and requires a public health analysis only where a significant unmitigated adverse impact is found in other *CEQR* analysis areas. However, given the extent of public concern over lead, in particular the potential for exposure to the community during the construction of the Proposed Project, an assessment of public health was performed.

Lead poisoning remains a significant health problem in New York City. Exposing a fetus or young child to lead can result in long-lasting damage, including learning and behavioral difficulties. According to the New York City Department of Health and Mental Hygiene ("NYCDOHMH"), lead-based paint is the most common cause of poisoning. Although atmospheric levels of lead have declined significantly over the years, following the transition to unleaded gasoline, lead remains ubiquitous in the urban environment.

During construction projects, excavation can create airborne dust (viz., particulate matter) that must be appropriately contained to prevent or minimize inhalation or ingestion exposure, since some of the dust contains lead. Particulate matter can also settle in local soils or on and within buildings, and can ultimately be inhaled or ingested. Respirable particulate matter (even without lead as an ingredient) is an issue as well. This air pollutant can be deposited in the lower respiratory tract and can affect those individuals sensitive to respiratory ailments, such as the elderly, asthmatics, and persons suffering from cardio-pulmonary disorders.

The precautionary measures required by the RAP/CHASP (such as wetting exposed soils to reduce the generation of dust, and covering soil stockpiles and haul trucks), would control and limit the potential for airborne exposure to dust and lead. And the associated respirable dust monitoring would be more than sufficient to ensure that the level of lead would not violate the National Ambient Air Quality Standards ("NAAQS") i.e., with the implementation of the construction procedures described in "Construction," and with the air monitoring and dust control requirements set out in the May 2010 NYSDEC Division of Environmental Remediation ("DER")-10 (including Section 5.4 and Appendices 1A and 1B) during soil disturbance. With these measures undertaken, the Proposed Project would not result in any significant adverse impacts from dust or lead on public health.

While there would be periods of the construction when P.S. 163 experiences noise level increments in excess of the *CEQR Technical Manual* impact criteria and that would be intrusive and noisy, the duration of the exceedances and the absolute value of the noise levels at the school were also considered in determined whether or not the construction noise at P.S. 163 would constitute a significant adverse impact.

The construction noise analysis predicts that construction of the Proposed Project would result in noise level increments exceeding the *CEQR Technical Manual* impact criteria for no more than 9 consecutive months and no more than 14 total months. This would be less than the 2 or more years of sustained elevated noise levels that would be considered a significant adverse noise impact according to *CEQR Technical Manual* construction noise impact criteria. Additionally, absolute noise levels at the school's exterior facade during the loudest periods of construction would be expected to range from the low 70s dBA to the low 80s dBA. Noise levels of this magnitude are similar to noise levels on busy New York City streets. Currently, the school's east and south façades include single-paned windows and window air conditioners, which would be expected to provide approximately 15-20 dBA of attenuation of exterior noise sources. However, with this level of attenuation, it is not expected that interior noise levels would be below 45 dBA $L_{10(1)}$ (the *CEQR Technical Manual* acceptable interior noise level criteria for classroom uses) in either the current condition or in the future during the construction period. Additionally, noise levels expected to result from the construction of the Proposed Project would be comparable to those from any typical construction site in New York City involving construction of a new building with concrete slab floors and foundation. Potential disruptions to adjacent residences and schools resulting from elevated noise levels generated by construction would be expected to also be comparable to those that would occur adjacent to any typical New York City construction site during the limited portions of the construction period when the loudest activities would occur. Based on the relatively short duration of the construction noise level increments and absolute noise levels at the school that are comparable to those on heavily trafficked roadways throughout New York City, the noise level increases resulting from construction of the Proposed Project would not constitute a significant adverse impact.

Neighborhood Character

The neighborhood character analysis examined the principal characteristics of the neighborhood surrounding the Project Site, including the streets within the neighborhood, and assessed the Proposed Project's potential to result in impacts to neighborhood character. Neighborhood character is typically considered to be a combination of various elements that give neighborhoods their distinct "personality," which may include aspects of socioeconomic conditions, land use, open space, historic and cultural resources, urban design and visual resources, shadows, transportation, noise, or other social or physical characteristics that help to define a community. A neighborhood character assessment is generally appropriate if a project has the potential to tresult in any significant adverse impacts in any of those areas, and considers how these components combine to create the context and feel of a neighborhood and how the Proposed Project would affect that context. As described in the relevant chapters of this EIS, consistent with the impact criteria presented in the *CEQR Technical Manual*, the Proposed Project would not result in significant adverse impacts in the areas of land use, zoning, or public policy; socioeconomic conditions; open space; historic and cultural resources; urban design and visual resources; shadows; or noise. As discussed in Chapter 7, "Transportation," the Proposed Project is projected to result in significant adverse traffic impacts.

The Proposed Project is expected to result in significant adverse traffic impacts at the West 97th Street and Amsterdam Avenue and West 97th Street and Columbus Avenue intersections during the Weekday a.m., Weekday Midday, and Weekday p.m. peak hours. However, all of these impacts could be mitigated with signal timing and phasing changes. Furthermore, as previously discussed, the neighborhood character of the study area is partly defined by the existing high level of vehicular traffic, particularly on Columbus Avenue and Amsterdam Avenue, and West 96th Street. Therefore, the increased traffic resulting from the Proposed Project does not represent a significant alteration of this character-defining feature.

According to the *CEQR Technical Manual*, even if a project does not have the potential to result in a significant adverse impact to neighborhood character in a certain technical area, additional analysis of neighborhood character may be warranted based on the potential for a project to result in a combination of moderate effects in more than one technical area. A "moderate" effect is generally defined as an effect considered reasonably close to the significant adverse impact threshold for a particular technical analysis area. The Proposed Project would not result in moderate effects that would be reasonably close to the impact thresholds in the other technical areas. The physical changes from the Proposed Project would be limited to the Project Site and would be compatible with the land use and urban design characteristics of the surrounding neighborhood. The Proposed Project would result in moderate effects due to new shadows, but the patterns of sunlight and shadow on Happy Warrior Playground are not a defining feature of the neighborhood character study area. Although the Proposed Project would increase activity modestly in the surrounding area, the new population would not result in a combination of moderate effects in the areas of socioeconomic conditions, open space, or transportation that would have the potential to adversely affect neighborhood character. While the Proposed Project would result in significant adverse traffic impacts in the area of transportation, mitigation measures are available to mitigate these impacts. In any event, increases in vehicular and pedestrian traffic would be unlikely to result in significant adverse impacts to the study area's neighborhood character given the existing high level of traffic in the neighborhood. Therefore, the Proposed Project would not have the potential to adversely affect neighborhood character through a combination of moderate effects.

Overall, the Proposed Project would not result in any significant adverse impacts on the neighborhood character of the Project Site and the study area.

Construction

Schedule. Construction of the Proposed Project is expected to begin in 2014 and would last approximately 30 months. Excavation and foundation activities would begin in 2014 and would take approximately 3 months to complete. Superstructure construction would commence in Month 4 of construction and would be completed by Month 9 of construction. Exterior façade work would begin in Month 10 of construction and would be completed by Month 14 of construction. Interior fit-out work is expected to begin in Month 13 of construction and would take approximately 13 months to complete. Site work would begin in Month 22 of construction and would take approximately 3 months to complete. Finally, commissioning would commence in Month 26 of construction and would be completed by Month 30 of construction.

Perimeter Safety. The Project Site is located on the southern portion of the superblock bounded by West 100th Street to the north, West 97th Street to the south, Columbus Avenue to the east, and Amsterdam Avenue to the west. P.S. 163 is located on this block immediately to the west of the Project Site, and two PWV residential buildings are located to the immediate north and east of the Project Site, respectively. For pedestrian safety purposes, flaggers would be employed adjacent to the Project Site to provide guidance to pedestrians and to alert or slow down the traffic and provide safe pedestrian access to P.S. 163 or nearby residences. In addition, to ensure the safety of the students, teachers, administrative personnel, and others traveling to and from P.S. 163, the construction manager would coordinate construction activities with New York City Department of Education ("NYCDOE") and with the P.S. 163 principal on an on-going basis. A protected, 8-foot-wide pedestrian pathway within the width of the existing West 97th Street sidewalk south of the Project Site would always be maintained. Flaggers would also be employed at each of the gates to control trucks entering and exiting the Project Site.

Although the Building Code does not require a sidewalk bridge to be installed on the pedestrian pathway between P.S. 163 and the Project Site, since the project building would be located more than 20 feet away from this pathway, a sidewalk bridge would be erected to provide overhead protection between P.S. 163 and the Project Site when superstructure construction commences. A sidewalk bridge/construction shed would also be erected to the immediate north and east of the Project Site when superstructure construction begins. In addition, 10-foot cantilevered fences with sound absorptive material mounted in the inner surface would be installed around the perimeter of the construction site during construction to provide noise shielding. Safety nettings would be installed on the sides of the proposed building as the superstructure advances upward to prevent inadvertent debris from falling to the ground. All NYCDOB safety requirements would be followed and construction activities associated with the Proposed Project would be conducted with the care mandated by the close proximity of sensitive receptor locations to the Proposed Project.

To avoid any temporary traffic disruptions in the surrounding area, construction deliveries would be made outside of the school commuting traffic peak hours to extent practicable while school is in session. Control measures would be implemented during construction to minimize air quality and noise disruptions to the school users.

Construction Impacts. Based on the analyses presented in this chapter, construction activities associated with the Proposed Project would result in significant adverse impacts in traffic and noise**;** additional information for key technical areas is summarized below.

Hazardous Materials. Construction activities associated with the Proposed Project would not result in any significant adverse hazardous materials impacts. A NYSDOH-approved RAP and associated CHASP would be prepared for implementation during the subsurface disturbance associated with the Proposed Project. Spill №. 1306324 would be remediated in accordance with NYSDEC requirements. During construction associated with the Proposed Project, regulatory requirements pertaining to excavated soil, petroleum storage tanks, and dewatering would be followed. Once excavation and foundation activities are complete, all of the contaminated soil would be remediated and removed from the Project Site and no further potential for future human exposure would occur.

Transportation – Traffic. The peak period of construction activity is projected to be during 2016. This period of peak of activity would result in 123 passenger-car-equivalent (“PCE”) trips during the Weekday a.m. and 101 PCE trips during the Weekday p.m. construction peak hours. (Construction workers would be expected to park in off-site parking facilities.) A significant adverse traffic impact is expected at the intersection of West 97th Street and Amsterdam Avenue in 2016. This impact can be mitigated by implementing the proposed mitigation at this location. The proposed mitigation is to reallocate 1 second of green time to the westbound phase from the northbound phase.

Transportation – Transit. The Project Site is served by 5 subway lines and 4 bus routes. During the peak construction period, the total estimated number of peak hour transit trips would be approximately 190 trips during the a.m. peak hour (167 subway/rail, 23 bus) and 190 trips during the p.m. peak hour (167 subway/rail, 23 bus). Since the increase in trips would be fewer than 200 trips on any one subway route and fewer than 50 trips on any one bus route during the peak construction period, detailed subway and bus line-haul analyses are not required. Therefore, no construction-related transit impacts would be expected during the peak construction period.

Transportation – Pedestrians. New pedestrian trips generated during the construction period would consist of construction workers who would park in off-site parking facilities, as well as those who take transit or walked to the construction site. Based on pedestrian trip assignment, fewer than 200 new peak-hour pedestrian trips would be added to any one pedestrian element during the construction period. Therefore, no construction-related pedestrian impacts would be expected during the peak construction period.

Transportation – Parking. If a curb-lane closure is required, approximately 10 parking spaces would be temporarily lost. These parking spaces would be restored once construction activities no longer require a curb-lane closure. During the peak construction period, a total of 441 parking spaces would be available at existing off-site parking facilities within a one-quarter-mile radius of the Project Site. Based on the projected peak construction trip estimates for 2016, the peak construction worker parking demand would be 101 spaces. The construction worker parking demand would be accommodated within the off-site parking facilities; therefore, no construction-related parking impacts would be expected.

Air Quality. Construction activity in general has the potential to adversely affect air quality as a result of diesel emissions. Measures would be taken to reduce pollutant emissions during construction in accordance with all applicable laws, regulations, and building codes. These include dust suppression measures and the idling restriction for on-road vehicles. In addition to the required laws and regulations, the Proposed Project would commit to a robust emissions reduction program, including diesel equipment reduction, the use of ultra-low sulfur diesel ("ULSD"), best available tailpipe reduction technologies, and utilization of newer equipment. With the implementation of these emission reduction measures, a detailed analysis of construction emissions determined that $PM_{2.5,}$ $PM_{10,}$ annual-average NO_2, and CO concentrations would be below their corresponding *de minimis* thresholds or NAAQS respectively. The maximum predicted 24-hour and annual average $PM_{2.5}$ incremental concentrations would be 5.0 $\mu g/m^3$ and 0.26 $\mu g/m^3$, respectively, below the applicable *de minimis* threshold values of 5.5 $\mu g/m^3$ and 0.30 $\mu g/m^3$. The maximum predicted 24-hour average PM_{10} concentration would be 60.5 $\mu g/m^3$, well below the applicable NAAQS value of 150 $\mu g/m^3$. The maximum predicted annual average NO_2 concentration would be 50.6 $\mu g/m^3$, well below the applicable NAAQS value of 100 $\mu g/m^3$. The maximum predicted 1-hour and 8-hour average CO concentrations would be 30.1 $\mu g/m^3$ and 8.8 $\mu g/m^3$, respectively, below the applicable NAAQS values of 35 ppm and 9 ppm. Therefore, the construction of the Proposed Project would not result in significant adverse air quality impacts due to construction sources.

Noise. Construction of the Proposed Project would result in significant adverse impacts with respect to noise. This conclusion is based on a conservative analysis of the construction procedures, including peak monthly levels, a maximum amount of construction equipment assumed to be operational at locations closest to nearby receptors, and a conceptual construction schedule.

Construction of the Proposed Project would include noise control measures as required by the *New York City Noise Control Code*, including both path and source controls. Even with these measures, the results of detailed construction analyses indicate that elevated noise levels are predicted to occur for 2 or more years at 6 of the 30 receptor sites analyzed. Affected locations include residential areas adjacent to the Proposed Project. However, the affected buildings have double-glazed windows and air-conditioning which greatly reduce such noise levels so that these locations would be expected to experience interior $L_{10(1)}$ values less than 45 dBA, which are deemed acceptable according to *CEQR Technical Manual* noise impact criteria. Two of the affected buildings (i.e., 125 West 97th Street and 122 West 97th Street) have outdoor balconies, which would not experience the same attenuation provided by the windows and alternate means of ventilation that exists at the interior of the buildings. During the loudest periods of construction, noise level increases resulting from construction at these balconies would range from 14.5 to 21.4 dBA, with absolute noise levels up to 88.1 dBA. Consequently, balconies on various floors may experience significant noise impacts due to construction for limited portions of the construction period. However, it should be noted that even during the portions of the construction period that would generate the most noise at these balconies, the balconies could still be enjoyed without the effects of construction noise outside of the hours that construction would occur, e.g. during late afternoon, nighttime, and on weekends. At these outdoor balconies, there would be no feasible or practicable mitigation to mitigate the construction noise impacts. Therefore, these balconies would be considered to experience unmitigated significant noise impacts as a result of construction.

Additional options for source and path controls would be incorporated into the construction methodology to the extent practicable and feasible. Due to low levels of traffic volumes on West 97th Street, existing and No-Build noise levels at the sensitive receptor locations near the Project Site are also especially low. The calculation of construction noise associated with the Proposed Project was conservative, tending to produce the highest calculated construction noise level for each stage of construction.

The east and south façades of the immediately adjacent P.S. 163 would experience noise levels that exceed *CEQR Technical Manual* noise level impact criteria during some construction activities. Construction noise levels would exceed the *CEQR Technical Manual* noise level impact criteria (as defined in the Construction Noise Impact Criteria section of Chapter 13, “Construction”) during the excavation and foundation activities (3 months), superstructure construction (6 months), and when two construction stages overlap, each of which would last only for a limited duration (2 months for exterior façade construction/interior fit-out activities and 3 months for interior fit-out activities/site work). During the excavation/foundation stage of construction, the maximum increase in hourly noise levels would range from 9.6 dBA to 21.2 dBA, with absolute noise levels up to 79.5 dBA. During superstructure construction, the maximum increase in hourly noise levels would range from 9.8 dBA to 24.1 dBA, with absolute noise levels up to 81.0 dBA. The higher end of the expected increases in maximum 1-hour noise levels would potentially occur during the excavation and foundation activities, and the portion of superstructure construction that would take place when the lower floors are being constructed. As the work progresses in height to the upper floors of the Proposed Project, noise levels would be expected to decrease with the greater distance to the noise sources. During the overlap periods of the construction schedule when more than one stage of construction would occur simultaneously, the maximum increase in hourly noise levels would range from 3.7 dBA to 8.6 dBA, with absolute noise levels up to 72.4 dBA. The interior fit-out stage of construction, when it would not overlap with other construction stages, would result in noise levels that do not exceed the *CEQR Technical Manual* noise level impact criteria (as defined in the Construction Noise Impact Criteria section of Chapter 13, "Construction"). This stage of construction would be the longest, and would last seven months without overlap. During this time, the maximum increase in hourly noise levels would range from 0.1 dBA to 1.6 dBA, with absolute noise levels up to 65.9 dBA which would be considered imperceptible. These noise level increments, resulting from construction, refer to the increases predicted to occur at various locations of the school during the single loudest hour throughout each phase of construction. The peak 1-hour noise level is the metric recommended by the *CEQR Technical Manual* for construction noise analysis, but noise levels typically fluctuate throughout the day and from day to day during each construction phase, and would not be sustained at these maximum values.

Noise levels expected to result from the construction of the Proposed Project would be comparable to those from any typical construction site in New York City involving construction of a new building with concrete slab floors and foundation. Potential disruptions to adjacent residences and schools resulting from elevated noise levels generated by construction would be expected to also be comparable to those that would occur adjacent to a typical New York City construction site during the limited portions of the construction period when the loudest activities would occur. While there would be periods of the construction when P.S. 163 experiences elevated noise level increments exceeding the *CEQR Technical Manual* impact criteria, these exceedances would occur intermittently for no more than 9 consecutive months and no more than 14 total months. This period of time would be less than 24 or more consecutive months (i.e., the *CEQR Technical Manual* definition of "long-term" construction). Cumulative noise levels at the school during the loudest periods of construction would be expected to range from the low 70's dBA to the low 80's dBA. Noise levels of this magnitude are similar to noise levels experienced on busy New York City streets. Currently, the school's east and south façades include single-paned windows and window air conditioners, which would be expected to provide approximately 15-20 dBA of attenuation of exterior noise sources. However with this level of attenuation, it is not expected that interior noise levels would be below 45 dBA $L_{10(1)}$ (the *CEQR Technical Manual* acceptable interior noise level criteria for classroom uses) during the existing condition or during the construction period.

Vibration. The Proposed Project is not expected to result in significant adverse construction impacts with respect to vibration. Use of construction equipment that would have the most potential to exceed the 65 VdB criterion within a distance of 230 feet of sensitive receptor locations (e.g., equipment used during pile driving) would be perceptible and annoying. Therefore, for limited time periods, perceptible vibration levels may be experienced by occupants and visitors to all of the buildings and locations on and immediately adjacent to the Project Site. However, the operations which would result in these perceptible vibration levels would only occur for limited periods of time at any particular location and, therefore, the resulting vibration levels, while perceptible, would not result in any significant adverse impacts.

Open Space. There are no existing recreational open spaces within the Project Site, and no recreational open space resources would be used for staging or other construction activities.

There are several recreational open spaces on the Project Site superblock, including Happy Warrior Playground, located adjacent to P.S. 163 and northwest of the Project Site, and the landscaped open space areas serving the PWV buildings, located to the north and east of the Project Site. Construction activities may generate noise that could impair the enjoyment of these nearby open spaces, but such noise effects would be temporary and of short duration. The construction hours would typically be from 7:00 a.m. to 3:30 p.m. on weekdays so these open spaces would not be affected by the construction of the Proposed Project after 3:30 p.m. on weekdays and on most weekends. Construction activities would be conducted with the care mandated by the close proximity of an open space to the Project Site. Construction on the Project Site would include noise control measures as required by the *New York City Noise Control Code* and air emissions control measures, including compliance with the *New York City Air Pollution Control Code*, which regulates construction-related dust emissions. In addition, the Proposed Project is committed to employing a wide variety of measures that exceed code requirements and standard construction practices to minimize the disruption to the community during construction. Therefore, construction of the Proposed Project would not result in any significant adverse impacts on open space.

Historic and Cultural Resources. There are no known or potential architectural or archaeological resources on the Project Site. Therefore, the proposed redevelopment of the Project Site would not have a direct or indirect effect on any on-site architectural or archaeological resources. None of the known or potential architectural resources in the study area are located within 90 feet of the Project Site. Therefore, no such resources would be physically affected during construction-period activities on the Project Site.

Mitigation Measures

Mitigation measures have been developed to minimize or eliminate project-related impacts to the fullest extent possible. These measures are discussed below.

Transportation. The intersections of West 97th Street with Columbus Avenue and Amsterdam Avenue in the study area would experience significant adverse traffic impacts as a result of the Proposed Project under the reasonable worst-case transportation development scenario. The readily implementable mitigation measures (e.g., revised signal timings, lane restriping, etc.) that would fully mitigate the identified impacts are discussed below. The implementation of these measures would be conducted in coordination with NYCDOT as development proceeds.

Traffic Operations. Three peak hours were considered for the transportation analysis: Weekday a.m. (8:00 a.m. to 9:00 a.m.), Weekday midday (2:45 p.m. to 3:45 p.m.), and Weekday p.m. (5:45 p.m. to 6:45 p.m.).

In 2018, the two study locations are forecast to experience significant adverse traffic impacts attributable to the Proposed Project during the analyzed peak periods:

- West 97th Street and Amsterdam Avenue during the Weekday a.m., Weekday midday, and Weekday p.m. peak hours.

- West 97th Street and Columbus Avenue during the Weekday a.m., Weekday midday, and Weekday p.m. peak hours.

Subject to review and approval by the relevant agencies, including NYCDOT, each of the above significant adverse impacts could be fully mitigated as outlined below.

West 97th Street and Amsterdam Avenue. This intersection would experience a significant impact in the westbound through/right-turn-lane group during all three peak hours. To mitigate the potential impact, green time would be reallocated as follows:

- Weekday a.m. peak hour: Shift 1.0 second from the northbound phase to the westbound phase.
- Weekday midday peak hour: Shift 2.0 seconds from the northbound phase to the westbound phase.
- Weekday p.m. peak hour: Shift 1.0 second from the northbound phase to the westbound phase.

West 97th Street and Columbus Avenue. This intersection would experience a significant impact in the westbound left-turn-lane group during all three peak hours and the westbound through/left-turn-lane group during the Weekday a.m. peak hour. To mitigate the potential impact, green time would be reallocated as follows:

- Weekday a.m. peak hour: Shift 2.0 seconds from the southbound phase to the westbound phase.
- Weekday midday peak hour: Shift 2.0 seconds from the southbound phase to the westbound phase.
- Weekday p.m. peak hour: Shift 1.0 second from the southbound phase to the westbound phase.

Construction

Traffic. During the peak construction period in 2016, a significant adverse traffic impact was identified at the West 97th Street and Amsterdam Avenue intersection during the Weekday p.m. peak hour of the peak construction period condition. Subject to review and approval by the relevant agencies, including NYCDOT, the above significant adverse impact could be fully mitigated as follows:

- Construction Weekday p.m. peak hour: Shift 2.0 seconds from the northbound phase to the westbound phase.

Noise. The approach and procedures for constructing the Proposed Project would be typical of the methods utilized in other construction projects throughout New York City. Since the Project Site is located close to an existing residential community and school, the Proposed Project is committed to taking a proactive approach during construction, which employs a wide variety of measures that exceed standard construction practices, to minimize construction noise and reduce potential off-site noise impacts. The additional noise control measures are designed to reduce the amount of noise experienced at nearby receptors (including residences, schools, and open spaces) by decreasing the amount of noise produced by on-site equipment and by shielding the receptors from the noise-producing activities and equipment. These additional measures would include alternate construction equipment and/or practices as well as additional or improved construction noise barriers.

However, even with the implementation of a wide variety of measures that exceed code requirements and standard construction practices to minimize noise disruption to the community during construction, construction of the Proposed Project would result in significant adverse impacts with respect to noise.

The noise analysis results show that predicted noise levels would exceed the *CEQR* impact criteria during 2 or more years on one or more floors at 6 of the 30 receptor sites. Table S-1 summarizes analysis results where predicted noise level increases exceed the *CEQR* impact criteria for 2 or more consecutive years. Table S-1 shows the analysis results at groups of floors on each of the buildings predicted to experience exceedances of *CEQR* impact criteria during 2 or more years, including the maximum predicted noise level increase resulting from construction during each of the analysis periods, and the duration of the construction stage represented by the analysis period. The results are separated into groups of 5 or fewer floors of each building.

Table S-1. Locations Where Noise Increases Exceed *CEQR* Criteria for Two or More Years

Building /Location	Associated Land Use	Total Stories	Façade	Associated Receptor(s)	Impacted Floor(s)	Maximum Increase in dB(A)				
						Excavation/ Foundation (3 months)	**Super-structure (6 months)**	**Exterior Façade/ Interior Fit-Out (2 months)**	**Interior Fit-Out (7 months)**	**Interior Fit-Out/ Site Work (3 months)**
125 West 97th Street (Park West Village Building East of Project Site)	Residential	16	South/West Within 50 feet of Southwest Corner	C2	3-5	14.5	14.2	11.4	3.4	15.2
					6-10	15.8	14.4	11.2	3.4	14.9
					11-15	15.8	14.4	10.6	3.3	14.0
					16	15.9	14.4	10.2	3.2	13.0
122 West 97th Street (Residential Building South of Project Site)	Residential	13	North Except for Western Most Portion	D1, D2, D3, D4	3-5	21.4	18.3	12.3	4.2	15.7
					6-10	21.3	18.8	13.4	6.0	16.9
					11-13	20.5	18.1	13.5	6.3	17.1
110 West 97th Street (Residential Building Southeast of Project Site)	Residential	12	West Half of North Façade	F1	12	14.9	12.4	9.3	3.0	11.4

The buildings listed in Table S-1 have double-glazed windows and air conditioners. For buildings with double-glazed windows and well-sealed, through-the-wall/sleeve/packaged terminal air conditioners (“PTACs”), interior noise levels would be approximately 25 to 30 dBA less than exterior noise levels. The typical attenuation provided by double-glazed windows and the alternate ventilation outlined above would be expected to result in interior noise levels that are below 45 dBA $L_{10(1)}$ (the *CEQR* acceptable interior noise level criteria). But although these structures have double-glazed windows and alternate ventilation, during some limited time periods construction activities may result in interior noise levels that would be above the 45 dBA $L_{10(1)}$ noise level recommended by *CEQR Technical Manual* guidance for these uses.

In addition, two buildings — 125 West 97th Street and 122 West 97th Street — have outdoor balconies, and would not experience the same attenuation provided by the windows and alternate means of ventilation that exists at the interior of the buildings. Consequently, balconies on various floors may experience significant noise impacts for limited portions of the construction period due to construction. It should be noted that even during the portions of the construction period that would generate the most noise at these balconies, they could still be enjoyed without the effects of construction noise outside of the hours that construction would occur, i.e., during late afternoon, nighttime, and on weekends. For these outdoor balconies, there would be no feasible or practicable mitigation to mitigate the construction noise impacts. Therefore, these balconies would be considered unmitigated significant noise impacts as a result of construction.

As shown in Table S-1, the noise level increments at these balconies are highest during excavation/foundation activities (3 months), superstructure construction (6 months), and when two construction stages overlap, each of which would last for a limited duration (2 months for exterior façade construction/interior fit-out activities and 3 months for interior fit-out activities/site work). The interior fit-out stage of construction, when it would not overlap with other construction stages, would result in noise levels that just barely exceed the *CEQR* impact criteria. This stage of construction would be the longest, and would last 7 months without overlap. Due to relatively low levels of traffic volumes on West 97th Street, existing and No-Build noise levels at the sensitive receptor locations near the Project Site are also especially low. The calculation of construction noise associated with the Proposed Project was conservative, tending to produce the highest calculated construction noise level for each stage of construction.

Based on this conservative analysis, the east and south façades of the immediately adjacent P.S. 163 are predicted to experience noise levels that exceed *CEQR* noise level impact criteria during some construction activities. Construction noise levels would exceed the *CEQR* noise level impact criteria during the excavation and foundation activities, superstructure construction, and when two construction stages overlap, each of which would last only for a limited duration (2 months for exterior façade construction/interior fit-out activities and 3 months for interior fit-out activities/site work). During the excavation/foundation stage of construction, the maximum increase in hourly noise levels would range from 9.6 dBA to 21.2 dBA. During superstructure construction, the maximum increase in hourly noise levels would range from 9.8 dBA to 24.1 dBA. The higher end of the expected increases in maximum 1-hour noise levels would potentially occur during the excavation and foundation activities, and the portion of superstructure construction that would take place when the lower floors are being constructed. As the work progresses in height to the upper floors of the Proposed Project, noise levels would decrease with the greater distance to the noise sources. During the overlap periods of the construction schedule when more than one stage of construction would occur simultaneously, the maximum increase in hourly noise levels would range from 3.7 dBA to 8.6 dBA. The interior fit-out stage of construction, when it would not overlap with other construction stages, would result in noise levels that do not exceed the *CEQR* noise level impact criteria. This stage of construction would be the longest, and would last 7 months without overlap. During this time, the maximum increase in hourly noise levels would range from 0.1 dBA to 1.6 dBA, which would be considered imperceptible. The above noise level increments resulting from construction refer to the increases predicted to occur at various locations of the school during the single loudest hour throughout each phase of construction. The peak 1-hour noise level is the metric recommended by the *CEQR Technical Manual* for construction noise analysis, but noise levels typically fluctuate throughout the day and from day to day during each construction phase, and would not be sustained at these maximum values.

Noise levels expected to result from the construction of the Proposed Project would be comparable to those from any typical construction site in New York City involving construction of a new building with concrete slab floors and foundation. Potential disruptions to adjacent residences and schools resulting from construction would be expected to also be comparable to those occurring adjacent to a typical New York City construction site during the portions of the construction period when the loudest activities would occur. While there would be periods of the construction when P.S. 163 experiences elevated noise levels that would be intrusive and noisy, construction would not result in 2 or more years of sustained elevated noise levels and would therefore not be considered a significant adverse noise impact according to *CEQR* construction noise impact criteria.

Cumulative noise levels at the school during the loudest periods of construction would be expected to range from the low 70s dBA to the low 80s dBA. Noise levels of this magnitude are similar to noise levels on busy New York City streets. Currently, the school's east and south façades include single-paned windows and window air conditioners, which would be expected to provide approximately 15-20 dBA of attenuation of exterior noise sources. However, with this level of attenuation, it is not expected that interior noise levels would be below 45 dBA $L_{10(1)}$ (the *CEQR* acceptable interior noise level criteria for classroom uses) in the existing condition or during the construction period.

Alternatives

The No-Build Alternative assumed that the Project Site would remain in its current state and continue to function as a parking area. JHL would maintain its existing 514 beds in three distinct buildings on the West 106th Street campus. The existing facility would continue to operate inefficiently, housed in outdated buildings with a physical plant in need of major infrastructure replacement. Under the No-Build Alternative, JHL would not be able to achieve its goal of constructing the first true urban Green House-model nursing facility in New York City and New York State, and would continue to use the existing facilities, which have an institutional design, with long corridors that are not ideal for the wheelchair-bound. Although the EIS assumes that the Project Site would remain in its current state for purposes of *SEQR*, it should be noted that, absent the Proposed Project, zoning would not preclude some other as-of-right redevelopment of the Project Site in the future. Any as-of-right development that could occur on the Project Site in the future would result in similar soil disturbance as the Proposed Project. In the case of any future as-of-right development on the Project Site, the petroleum spill would be remediated and applicable regulations for the handling and appropriate disposal of excavated and contaminated soil would be followed. However, any future as-of-right development on the Project Site would not require the implementation of a NYSDOH-approved RAP or CHASP, including air monitoring. The No-Build Alternative would not result in the additional vehicle trips or increased parking demand generated by the Proposed Project's construction activities and also would not result in any air pollutant emissions or increased noise levels that would be associated with the construction of the Proposed Project. As such, the No-Build Alternative would not result in the significant adverse impacts to traffic and noise during the construction period.

The West 106th Street Redevelopment Alternative considered a project that would involve the redevelopment of the West 106th Street site instead of the West 97th Street site with a new nursing-care facility on the western portion of the site and a new residential building on the eastern portion of the site. Under the West 106th Street Redevelopment Alternative, the new nursing facility would accommodate a total of 303 beds — 111 fewer beds, or 27 percent less than the 414-bed Proposed Project. Along West 106th Street, the environmental effects of this alternative would be similar to existing conditions, except that the new residential building would result in a modest increase in activity along the block with uses that are different from those that are currently on the site.

Since this alternative would not involve any new development on the West 97th Street Project Site, unlike the Proposed Project, the West 106th Street Redevelopment Alternative would not result in significant adverse traffic impacts at the intersections of West 97th Street and Amsterdam Avenue and West 97th Street and Columbus Avenue. However, as discussed in "Mitigation Measures," traffic improvement measures have been identified for the Proposed Project to mitigate these potential significant adverse traffic impacts.

Unlike the Proposed Project, the West 106th Street Redevelopment Alternative would result in a longer construction phasing that would result in prolonged disruption to the JHL residents and adjacent community and greater significant construction impacts. In order to facilitate construction of the new nursing-care facility and the new residential development on the West 106th Street site, JHL would need to reduce the number of nursing home residents to 328, so that only a portion of the existing facility would be occupied. As a result, this alternative would result in significant disruption to the nursing-care facility's operations and to the adjacent neighborhood as compared with the Proposed Project. Under this alternative, residents of the nursing-care facility would be located immediately adjacent to ongoing construction activities while the new nursing-care facility and residential building are completed. In total, this alternative would result in up to approximately 76 months of ongoing construction along West 106th Street, compared with approximately 30 months with the Proposed Project on West 97th Street. With the Proposed Project, nursing facility residents would be relocated from West 106th Street to West 97th Street once the new facility on West 97th Street is completed; thus, there would be no interruption to the care of the nursing home residents and no construction activities would occur adjacent to the nursing-care facility while it is occupied. Also, with the Proposed Project, JHL would not lose 111 additional beds. Consequently, the West 106th Street Redevelopment Alternative would neither be consistent with the goals and objectives of the Proposed Project nor would it result in an efficient new nursing-care facility to the same extent as the Proposed Project. Because of the smaller size of the facility under this alternative, a similar amount of common space and support areas must be provided for a smaller number of beds. This, in turn, makes the facility under this alternative more costly to operate since fewer beds must support the same overhead cost. Moreover, the design of this alternative, with longer corridors than proposed under the Proposed Project, would result in greater inefficiencies for staff providing services to the residents.

Furthermore, this alternative would not be able to adhere to the Green House model of long-term care.[4] For example, due to the narrower floorplates on the West 106th Street site, the building design would include semiprivate long-term-care bedrooms, which are not permitted under the Green House model. In addition, these semi-private rooms would not be able to provide a window for each resident. In contrast, the Proposed Project would provide private long-term-care bedrooms and thus every resident with a dedicated bedroom window. This alternative would not be able to provide balcony space on each floor, and would require longer travel distances between bedrooms and dining rooms, which serve as physical and psychological barriers for residents.

Overall, this alternative would not be consistent with the goals and objectives of the Proposed Project because it would result in an inefficient facility that would not meet Green House design principles to the same extent as the Proposed Project. This alternative would also have more significant construction impacts due to the longer construction time frame. Moreover, unlike the Proposed Project, it is expected that this alternative would continue to present physical challenges that would negatively impact residents' quality of life, mobility, privacy, and independence as well as significantly reduce the number of nursing home residents that could be served by a redeveloped facility.

The No Significant Adverse Impacts Alternative considered a project that would avoid the significant adverse impacts identified with the Proposed Project, which as discussed elsewhere, would result in the potential for significant adverse impacts in the areas of operational and construction traffic and construction noise. The Proposed Project would not result in any significant adverse impacts in the other 10 technical areas assessed. The No Significant Adverse Impacts Alternative addresses operational or construction-related impacts that could be minimized or eliminated. As this alternative would be smaller than the Proposed Project, its effects would be comparable or more limited in the technical areas for which the Proposed Project would not result in significant adverse impacts.

In order to avoid the potential for significant adverse impacts, the program for the nursing-care facility on the Project Site would have to be reduced to 41 beds. A nursing-care facility of this size would not generate enough trips to result in a level of service ("LOS") deterioration that would result in a significant adverse impact at either of these intersections. However, a 41-bed alternative would not be consistent with the goals and objectives of the Proposed Project, and would serve very few residents in the community and the borough. Because of the substantial reduction in the size of the facility under this alternative, a similar amount of common space and support areas must be provided for a very small number of beds. This, in turn, would make the facility under this alternative more costly to operate since fewer

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[4] Although a Green House-model facility could be constructed on the West 106th Street site, such a facility would only contain 156 beds, 258 fewer beds (62 percent fewer) than the Proposed Project, and would also be an inefficient facility that would not be viable to operate.

beds would support the same overhead cost. Further, as described in "Mitigation Measures," the significant adverse traffic impacts that would result from the Proposed Project could be fully mitigated.

Both the temporary traffic impacts due to the construction of the Proposed Project and the temporary unmitigated noise impacts at residential balconies would be avoided if there were no construction on the Project Site. However, this would not meet the goal of the Proposed Project to provide a new, state-of-the-art facility using the innovative Green House living model of long-term care nor be economically feasible. Finally, any future development on the Project Site would result in temporary traffic and noise disruption to the surrounding community during construction.

Therefore, there is no reasonable alternative to the Proposed Project that would substantively meet the goals and objectives of the Proposed Project while also avoiding a significant adverse impact to traffic and construction traffic and noise.

Unavoidable Adverse Impacts

Construction Noise. The approach and procedures for constructing the Proposed Project would be typical of the methods utilized in other construction projects throughout New York City. Since the Project Site is located close to an existing residential community and P.S. 163, the Proposed Project is committed to taking a proactive approach during construction, which would employ a wide variety of measures that exceed standard construction practices, to minimize construction noise and reduce potential off-site noise impacts. The additional noise control measures are designed to reduce the amount of noise experienced at nearby receptors by decreasing the amount of noise produced by on-site equipment and by shielding the receptors from the noise-producing activities and equipment. These additional measures would include alternate construction equipment and/or practices as well as additional or improved construction noise barriers.

As detailed above in "Construction," even with the implementation of a wide variety of measures that exceed code requirements and standard construction practices to minimize noise disruption to the community during construction, construction of the Proposed Project would result in significant adverse impacts with respect to noise.

This conclusion is based on a conservative analysis of the construction procedures, including peak monthly levels, a maximum amount of construction equipment assumed to be operational at locations closest to nearby receptors, and a conceptual construction schedule.

The noise analysis results show that predicted noise levels would exceed the *CEQR Technical Manual* impact criteria during 2 or more years on 1 or more floors at 6 of the 30 receptor sites analyzed. During the loudest periods of construction, noise level increases resulting from construction at these buildings would range from 14.5 to 21.4 dBA, with absolute noise levels up to 88.1 dBA. Affected locations include residential areas adjacent to the Proposed Project**,** including 125 West 97th Street (Park West Building east of Project Site), 122 West 97th Street (residential building south of Project Site), and 110 West 97th Street (residential building southeast of Project Site). However, these buildings have double-glazed windows and alternate ventilation (i.e., air conditioners). For buildings with double-glazed windows and well-sealed, through-the-wall/sleeve/PTACs, interior noise levels would be approximately 25 to 30 dBA less than exterior noise levels. The typical attenuation provided by double-glazed windows and the alternate ventilation outlined above would be expected to result in interior noise levels during most of the time that are below 45 dBA $L_{10(1)}$ (the *CEQR Technical Manual* acceptable interior noise level criteria). However, although these structures have double-glazed windows and alternate ventilation, during some limited time periods construction activities may result in interior noise levels that would be above the 45 dBA $L_{10(1)}$ noise level recommended by the *CEQR Technical Manual* for these uses.

Additionally, two buildings — 125 West 97th Street and 122 West 97th Street — have outdoor balconies that would not experience the same attenuation provided by the windows and alternate means of ventilation that exists at the interior of the buildings. During the loudest periods of construction, noise level increases resulting from construction at these balconies would range from 14.5 to 21.4 dBA, with absolute noise levels up to 88.1 dBA. Consequently, balconies on various floors may experience significant noise impacts due to construction for limited portions of the construction period. However, it should be noted that even during the portions of the construction period that would generate the most noise at these balconies, they could still be enjoyed without the effects of construction noise outside of the hours that construction would occur, e.g., during late afternoon, nighttime and on weekends. At these outdoor balconies, there would be no feasible or practicable mitigation to mitigate the construction noise impacts. Therefore, these balconies would be considered to experience unavoidable significant noise impacts as a result of construction.

The noise level increments at these balconies are highest during excavation/foundation activities (3 months), superstructure construction (6 months), and when two construction stages overlap, each of which would last only for a limited duration (2 months for exterior façade construction/interior fit-out activities and 3 months for interior fit-out activities/site work). The interior fit-out stage of construction, when it would not overlap with other construction stages, would result in noise levels that just barely exceed the *CEQR Technical Manual* impact criteria. This stage of construction would be the longest, and would last 7 months without overlap. Due to relatively low levels of traffic volumes on West 97th Street, existing and No-Build noise levels at the sensitive receptor locations near the Project Site are also especially low. The calculation of construction noise associated with the Proposed Project was conservative, tending to produce the highest calculated construction noise level for each stage of construction.

As described in "Mitigation, Measures," a number of the potential impacts identified for the Proposed Project could be mitigated. However, as described above, in some cases, project impacts would not be fully mitigated at the two buildings with outdoor balconies. During the loudest periods of construction, balconies may experience significant noise impacts due to construction for limited portions of the construction period. There would be no feasible or practicable mitigation to mitigate the construction noise impacts. Therefore, these locations would be considered to experience unavoidable, unmitigated significant noise impacts as a result of construction.

Growth-Inducing Impacts

Proposed actions may induce primary growth by expanding the numbers of employees on a site or secondary growth if further development is triggered by the proposed actions. In an environmental context secondary growth is the main concern. Actions that may result in secondary growth effects include actions that introduce a substantial amount of new residents or new employment that could induce additional development of a similar kind and/or development of support uses. In addition, actions that result in the expansion of infrastructure capacity could also induce secondary growth.

The Proposed Project would result in a new, more intensive land use on the Project Site, but would be in keeping with residential uses in the study area, and would be compatible with existing community facility and commercial uses in the study area. In addition, the Proposed Project would result in the construction of a building that is consistent with and permitted under existing zoning. The area surrounding the Project Site is fully developed, and the level of development is controlled by zoning. As such, the Proposed Project would not “induce” new growth in the study area. The Proposed Project and related actions are specific to the Project Site only.

The Proposed Project would utilize existing infrastructure, and the proposed actions would not result in any significant adverse impacts to water supply or wastewater and storm water infrastructure. Therefore, secondary growth would not be expected to be induced as a result of the Proposed Project.

Irreversible and Irretrievable Commitment of Resources

There are a number of resources, both natural and built, that would be expended in the construction and operation of the Proposed Project. These resources would include the materials used in construction; energy in the form of gas and electricity consumed during construction and operation of the proposed development; and the human effort (i.e., time and labor) required to develop, construct, and operate various components of the proposed development.

The resources are considered irretrievably committed because their reuse for some purpose other than for the Proposed Project would be unlikely. The land use changes associated with the development of the Project Site would be considered a resource loss. The Proposed Project would constitute an irreversible and irretrievable commitment of the Project Site as a land resource, thereby rendering land use for other purposes infeasible, at least in the near term.

These commitments of land resources and materials are weighed against the benefits of the Proposed Project, which introduce a new, state-of-the-art nursing-care facility to an underdeveloped site. This action would be expected to substantially improve the Project Site. Overall, the Proposed Project would not represent a substantial new irreversible and irretrievable commitment of energy resources for building operations.

Chapter 1. Project Description

Introduction

This Environmental Impact Statement ("EIS") is being undertaken pursuant to the *State Environmental Quality Review Act ("SEQRA")*, which is codified at Article 8 of the New York *Environmental Conservation Law ("ECL")*, as well as the implementing regulations, promulgated at Part 617 of Title 6 of the *New York Codes, Rules and Regulations ("N.Y.C.R.R.")* and the *SEQRA* regulations of the New York State Department of Health ("NYSDOH") at Part 97 of Title 10 of the *N.Y.C.R.R.* Collectively, these provisions of law and regulation set forth the requirements for the *State Environmental Quality Review ("SEQR")* process for the proposed action. As set forth in a letter from NYSDOH to Jewish Home Lifecare, Manhattan ("JHL") dated May 6, 2013, the environmental review of the Jewish Home Lifecare, Manhattan Replacement Nursing Facility Project ("Proposed Project") follows *SEQRA*, and the 2012 *City Environmental Quality Review ("CEQR") Technical Manual*[1] is generally used as a guide with respect to environmental analysis methodologies and impact criteria for evaluating the effects of the Proposed Project, unless NYSDOH determines otherwise.

The Proposed Project is also being reviewed in conformance with the *New York State Historic Preservation Act of 1980 ("SHPA")*, especially the implementing regulations of Section 14.09 of the *Parks, Recreation, and Historic Preservation Law ("PRHPL")*. Additionally, the Proposed Project will be reviewed in conformance with the *State Smart Growth Public Infrastructure Policy Act* ("*SSGPIPA*").

Project Description

NYSDOH has received a request from JHL, a member of the Jewish Home Lifecare System, for authorization to construct a replacement nursing facility (the "Proposed Project"). For purposes of *SEQR*, the Proposed Action would consist of NYSDOH's approval of a construction application filed pursuant to Section 2802 of the *Public Health Law ("PHL")* that would consist of JHL's plan to construct a new facility at 125 West 97th Street in Manhattan's Upper West Side neighborhood (the "Project Site," see Figure 1-1 and Figure 1-2). Following the construction of the new facility, JHL would close the current location of its Manhattan Division, which is located at 120 West 106th Street in the borough of Manhattan, New York County, New York.

Proposed Program. The Proposed Project would result in the construction of a LEED-certified replacement facility with 100 fewer beds than the current location. Upon completion of the Proposed Project, the total NYSDOH-certified bed complement at JHL would be reduced from 514 beds to 414 beds. More specifically, the Proposed Project would replace the existing,

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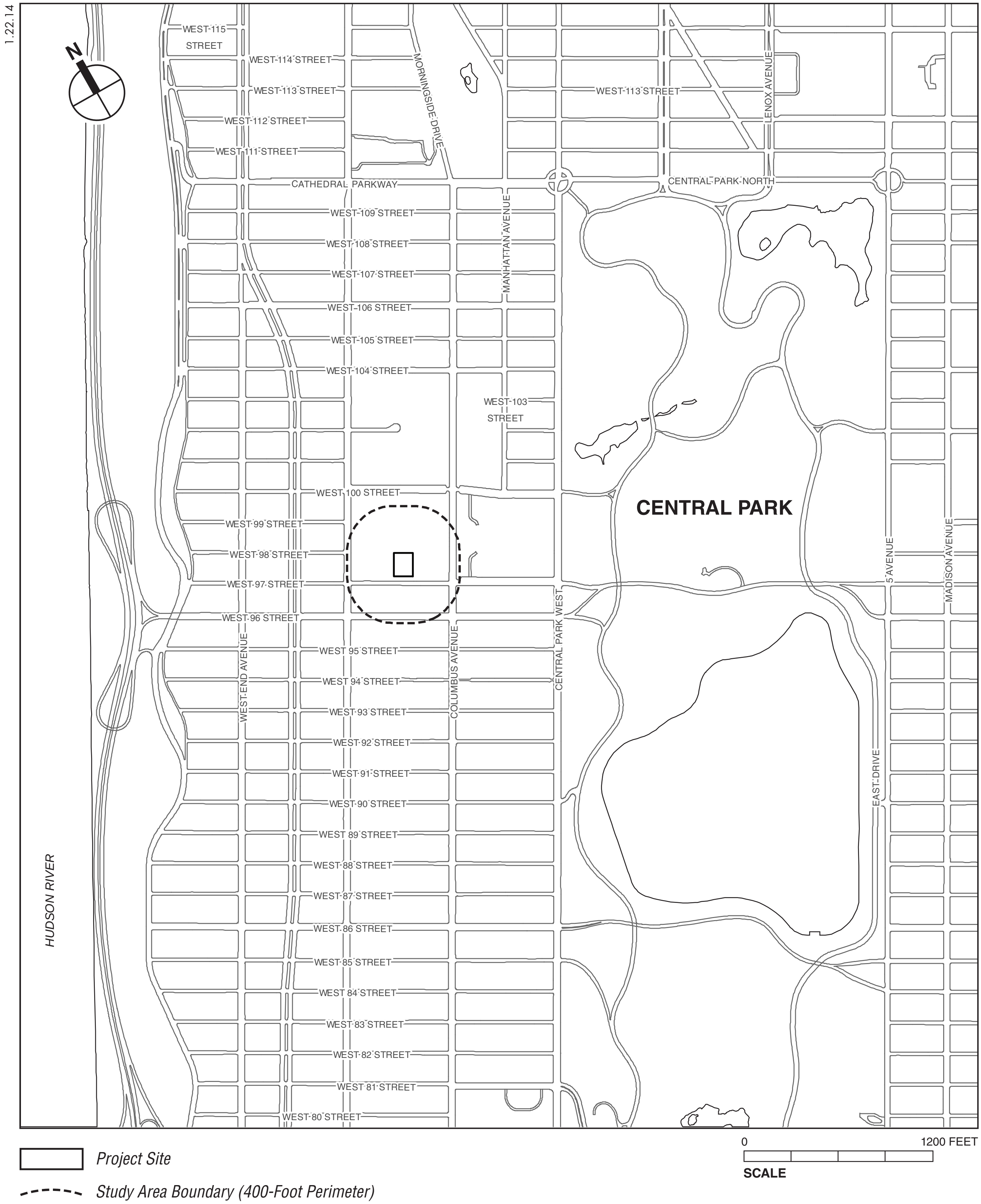
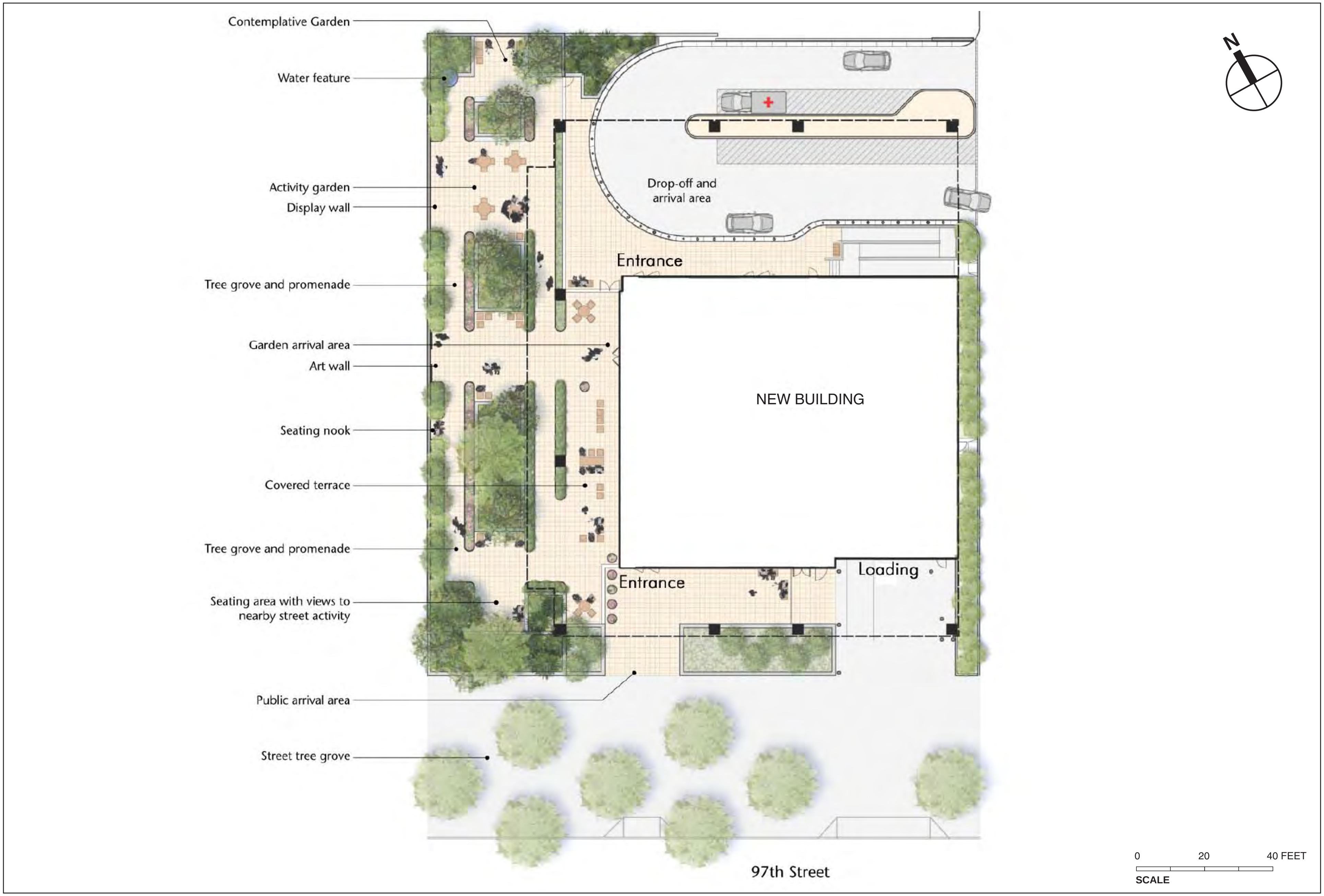
[1] The City of New York, Mayor's Office of Environmental Coordination, *City Environmental Quality Review Technical Manual*, 2012 Edition, Revised June 5, 2013.



Project Location
Figure 1-1



SOURCE: Perkins Eastman

NOTE: FOR ILLUSTRATIVE PURPOSES ONLY

Proposed Site Plan

Figure 1-2

approximately 31,804-square-foot ("sf"), 88-space, surface accessory parking lot on the Project Site with a new, 20-story (plus cellar floor), approximately 376,000-gross-square-foot ("gsf") building. Users of the existing surface parking lot would receive substitute nearby parking within the Park West Village ("PWV") complex (the property owner commenced construction of the relocated surface parking lot in March 2014). As shown in Figure 1-3, the proposed building would have three access areas: (1) a public pedestrian entrance on West 97th Street with access to the reception, main lobby, and resident and family areas, for residents, visitors, staff, and the general public; (2) a public vehicular entrance on the north side of the building to the same areas via a covered, semi-circular driveway for patient drop off and pick up, including ambulette and taxi access, utilizing the existing driveway along the eastern end of the Project Site for access from West 97th Street; and (3) loading and service access on West 97th Street. The ground-floor level would include an approximately 8,700-gsf landscaped area along the west side of the Project Site, of which about 1,850 gsf would be covered by the building above. This area would be accessible for JHL residents, visitors, and employees, as well as PWV residents, who would access it using a keycard.

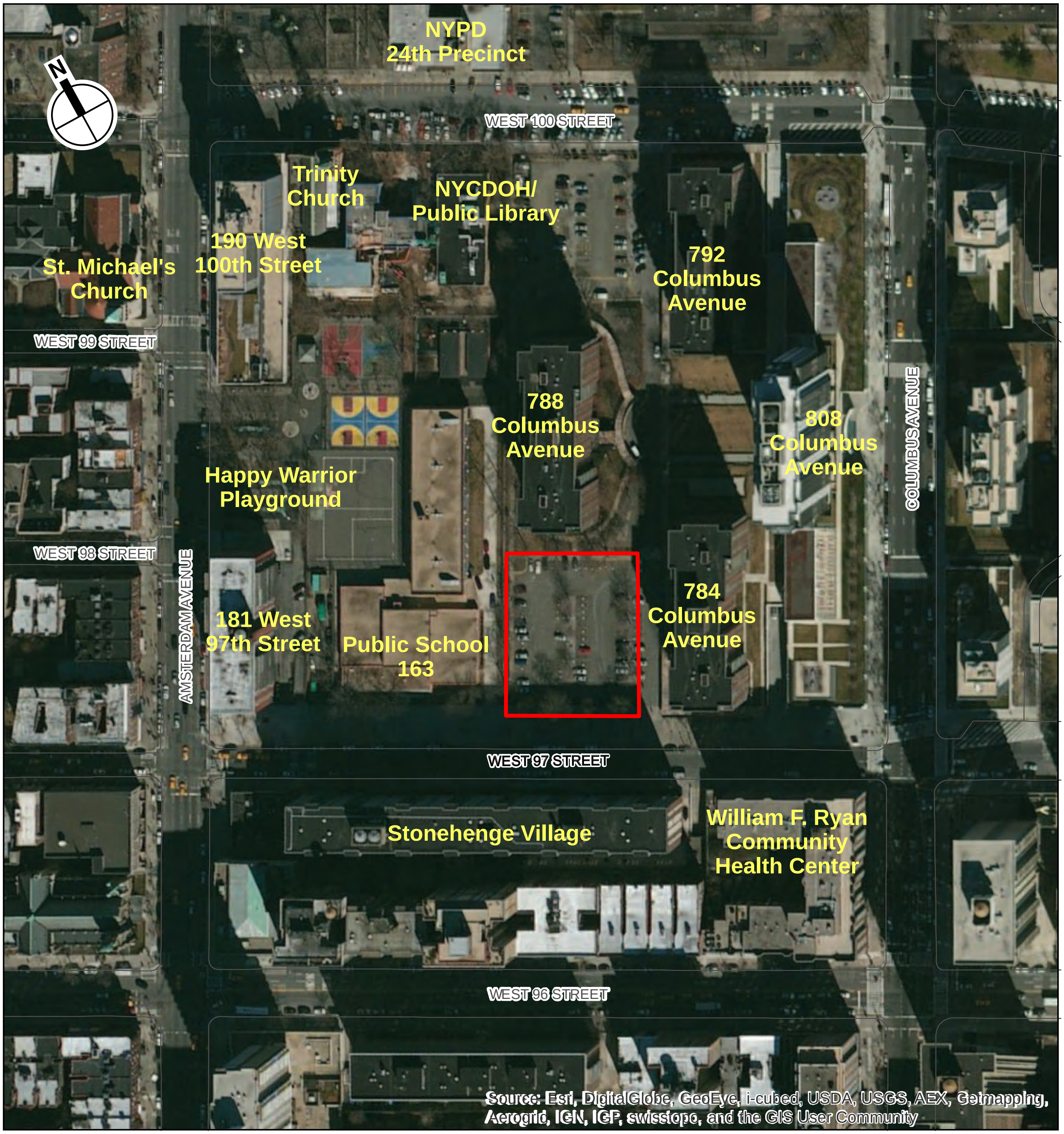
The Proposed Project would also comply with the street tree planting requirements of the *Zoning Resolution of the City of New York ("Zoning Resolution")* for the zoning lot, and would also replace trees removed from the Project Site during construction. As part of the Builders Pavement Plan ("BPP") and Forestry Application, as currently contemplated, approximately 3 existing street trees would be removed and 5 would be protected along the West 97th Street frontage of the Project Site. Approximately 18 trees would be planted along the boundary of the zoning lot, including along West 97th and West 100th Streets, and Columbus Avenue, and additional trees would be planted off site at the direction of the New York City Department of Parks and Recreation ("NYCDPR"). The size and species of the proposed replacement trees would be determined by NYCDPR. Trees that are currently located on the Project Site would be removed during the construction of the Proposed Project, and new trees would be planted within the PWV property.

The Proposed Project would include a total of 414 beds, with 264 long-term-care beds located on the 9th floor through the 19th floor. Each floor would house 24 beds that include two "Green House" homes, complete with living and dining areas, a kitchen, private bedrooms and bathrooms with showers, and staff support areas. Another 150 post-acute (short-term rehabilitation) beds would be located on the 4th floor through the 8th floor, along with community dining and decentralized therapy and activity space. The remaining floors would contain shared common areas, administrative offices, and service and support areas. The building would have one cellar level and one mechanical story, and would include an approximately 1,950-gsf rooftop garden for JHL residents and their visitors. The proposed building would be approximately 275 feet in height (see Figure 1-4 and Figure 1-5).

The Proposed Project would employ approximately 625 full-time-equivalent ("FTE") employees at the proposed facility. The new facility would decertify 100 beds from the current complement of 514 beds, for a new total reduced bed count of 414.

Site Access and Circulation. As noted above, the PWV property owner would relocate the Project Site's surface parking to another surface location within the PWV complex (the

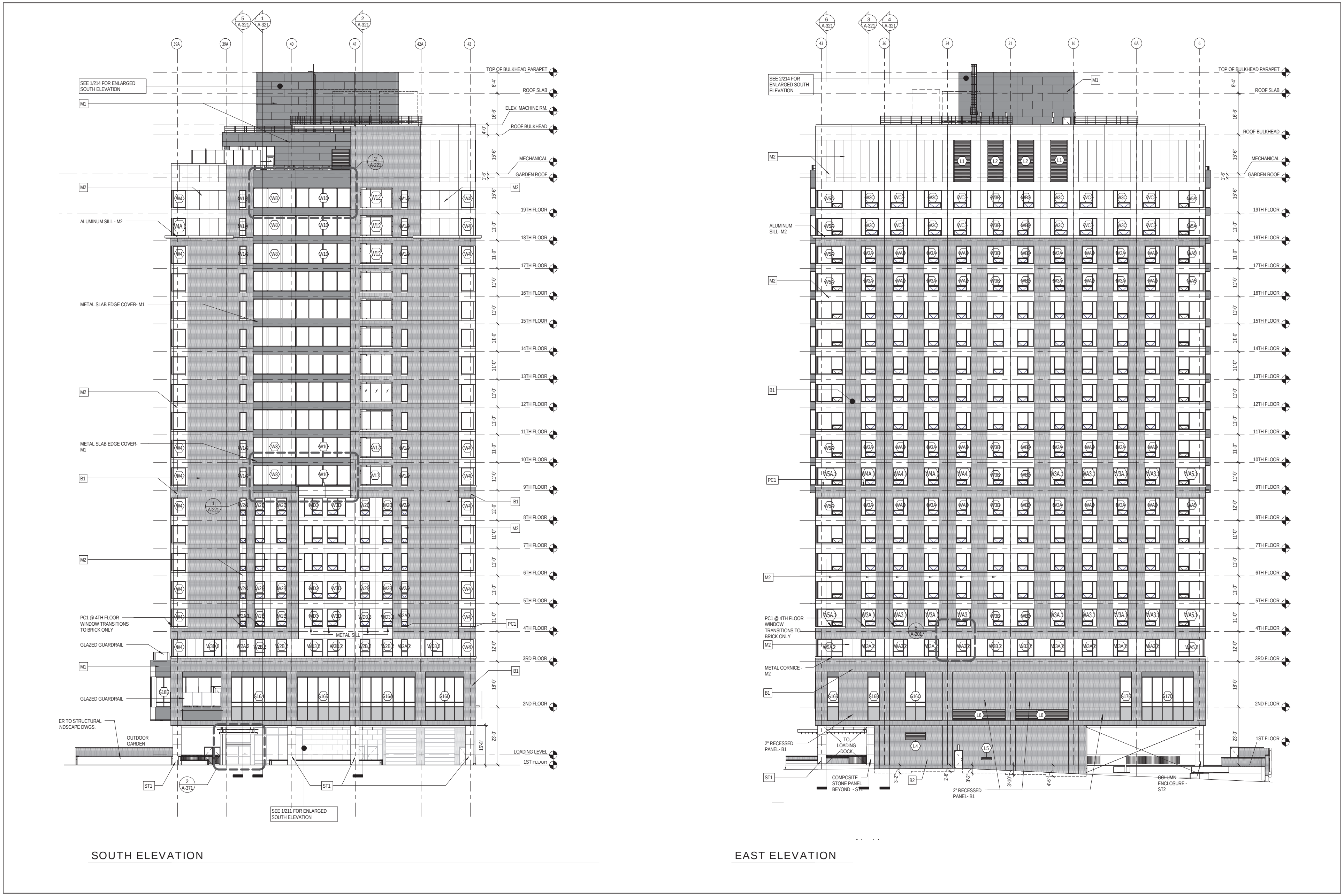
3.6.14



Project Site

0 0 200 FEET
SCALE

Project Site and Context
Figure 1-3

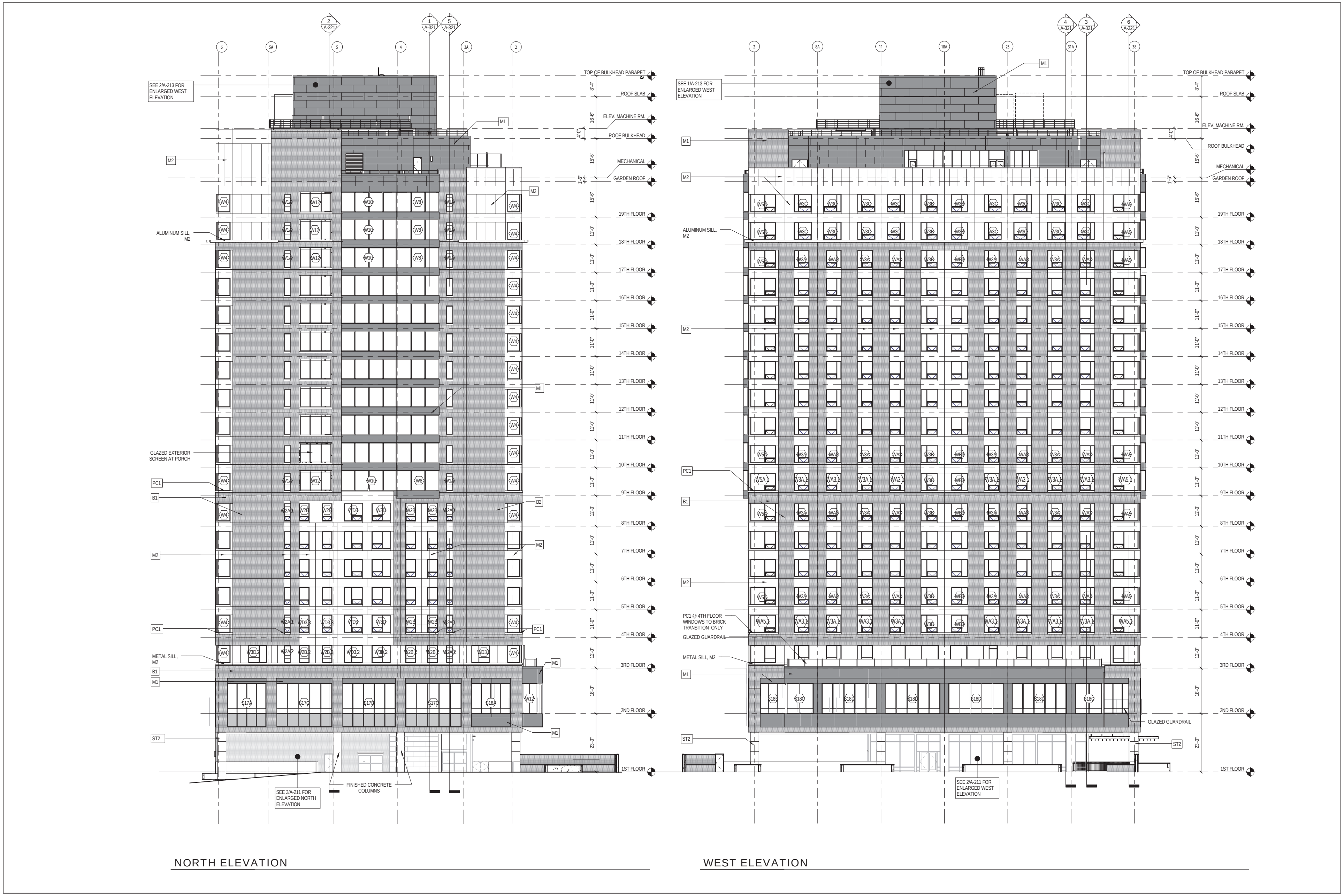


SOURCE: Perkins Eastman

NOTE: FOR ILLUSTRATIVE PURPOSES ONLY

Proposed South and East Elevations

Figure 1-4



SOURCE: Perkins Eastman

NOTE: FOR ILLUSTRATIVE PURPOSES ONLY

Proposed North and West Elevations

Figure 1-5

JEWISH HOME LIFECARE MANHATTAN Replacement Nursing Facility property owner commenced construction of the relocated surface parking lot in March 2014). The configuration of Park West Drive, the north-south access road within the PWV complex, may be modified as part of the PWV property owner's planning for the complex, but will continue to function as a discontinuous two-way access road for PWV parkers. These potential changes, if implemented, would occur independently of the Proposed Project.

The proposed JHL facility would make use of the shared Park West Drive to access a private loop roadway allowing for pick-up and drop-off activity. The actual pick ups and drop offs would occur on the private loop roadway separate from Park West Drive. Pick-up and drop-off activities are not anticipated to affect traffic along Park West Drive.

Project Build Year. Construction of the Proposed Project is expected to begin in 2014 and would last approximately 30 months. It is expected that construction would be completed in a single phase, and that occupants would move into the new facility over the course of approximately four to 10 months. Therefore, for the purposes of this assessment, a 2018 analysis (Build) year is assumed.

Project Site

The Proposed Project would be located on Block 1852, Lot 5 located at 125 West 97th Street in the borough of Manhattan, New York County, New York. The approximately 0.73±-acre Project Site is located on the southern portion of the superblock bounded by West 100th Street to the north, West 97th Street to the south, Columbus Avenue to the east, and Amsterdam Avenue to the west (see Figure 1-1 and Figure 1-2). The Project Site is currently occupied by an 88-space, surface, accessory parking lot and trash removal area serving the neighboring PWV residential complex. Both existing uses would be relocated by the PWV property owner prior to the completion of the Proposed Project.

Proposed Action

As described above, the Proposed Action would consist of NYSDOH's approval of a construction application filed pursuant to Section 2802 of the *PHL*. This is a discretionary action that requires review under *SEQRA*. The environmental review is being undertaken pursuant to *SEQRA*, which is codified at Article 8 of the *ECL*, and its implementing regulations, promulgated at Part 617 of Title 6 of the *N.Y.C.R.R.* In addition, NYSDOH has promulgated its own implementing regulations at Part 97 of Title 10 of the *N.Y.C.R.R.* There are no other discretionary actions associated with the Proposed Project.

The Proposed Project will also be reviewed in conformance with *SHPA*, especially the implementing regulations of Section 14.09 of *PRHPL*, as well as with *SSGPIPA*. The compatibility of the Proposed Project with the ten criteria of the *SSGPIPA* will be detailed.

Other Approvals

A New York City Planning Commission ("CPC") certification pursuant to Section 22-42, "Certification of Certain Community Facility Uses," of the *Zoning Resolution* was approved on March 26, 2012 (see Appendix A). Section 22-42 of the *Zoning Resolution* requires that, prior to any development, enlargement, extension or change in use involving a nursing home or health-related facility in a residence district, the CPC must certify to the New York City Department of Buildings ("NYCDOB") that none of the findings set forth in Section 22-42 of the *Zoning Resolution* exist in the Community District within which such use is to be located. If any of the findings are found to exist, a special permit pursuant to Section 74-90 of the *Zoning Resolution* is required for the development, extension or enlargement or change of use. The findings that would trigger a special permit are:

1. That the ratio between the number of existing and approved beds for nursing homes compared to the population of the Community District is relatively high compared to other Community Districts.
2. There is a scarcity of land for general community purposes within the Community District.
3. The incidence of nursing home construction in the past three years warrants review.

The CPC determined that none of these findings exist in Community District 7 and issued the certification.

A foundation permit was obtained from NYCDOB.[2]

Future Without the Proposed Project

In the future without the Proposed Project, (the "No-Build Condition"), the Project Site would remain in its current state and continue to function as a parking area. JHL would maintain its existing 514 beds in three distinct buildings on the West 106th Street campus. The existing facility would continue to operate inefficiently, housed in outdated buildings with a physical plant in need of major infrastructure replacement.

No other development projects are currently anticipated to be built within the 400-foot study area by 2018.

Need and Public Purpose

JHL is a member of Jewish Home Lifecare System (the "System"), which operates a geographically-diverse continuum of services for the elderly and disabled in the New York metropolitan area, covering the counties of Manhattan, the Bronx, and Westchester. The System serves nearly 12,000 individuals per year.

The existing nursing facility, located at 120 West 106th Street, is located in outdated buildings constructed between 1898 and 1964, which are at the end of their useful lives and operate at 65 percent efficiency. The existing facility presents physical challenges that

[2] NYCDOB Permit Number 120797888-01-EQ-FN, issued October 23, 2013.

negatively impact residents' quality of life, mobility, privacy, and independence; the buildings operate inefficiently, are antiquated and require major infrastructure replacement.

JHL's Proposed Project would result in a modern nursing facility of 414 beds on the Project Site, and would permanently decertify 100 beds from the current complement of 514 NYSDOH-certified beds at the existing facility. This plan is the result of over eight years of planning to identify the best location and best model of care for the JHL facility. Throughout this planning process, JHL coordinated with NYSDOH on the programming and identification of the proposed location. The Proposed Project would enable JHL to continue serving the residents in the community and in the borough in a new, state-of-the-art facility. The proposed facility would provide an innovative model of long-term care called "Green House" living. The Green House design would create a small home environment that allows more enhanced, focused attention and care between residents and staff and allow for greater independence. The new, LEED-certified facility would be groundbreaking as the first true urban Green House model to be developed in New York City and New York State and one of the first nationwide. The facility would also accommodate the significant shift that is occurring from long-term care to short-stay, post-acute rehabilitation needs, with 36 percent of the beds in the proposed facility dedicated to post-acute (short-term rehabilitation) beds. The Proposed Project would result in infill development in a dense urban setting with a diverse mixture of uses and proximity to multiple subway and bus lines.

Regulatory Framework

The following section discusses the regulatory framework used to comply with environmental review requirements and identifies the necessary approvals and actions to implement the Proposed Action.

Lead Agency Establishment. Under *SEQR*, the lead agency is the involved state or local agency that is principally responsible for undertaking, funding and/or approving an action. The lead agency is required to perform the environmental review of the action. In particular, the lead agency will determine whether an environmental impact statement is required, and if so, file the statement. Upon receipt of a request from JHL to construct a replacement nursing facility, NYSDOH determined that it should assume lead agency status and conduct a coordinated review among the involved agencies. Accordingly, JHL submitted an *Environmental Assessment Statement ("EAS")* on May 22, 2013, to initiate the *SEQR* process. NYSDOH issued the *EAS* and a lead agency request letter to the involved agencies and interested parties on June 5, 2013. There being no objections, NYSDOH assumed the lead agency role on July 5, 2013.

SEQR Classification. Based on an initial evaluation of the Proposed Project, NYSDOH made a preliminary determination that the Proposed Project is a Type I action pursuant to 6 *N.Y.C.R.R.* 617.4(b)(6)(v) of the *SEQR* implementing regulation pertaining to Article 8 of the ECL and 10 *N.Y.C.R.R.* 97.14(b)(1)(v) of NYSDOH's regulations implementing *SEQR*.

Determination of Significance. NYSDOH has determined that the Proposed Project may result in one or more significant adverse environmental impact and, thus, requires a Draft Environmental Impact Statement ("DEIS"). Accordingly, NYSDOH issued a *Positive Declaration Notice of Intent to Prepare a Draft Environmental Impact Statement Determination* *of Significance ("Positive Declaration")* under *SEQR* on June 5, 2013. The *Positive Declaration* discussed the rationale for the preparation of a DEIS.

Scoping Process. The development of the scope of work for the DEIS is referred to as "scoping." Scoping focuses the environmental impact analyses on the key issues to be examined. The first step in the scoping process was the distribution of the *Draft Scoping Document* for the DEIS, which presented the draft scope of work for the analyses that will be presented in the DEIS. The *Draft Scoping Document* was distributed on June 5, 2013, to the involved agencies and interested parties for review and comment. Notice of the *Positive Declaration* and *Draft Scoping Document* was first published in the New York State Department of Environmental Conservation's ("NYSDEC's") *ENB* on June 12, 2013, and the Notice of Public Scoping Meeting was published in the June 28, 2013, edition of the *New York Daily News*. The Scoping Meeting was subsequently postponed at the request of the community and a second notice of the *Positive Declaration* and *Draft Scoping Document* was published in the *ENB* on July 10, 2013; a Notice of Public Scoping Meeting was published in the July 29, 2013 edition of the *New York Daily News*. The Scoping Meeting was postponed a second time, and the final notice of the *Positive Declaration* and *Draft Scoping Document* was published in the *ENB* on August 7, 2013; a Notice of Public Scoping Meeting was published in the August 17, 2013 edition of the *New York Daily News*.

A public scoping meeting was held for the Proposed Project at 6:30 p.m. on September 17, 2013, at Public School 163 ("P.S. 163"), allowing all involved agencies, interested parties and members of the public an opportunity to provide oral comments on the scope of the DEIS. The comment period for the *Draft Scoping Document* was extended beyond the customary 10-calendar-day period, and written comments were accepted through October 4, 2013. After all comments were considered, NYSDOH prepared and issued a *Final Scoping Document* on January 28, 2014.

Draft Environmental Impact Statement. The DEIS, prepared in accordance with the *Final Scoping Document*, is a comprehensive document that accomplished the following: the systematic consideration of the potential environmental effects of the Proposed Action and Proposed Project, and evaluation of reasonable alternatives, and the identification of reasonable and practicable mitigation measures to reduce or eliminate the significant adverse environmental impacts of the Proposed Project. Accepted methodologies and procedures that have been used in the past in New York and are consistent with *SEQR* have been utilized as a general guide for evaluating the potential environmental impact of the Proposed Project. Specific methodologies and impact significant criteria used in the technical analyses are discussed accordingly in each DEIS chapter.

Public Review and Comment Period. During the comment period, the public may review and comment on a DEIS either in writing or at a public hearing that will be convened for the purpose of receiving such comments. The lead agency must publish a notice of the public hearing at least 14 days in advance, and must accept written comments for at least 10 calendar days following the close of the public hearing, or no less than 30 days from the day the DEIS is filed.

Final Environmental Impact Statement. NYSDOH will prepare the Final Environmental Impact Statement ("FEIS") once the DEIS public comment period has closed. The FEIS will summarize and respond to all substantive comments received during the public comment period. Once NYSDOH determines that the FEIS is complete, it will issue a Notice of Completion ("NOC") for the FEIS and circulate the document to the involved agencies, interested parties and the public. The FEIS will be made available to the public and agencies for a minimum of 10 days before NYSDOH makes its findings regarding the Proposed Project under *SEQR*.

Findings Statement. In accordance with the *SEQR* regulations (6 *N.Y.C.R.R.* §617.11[d]), lead and involved agencies each must adopt a formal set of written findings based on the FEIS. The *SEQR Findings Statement* issued in connection with a proposed action must (a) consider the relevant environmental impacts disclosed in the FEIS; (b) weigh and balance the relevant environmental impact with applicable social, economic and other essential consideration (c) provide the rationale for the agency's decision; (d) certify that the *SEQR* requirements (as specified in 6 *N.Y.C.R.R.* §617) have been met; and (e) certify that, consistent with social, economic and other essential factors, and considering the available reasonable alternatives, the proposed action is one that avoids or minimized adverse environmental impact to the maximum extent practicable by incorporating as conditions to the decision those mitigation measures identified as practicable.

The *SEQR* process is completed once the *Findings Statements* are adopted. The lead and involved agencies will then be able to take action with respect to the Proposed Project, one of the alternatives examined in the EIS, or decide to take no action. Each involved agency must issue its own *SEQR* findings statement before undertaking, approving or funding the Proposed Project.

Coordination with Environmental and Regulatory Agencies. During the preparation of the DEIS, NYSDOH has coordinated with the relevant environmental and regulatory agencies with jurisdiction over issues of concern regarding the Proposed Project. Representatives of these and other federal, state, and local agencies have been involved throughout the Proposed Project's environmental review process. Agency correspondence related to the Proposed Project is included in Appendix B.

With respect to historic resources, the Proposed Project was reviewed in conformance with *SHPA* in consultation with the New York State Office of Parks, Recreation and Historic Preservation ("OPRHP"), especially the implementing regulations of Section 14.09 of *PRHPL*.

Required Approvals

The Proposed Project requires NYSDOH approval of a construction application pursuant to Section 2802 of the *PHL* (Certificate of Need Project #121075 C). There are no other discretionary actions associated with the Proposed Project.

Analysis Framework

The following discussion provides an overview of the analytical framework used to guide the EIS technical analyses presented in subsequent chapters. Based on the Proposed Project described above, the impact thresholds presented in the *CEQR Technical Manual*, and the comments received during the public scoping process, the EIS assessed the potential of the Proposed Project to result in significant adverse impacts to the following areas: Land Use, Zoning, and Public Policy, Shadows, Historic and Cultural Resources, Hazardous Materials, Water and Sewer Infrastructure, Transportation, Air Quality, Greenhouse Gas Emissions, Noise, Public Health, Neighborhood Character, Construction, Mitigation and Alternatives. Based on the impact guidance thresholds in the *CEQR Technical Manual*, the following technical areas do not require detailed analyses because the Proposed Project is not likely to result in any significant adverse impacts in these areas: Socioeconomic Conditions, Community Facilities and Services, Open Space, Urban Design and Visual Resources, Natural Resources, Solid Waste and Sanitation Services, and Energy. Screening level analyses for these technical areas were prepared as part of the *EAS* completed for the Proposed Project. In addition, because the Project Site is not located within the state and/or city's respective coastal zones, an assessment of the Proposed Project's consistency with the Waterfront Revitalization Program ("WRP") is not required.

Assumptions Regarding the Proposed Project. The Proposed Project would be constructed over an approximately 30-month period. Upon completion, the Proposed Project would employ about 625 FTE employees at the proposed facility.

Analysis Years. As is standard for environmental impact statements prepared pursuant to *SEQR*, the EIS will provide a description of 2013 existing conditions, and assessments of conditions in the future with the Proposed Project (the "Build Condition") and conditions in the future without the Proposed Project (the "No-Build Condition"). A single-phase project will be assumed with a build completion date ("Build Year") of 2018.

Alternatives Analysis. Three alternatives to the Proposed Project are presented and evaluated in Chapter 15, "Alternatives to the Proposed Project." One is the No-Build Alternative, which is the equivalent of the No-Build Condition. The second is the West 106th Street Alternative, which considers a project that would involve the redevelopment of the West 106th Street site with a new nursing facility and a new residential building. The West 106th Street site is the subject of a current Uniform Land Use Review Procedure ("ULURP") application to rezone the site from an R7-2 General Residence District to an R8A General Residence District along West 106th Street and an R8B General Residence District along West 105th Street (ULURP №. 130208ZMM; *CEQR* №. 14DCP084M). A *Negative Declaration Notice of Determination of Nonsignificance* was issued by the New York City Planning Commission ("CPC") on December 13, 2013, and the application is currently undergoing ULURP review.[3] The third alternative is the No Significant Adverse Impacts Alternative, which considers a project program that would eliminate the Proposed Project's significant adverse impacts. Each alternative is addressed in sufficient detail to enable the comparison of associated environmental impacts, and in terms of attaining the Proposed Project's goals and objectives.

[3] http://www.nyc.gov/html/dcp/pdf/env_review/eas/14dcp084m_negative_declaration.pdf.

Definition of Study Areas. Specific study areas have been identified for each technical analysis area (i.e., traffic and parking, land use, zoning and public policy, etc.). The study area delineation for each technical area is generally based upon the area that lies within a specified distance from the Project Site, and represents the area that could be affected for that particular impact area as a result of the Proposed Project. These technical study areas are defined at the beginning of each EIS chapter, typically included as part of the methodology section.

Existing Conditions. For each technical area assessed in the EIS, the existing conditions are described first. This assessment establishes a baseline from which future conditions can be projected. existing conditions analyses inform the development of reasonable worst-case future conditions.

For example, the traffic analysis identifies the time periods when the greatest number of vehicular trips to and from the Project Site would occur, and then uses this information as the basis for future traffic condition projections, yielding a conservative picture of future conditions.

No-Build Condition. The No-Build Condition provides a future baseline condition that is used to compare and evaluate the incremental changes expected as a result of the Proposed Project. The No-Build Condition is assessed for the same analysis year as the Proposed Project (i.e., the Build Year). Using existing conditions as the starting point, the No-Build Condition adds in changes that are known or expected to be built by the 2018 Build Year. For many technical areas, the No-Build Condition incorporates known development projects that are likely to be completed by the Build Year ("No-Build projects"), and may include development currently under construction or that which can be reasonably anticipated. For some technical areas, such as traffic, an additional background growth factor is incorporated into the No-Build Condition to account for increases associated with general development and increases in population and employment expected in the future. The methodology section included in each EIS chapter specifies how the No-Build Condition was developed since it may vary for certain technical analyses.

Absent the Proposed Action, in the No-Build Condition, the Project Site would remain in its current state and continue to function as an accessory parking area. JHL would maintain its existing 514 beds in three distinct buildings on the West 106^{th} Street campus. The existing facility would continue to operate inefficiently, housed in outdated buildings with a physical plant in need of major infrastructure replacement.

No-Build Projects. The area situated within 400 feet of the Project Site boundary was thoroughly reviewed in order to identify known projects or planned developments and initiatives that share a common study area with the Proposed Project and are scheduled to be completed by the Build Year. The New York City Department of City Planning ("NYCDCP") was contacted. As described in Chapter 2, "Land Use, Zoning, and Public Policy," no other development projects are currently anticipated to be built within the 400-foot study area by 2018.

Build Condition. The Build Condition was developed by starting with the No-Build Condition, and then adding to it the development that is anticipated to result from the Proposed Project. For most technical areas, projecting the Build Condition involves estimating the quantitative increment that the Proposed Project would add to the No-Build Condition, such as the number of new vehicle trips, new employees, etc. The Build Condition was evaluated against the No-Build Condition, thus enabling the assessment of the Proposed Project's incremental impacts on the environment.

Identification of Significant Adverse Impacts and Mitigation Measures

Where significant adverse environmental impacts are identified in this EIS, mitigation measures have been developed with the objective of minimizing impacts to the greatest extent practicable. Mitigation is generally based upon a comparison between the No-Build Condition, existing conditions, and regulatory thresholds as appropriate for the affected resource. Where applicable, this EIS discloses reasonable and practicable mitigation measures, when possible, to eliminate significant adverse environmental impacts that would be caused by the Proposed Project.

Chapter 2. Land Use, Zoning, and Public Policy

Introduction

As described in Chapter 1, "Project Description," the Proposed Project would replace the existing surface parking lot on the Project Site with a new, 20-story (plus cellar floor), approximately 376,000-gross-square-foot ("gsf") building, which can be constructed as of right on the Project Site.

This chapter assesses the potential impacts of the Proposed Project on land use, zoning, and public policy for the Project Site and for the 400-foot study area surrounding the Project Site (sees Figure 2-1). The analysis compares the probable impacts of the Proposed Project to the impacts of the No-Build Condition, which is described below under "Future Without the Proposed Project."

Methodology

This analysis of land use, zoning, and public policy examines the area within 400 feet of the Project Site — the area in which, according to the *CEQR Technical Manual*, the Proposed Project could reasonably be expected to cause potential effects. The land use study area is generally bounded by West 100th Street to the north, West 96th Street to the south, Columbus Avenue to east, and Amsterdam Avenue to the west (see Figure 2-1).

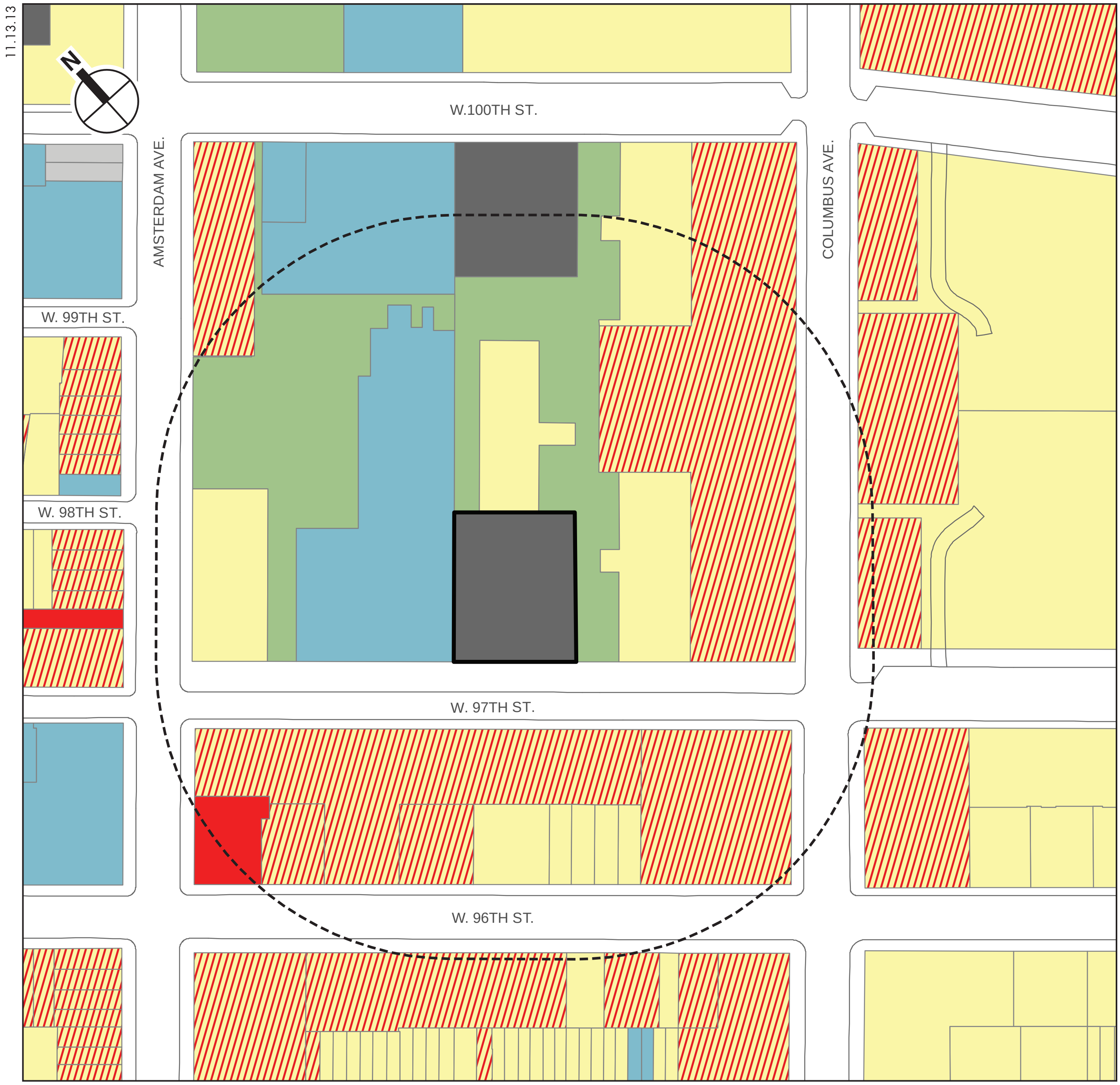
The analysis begins by considering existing conditions in the study area in terms of land use, zoning, and public policy. The analysis then examines land use, zoning, and public policy in the future without the Proposed Project (the "No-Build Condition") for the 2018 analysis year by identifying developments and potential policy changes expected to occur within that time frame. Probable impacts of the Proposed Project are then identified in comparison to conditions without the Proposed Project.

Existing Conditions

Land Use-Project Site. The approximately 0.73±-acre Project Site is located at 125 West 97th Street (Block 1852, Lot 5) in the borough of Manhattan, New York County, New York (see Figure 2-1). The site is currently occupied by an 88-space, accessory surface parking lot and trash removal area serving the neighboring Park West Village ("PWV") residential complex. The Project Site is located on the southern portion of the superblock bounded by West 100th Street to the north, West 97th Street to the south, Columbus Avenue to the east, and Amsterdam Avenue to the west.

On the north sidewalk of West 97th Street, which fronts along the Project Site, a weekly Greenmarket Farmers' Market is hosted every Friday (8:00 a.m. – 2:00 p.m.), comprising approximately 20 vendors.

Land Use-Study Area. The 400-foot study area surrounding the Project Site includes other parking uses, as well as residential, commercial, institutional, and open space uses (See



Project Site

Study Area Boundary (400-Foot Perimeter)

Residential

Residential with Commercial Below

Hotels

Commercial and Office Buildings

Public Facilities and Institutions

Open Space and Outdoor Recreation

Parking Facilities

Vacant Land

0 200 FEET

SCALE

Land Use

Figure 2-1

Figure 2-1). The Project Site superblock and the superblock to the east (Block 1833) contain PWV, a mixed-use development originally created as the Manhattantown (renamed the West Park) Urban Renewal Area ("URA"). The former URA was created in 1952, when the land acquisition and disposition were authorized for development according to the approved redevelopment plan for the area (the "Redevelopment Plan" or "Plan"). The purpose of the West Park URA was to improve a deteriorating area and to preserve some existing buildings, including the Trinity Lutheran Church of Manhattan. The Redevelopment Plan established use and bulk controls for parcels in the URA, and originally called for 17 residential buildings clustered on portions of the URA as well as sites for commercial and recreational uses. The original Redevelopment Plan and subsequent modifications were to remain in effect for 40 years from the completion of the project, defined as the time when all certificates of occupancy have been issued for the residential buildings. The final residential certificate of occupancy for the URA was issued in 1966, and the Plan expired on July 22, 2006.

The three PWV buildings on the Project Site superblock were completed in 1959, and the four buildings on the superblock to the east were completed in 1961. The four 19-story PWV buildings fronting Central Park West on Block 1833 are in condominium ownership, and the block includes an independently-owned-and-operated tennis facility along the east side of Columbus Avenue. The three 16-story PWV residential buildings on the Project Site superblock contain rental units, and are connected by landscaped open areas, the Project Site parking lot, and another parking lot on the northern end of the block. The block also contains community facility uses that were contemplated as part of the URA plan, which are described below, and more recent development on areas that were designated for local retail uses under the URA plan. Until 1987, all seven PWV buildings were rent stabilized. Four buildings were subsequently converted to condominiums in 1987 and 1991, although these buildings still include rent-stabilized tenants who lived there prior to conversion and chose not to buy their apartments.

West of the Project Site is Public School ("P.S. 163") Alfred E. Smith School, a pre-kindergarten through fifth grade school with an enrollment of 651 students. The southwestern corner of the superblock is occupied by a 16-story, 140-unit rental building at 181 West 97th Street, built in 1965 on land that was originally designated for local retail uses in the URA. North of this building and adjacent to P.S. 163 is Happy Warrior Playground, a 1.7-acre park containing basketball and handball courts, and play equipment. Happy Warrior Playground is a jointly-operated playground ("JOP"), which is operated by both the New York City Department of Education ("NYCDOE") and the New York City Department of Parks and Recreation ("NYCDPR").

West of the parking lot on the northern end of the block is the Bloomingdale Branch of the New York Public Library ("NYPL"). West of the library is Trinity Lutheran Church. Other portions of the superblock were originally designated for local retail uses in the URA, but have been redeveloped in recent years. These include the northwest corner of the superblock, which is occupied by 801 Amsterdam Avenue, a 15-story, 100-unit, mixed-use building that is part of the Columbus Square development built between 2007 and 2008. This building contains ground-floor retail, some of which is vacant, as well as the Ryan Women and Children's Center. The eastern end of the superblock contains 808 Columbus Avenue, a 30-story, 359-unit rental apartment that was also built as part of the Columbus Square development. The ground floor of

808 Columbus Avenue contains a Whole Foods grocery store, as well as retail space including T.J. Maxx, Michaels, and Sephora. There are also several entrances around the superblock to underground parking.

South of the Project Site superblock are several mixed-use buildings fronting West 97th Street. These include the Stonehenge Village residential development located at 120 through 160 West 97th Street, which houses ground-floor medical offices, the Chabad Early Learning Center, and a two-story Associated grocery store on the corner of West 97th Street and Amsterdam Avenue. East of Stonehenge Village, fronting West 97th Street, Columbus Avenue, and West 96th Street, is the Archstone West 96th apartment building. On the side fronting West 96th Street, this building contains the Mandell School's fifth through eighth grade facilities. Retail occupies the ground floor along Columbus Avenue, and the West 97th Street ground floor contains the William F. Ryan Community Health Center. The southern side of this block contains several six-story, multifamily, residential buildings and two taller 15- and 17-story residential buildings in the middle of the block. The Stonehenge Village building extends through the block with an entrance on West 96th Street as well. The corner of West 96th Street and Amsterdam Avenue contains a CVS pharmacy in a former bank building built in 1927.

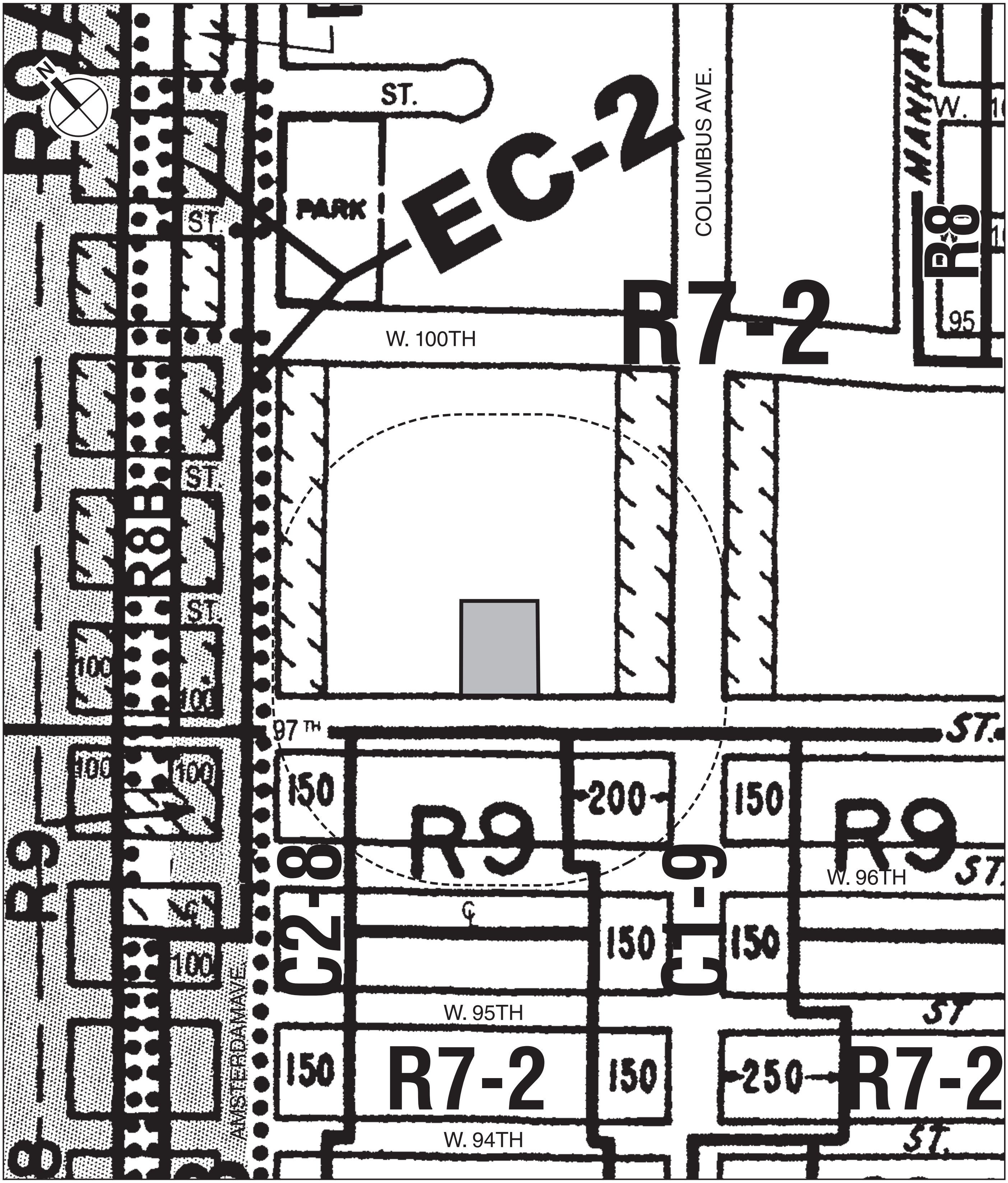
Zoning-Project Site. As shown in Figure 2-2, the Project Site is located within an R7-2 General Residence District. The R7-2 districts allow medium-density apartment houses. Buildings in R7-2 zoning districts can be developed according to height factor regulations — which encourage lower apartment buildings on smaller zoning lots and taller buildings with less lot coverage on larger lots — or Quality Housing regulations, which allow for lower buildings with greater lot coverage. As shown in Table 2-1, R7-2 districts allow a maximum floor area ratio ("FAR") of 3.44 for residential uses, and 6.5 for community facility uses. The maximum FAR for nursing homes in R7-2 districts is 3.44.

Table 2-1. Zoning Districts in the Study Area by Maximum Floor Area Ratio (FAR) and by Uses

Zoning District	Maximum Floor Area Ratio (FAR)	Uses/Zone Type
R7-2	0.78 to 3.44 Residential[1] 6.5 Community Facility	Medium-density apartment house districts
R9	0.99 to 7.52 Residential[2] 10.0 Community Facility	High-density residential districts along major thoroughfares
C1-5	1.0 Commercial within R1 through R5 2.0 Commercial within R6 through R10	Commercial overlay for neighborhood retail within residence districts
C2-8	10.0 Residential[2] 2.0 Commercial 10.0 Community Facility[3]	Commercial district that is predominantly residential in character, along major thoroughfares, and typically containing neighborhood retail

Notes:
1. 4.0 residential FAR on a wide street outside the Manhattan Core.
2. Increase in residential FAR with Inclusionary Housing Program bonus.
3. Up to 20 percent increase for a public plaza bonus.

Sources: *Zoning Resolution of the City of New York*



Project Site

Study Area Boundary (400-Foot Perimeter)

Zoning District Boundary

C1-5 Overlay

0 500 FEET
SCALE

Zoning
Figure 2-2

Zoning-Study Area. In addition to the R7-2 district, the study area also contains an R9 General Residence District, a C1-5 Local Retail District, and a C2-8 Local Service District. The R9 zoning districts are high-density residential districts that are mapped along several major thoroughfares in Manhattan. Developers in R9 districts can build under height factor regulations or the optional Quality Housing regulations. Within the study area, the R9 zoning district is mapped on the block directly south of the Project Site. The C1-5 districts are commercial overlays mapped along within residence districts. They are mapped along streets that serve local retail needs and found throughout lower- and medium-density districts in the city and occasionally in higher-density districts. Typical uses in C1-5 overlay districts include neighborhood grocery stores, restaurants, and beauty parlors. Within the study area, the C1-5 overlay district is mapped on the Project Site superblock, directly west of the Project Site. The C2-8 districts are commercial districts that are predominantly residential in character and are mapped along major thoroughfares in medium- and higher-density areas of the city. Typical retail uses in C2-8 districts are grocery stores, dry cleaners, drug stores, restaurants, and local clothing stores that serve the local population. Within the study area, a C2-8 district is mapped on the southwest corner of West 96th Street and Amsterdam Avenue.

Public Policy-Local PlaNYC. In April 2007, the Mayor's Office of Long Term Planning and Sustainability released *PlaNYC: A Greener, Greater New York*. An update to PlaNYC in April 2011 built upon the goals established in 2007. PlaNYC represents a comprehensive and integrated approach to planning for New York City's future. It includes policies to address three key challenges that the city is expected to face over the next 20 years: (1) population growth; (2) aging infrastructure; and (3) global climate change. In the 2011 update, elements of the plan are organized into 10 categories — housing and neighborhoods, parks and public space, brownfields, waterways, water supply, transportation, energy, air quality, solid waste, and climate change — with corresponding goals and initiatives for each category. An assessment of the consistency of the Proposed Project with PlaNYC's sustainability goals is provided below, in "Probable Impacts of the Proposed Project."

Public Policy-New York State Smart Growth Public Infrastructure Policy Act. In 2010 New York State enacted the *State Smart Growth Public Infrastructure Policy Act ("SSGPIPA")*. The purpose of this act is to maximize the social, economic, and environmental benefits from public infrastructure development through minimizing unnecessary costs of sprawl development. The act mandates that all state agencies not approve, undertake, support, or finance a public infrastructure project unless that project is — to the extent practicable — consistent with 10 smart growth criteria, which are:

1. To advance projects for the use, maintenance, or improvement of existing infrastructure;
2. To advance projects located in municipal centers;
3. To advance projects in developed areas or areas designated for concentrated infill development in a municipally-approved comprehensive land use plan, local waterfront revitalization plan, and/or brownfield opportunity area plan;

4. To protect, preserve, and enhance the state's resources, including agricultural land, forests, surface and groundwater, air quality, recreation and open space, scenic areas, and significant historic and archeological resources;
5. To foster mixed land uses and compact development, downtown revitalization, brownfield redevelopment, the enhancement of beauty in public spaces, the diversity and affordability of housing in proximity to places of employment, recreation, and commercial development, and the integration of all income and age groups;
6. To provide mobility through transportation choices, including improved public transportation and reduced automobile dependency;
7. To coordinate between state and local government and intermunicipal and regional planning;
8. To participate in community-based planning and collaboration;
9. To ensure predictability in building and land use codes; and
10. To promote sustainability by strengthening existing and creating new communities which reduce greenhouse gas ("GHG") emissions and do not compromise the needs of future generations, by among other means encouraging broad based public involvement in developing and implementing a community plan and ensuring the governance structure is adequate to sustain its implementation.

A NYSDOH Smart Growth Impact Statement Assessment Form ("SGISAF") was completed to assist in determining whether the Proposed Project is consistent with *SSGPIPA*, Article 6 of the New York *Environmental Conservation Law ("ECL")*, for a variety of policy areas related to land use and sustainable development. The SGISAF is included in Appendix C.

Future Without the Proposed Project

Land Use-Project Site. Absent the Proposed Action, the Project Site would remain in its current state and continue to function as an accessory parking lot and trash removal area. Jewish Home Lifecare, Manhattan ("JHL") would maintain its existing 514 beds in three distinct buildings on the West 106th Street campus. It should be noted that the West 106th Street site is the subject of a current Uniform Land Use Review Procedure ("ULURP") application to rezone the site from a R7-2 General Residence District to a R8A General Residence District along West 106th Street and a R8B General Residence District along West 105th Street (ULURP №. 130208ZMM; *CEQR* №. 14DCP084M). A *Negative Declaration Notice of Determination of Nonsignificance* was issued by the New York City Planning Commission ("CPC") on December 13, 2013, and the application is currently undergoing ULURP review. Absent the Proposed Action the existing facilities would continue to operate inefficiently, housed in outdated buildings with a physical plant in need of major infrastructure replacement. JHL would not be able to achieve its goal of constructing the first true urban Green House-model nursing facility in

New York City and New York State, and would continue to use the existing facilities, which has an institutional design, with long corridors not appropriate for the wheelchair bound.

Land Use-Study Area. In the No-Build Condition the configuration of Park West Drive, the north-south access road within the PWV complex, may be modified as part of the PWV property owner's planning for the complex, but will continue to function as a discontinuous two-way access road for PWV parkers. These potential changes, if implemented, would occur independently of the Proposed Project.

No other development projects are currently anticipated to be built within the 400-foot study area by 2018.

Zoning and Public Policy-Project Site/Study Area. No changes to zoning or public policy affecting the Project Site or the 400-foot study area are currently anticipated by 2018. Existing zoning controls, as described above under "Existing Conditions," are expected to remain in force.

Probable Impacts of the Proposed Project

Land Use-Project Site. The Proposed Project would be completed in 2018. The Proposed Project would replace the existing, approximately 31,804-square-foot ("sf"), 88-space, accessory surface parking lot and trash removal area on the Project Site with a new, 20-story (plus cellar floor), approximately 376,000-gsf building on the Project Site. Both existing uses would be relocated by the PWV property owner prior to the development of the Proposed Project. Users of the existing surface parking lot would receive substitute nearby parking within the PWV complex (the property owner commenced construction of the relocated surface parking lot in March 2014). The proposed building would have three access areas: (1) a public pedestrian entrance on West 97th Street with access to the reception, main lobby, and resident and family areas, for residents, visitors, staff, and the general public; (2) a public vehicular entrance on the north side of the building to the same areas via a covered, semi-circular driveway for patient drop off and pick up, including ambulette and taxi access, utilizing the existing driveway along the eastern end of the Project Site for access from West 97th Street; and (3) loading and service access on West 97th Street. The ground-floor level would include an approximately 8,700-gsf landscaped area along the west side of the Project Site, of which about 1,850 gsf would be covered by the building above. This area would be accessible for JHL residents, visitors, and employees, as well as PWV residents, who would access it using a keycard.

The Proposed Project would include a total of 414 beds, with 264 long-term-care beds located on the 9th floor through the 19th floor. Each floor would house 24 beds that include two "Green House" homes, complete with living and dining areas, a kitchen, private bedrooms and bathrooms with showers, and staff support areas. Another 150 post-acute (short-term rehabilitation) beds would be located on the 4th floor through the 8th floor, along with community dining and decentralized therapy and activity space. The remaining floors would contain shared common areas, administrative offices, and service and support areas. The building would have one cellar level and one mechanical story, and would include an approximately 1,950-gsf rooftop garden for JHL residents and their visitors. The proposed building would be approximately 275 feet in height.

Construction of the Proposed Project is expected to begin in 2014 and would last approximately 30 months. It is expected that construction would be completed in a single phase, and that occupants would move into the new facility over the course of approximately four to ten months. Therefore, for the purposes of this assessment, a 2018 analysis year is assumed.

The Proposed Project would result in a new land use on the Project Site, but would be in keeping with residential uses in the study area, and would be compatible with community facility uses — including the William F. Ryan Community Health Center located at 110 West 97th Street and P.S. 163 Alfred E. Smith School — as well as commercial uses.

Upon completion of the Proposed Project, the weekly Greenmarket Farmers' Market could relocate back to its current location in front of the Project Site.

Land Use-Study Area. The Proposed Project would result in a change in use on the Project Site, but would not alter the mix of uses in the study area, which include residential uses as well as community facilities. Accordingly, the study area would continue to include a mix of residential, commercial, community facility, parking, and open space uses. Therefore, the Proposed Project would not result in any significant adverse impacts related to land use.

Zoning-Project Site/Study Area. The Proposed Project can be constructed as of right and would not affect the existing zoning of the Project Site or study area, and would comply with the *Zoning Resolution of the City of New York ("Zoning Resolution").* No zoning map changes, zoning text changes, zoning special permits, New York City Board of Standards and Appeals ("BSA") variances or special permits, or park mapping actions are required to implement the Proposed Project. The Proposed Project would result in the construction of a building that is consistent with and permitted under existing zoning, which permits up to 1,061,154 square feet of zoning floor area ("zfa") for community facilities within the zoning lot. In addition, the Proposed Project would comply with Section 22-42, "Certification of Certain Community Facility Uses," of the *Zoning Resolution*, which requires that, prior to any development, enlargement, extension or change in use involving a nursing home or health-related facility in a residence district, the CPC must certify to the New York City Department of Buildings ("NYCDOB") that none of the findings set forth in Section 22-42 of the *Zoning Resolution* exist in the Community District within which such use is to be located. If any of the findings are found to exist, a special permit pursuant to Section 74-90 of the *Zoning Resolution* is required for the development, extension or enlargement or change of use. The findings that would trigger a special permit are:

1. That the ratio between the number of existing and approved beds for nursing homes compared to the population of the Community District is relatively high compared to other Community Districts.
2. There is a scarcity of land for general community purposes within the Community District.
3. The incidence of nursing home construction in the past three years warrants review.

The CPC determined that none of these findings exist in Community District 7 and the certification was approved on March 26, 2012 (see Appendix A).

Public Policy-Local PlaNYC. PlaNYCs has sustainability goals in several areas that are relevant to the Proposed Project, including air quality, water quality and land use, open space, natural resources, and transportation. The consistency of the Proposed Project with these PlaNYC objectives is assessed below.

Air Quality. PlaNYC's air quality goal — of achieving the cleanest air quality of any big U.S. city — is supported by a strategy to reduce road vehicle and other transportation emissions, reduce emissions from buildings, pursue natural solutions to improve air quality, to better understand the scope of the challenge, and to update codes and standards accordingly.

According to the *CEQR Technical Manual*, a project would generally be consistent with PlaNYC's air quality initiatives if it includes one or more of the following elements: the promotion of mass transit; the use of alternative fuel vehicles; the installation of anti-idling technology; the use of retrofitted diesel trucks; the use of biodiesel in vehicles and in heating oil; the use of ultra-low-sulfur diesel ("ULSD") fuel and retrofitted construction vehicles; the use of cleaner-burning heating fuels; or the planting of street trees and other vegetation.

The Proposed Project would include an approximately 8,700-gsf landscaped area along the west side of the Project Site of which about 1,850 gsf would be covered by the building above. This area would be accessible for JHL residents, visitors, and employees, as well as PWV residents, who would access it using a keycard. The Proposed Project would also include an approximately 1,950-gsf rooftop garden for JHL residents and their visitors. In addition, the Proposed Project would comply with the street tree planting requirements of the *Zoning Resolution* for the zoning lot, and would also replace trees removed from the Project Site. As part of the Builders Pavement Plan ("BPP") and Forestry Application, as currently contemplated, approximately 3 existing street trees would be removed and 5 would be protected along the West 97th Street frontage of the Project Site. Approximately 18 trees would be planted along the boundary of the zoning lot, including along West 97th and West 100th Streets, and Columbus Avenue, and additional trees would be planted off site at the direction of NYCDPR. The size and species of the proposed replacement trees would be determined by NYCDPR. Trees that are currently located on the Project Site would be removed during the construction of the Proposed Project, and new trees would be planted within the PWV property. As discussed in Chapter 13, "Construction," construction of the Proposed Project would include an extensive diesel emissions reduction program including diesel particle filters for large construction engines, ultra-low sulfur diesel, and retrofitted construction vehicles. Overall, the proposed emission reduction program is expected to significantly reduce pollutant emissions during the construction of the Proposed Project. As discussed in Chapter 8, "Air Qualtiy," the Proposed Project would use natural gas for heating, which is considered a cleaner-burning fuel than oil. In addition, the location of the Proposed Project would promote commuting via mass transit for workers. For these reasons, the Proposed Project would be consistent with PlaNYC's air quality goals.

Water Quality. PlaNYC's water quality goals are focused on improving the quality of the city's waterways to increase opportunities for recreation and restore coastal ecosystems. PlaNYC aims to improve water quality by removing industrial pollution from waterways, protecting and restoring wetlands, aquatic systems and ecological habitats, continuing construction of infrastructure upgrades, and using green infrastructure to manage storm water.

According to the *CEQR Technical Manual*, a project would generally be consistent with PlaNYC's water quality initiatives if it includes one or more of the following elements: expanding and improving wastewater treatment plants; protecting and restoring wetlands, aquatic systems, and ecological habitats; expanding and optimizing the sewer network; building high level storm sewers; expanding the amount of green, permeable surfaces across the city; expanding the Bluebelt system; incorporating green infrastructure to manage storm water; consistency with the Sustainable Stormwater Management Plan; building systems for on-site management of storm water runoff; incorporating plantings and storm water management within parking lots; building green roofs; protecting wetlands; using water-efficient fixtures; or implementing a water conservation project.

The Proposed Project would result in the demolition of the existing parking lot and trash removal area and the redevelopment of the Project Site with a new building, including a ground-floor landscaped plaza and a rooftop garden. As described in Chapter 6, "Water and Sewer Infrastructure," the Proposed Project would comply with the most recent requirements of the New York City Department of Environmental Protection ("NYCDEP") for the retention and detention of storm water to minimize the potential for combined sewer overflow ("CSO"). In addition, the Proposed Project would be designed with a commitment to Leadership in Energy and Environmental Design ("LEED") certification, which would incorporate water saving elements. Therefore, the Proposed Project would be consistent with PlaNYC water quality goals.

Land Use. PlaNYC sets forth the goals of creating homes for approximately one million residents, while making housing more sustainable and affordable. These goals are to be achieved by PlaNYC initiatives that encourage publicly-initiated rezonings, creation of new housing on public land, expansion of targeted affordability programs, and exploration of additional areas of opportunity.

According to the *CEQR Technical Manual*, a project would generally be consistent with PlaNYC's land use initiatives if it includes one or more of the following elements: transit-oriented development; preserving and upgrading current housing; promoting walkable destinations for retail and services; reclamation of underutilized waterfronts; adaptation of outdated buildings to new uses; development of underutilized areas to knit neighborhoods together; decking over rail yards, rail lines, and highways; extension of the Inclusionary Housing program in a manner consistent with PlaNYC; preservation of existing affordable housing; or redevelopment of brownfields.

The Proposed Project would support PlaNYC's land use goals by developing an underutilized site. The Proposed Project would create a new, state-of-the-art, efficient facility. Accordingly, the Proposed Project would be consistent with PlaNYC's land use goals.

Open Space. As outlined in PlaNYC, the city has a goal of ensuring that all New Yorkers live within a 10-minute walk of a park. PlaNYC's seven open space initiatives aim to achieve this objective by making existing resources accessible to more New Yorkers, expanding hours at existing resources, and reimagining the public realm to create or enhance public spaces.

According to the *CEQR Technical Manual*, a project is generally consistent with PlaNYC's open space initiatives if it includes one or more of the following elements: completion of underdeveloped destination parks; provision of multi-purpose fields; installation of new lighting at fields; creation or enhancement of public plazas; or planting of trees and other vegetation.

As described above, the ground-floor level of the proposed building would include an approximately 8,700-gsf landscaped area along the west side of the Project Site of which about 1,850 gsf would be covered by the building above. This area would be accessible for JHL residents, visitors, and employees, as well as PWV residents, who would access it using a keycard. In addition, the facility's residents introduced by the Proposed Project and their visitors would be served by an approximately 1,950-gsf rooftop garden. The Proposed Project would also comply with the street tree planting requirements of the *Zoning Resolution* for the zoning lot, and would also replace trees removed from the Project Site during construction. As part of the BPP and the Forestry Application, as currently contemplated, approximately 3 existing street trees would be removed and 5 would be protected along the West 97th Street frontage of the Project Site. Approximately 18 trees would be planted along the boundary of the zoning lot, including along West 97th and West 100th Streets, and Columbus Avenue, and additional trees would be planted off site at the direction of NYCDPR. The size and species of the proposed replacement trees would be determined by NYCDPR. Trees that are currently located on the Project Site would be removed during the construction of the Proposed Project, and new trees would be planted within the PWV property. Accordingly, the Proposed Project would be consistent with PlaNYC's open space goals.

Natural Resources. Conservation of the city's natural resources is a key objective of PlaNYC. According to the *CEQR Technical Manual*, a project is generally consistent with PlaNYC's natural resources initiatives if it includes one or more of the following elements: planting street trees and other vegetation; protecting wetlands; creating new open space; minimizing or capturing storm water runoff; or redeveloping brownfields.

As described above, the Proposed Project would include an approximately 8,700-gsf landscaped area along the west side of the Project Site of which about 1,850 gsf would be covered by the building above. This area would be accessible for JHL residents, visitors, and employees, as well as PWV residents, who would access it using a keycard. In addition, the facility's residents introduced by the Proposed Project and their visitors would be served by an approximately 1,950-gsf rooftop garden. As part of the Proposed Project, and per the BPP and Forestry Application, as currently contemplated, approximately 3 existing street trees would be removed and 5 would be protected along the West 97th Street frontage of the Project Site. Approximately 18 trees would be planted along the boundary of the zoning lot, including along West 97th and West 100th Streets, and Columbus Avenue, and additional trees would be planted off site at the direction of NYCDPR. The size and species of the proposed trees would be determined by NYCDPR. In addition, the Proposed Project would comply with the most recent NYCDEP requirements for the retention and detention of storm water to minimize the potential for CSOs. Therefore, the Proposed Project would result in new vegetation and would be consistent with PlaNYC's natural resource goals.

Transportation. PlaNYC's transportation goals are to add transit capacity for 1 million more residents, visitors, and workers, and to reach a full state of good repair on the city's roads, subways, and railroads. PlaNYC identifies 16 transportation initiatives, which are intended to build and expand transit infrastructure, improve transit service on existing infrastructure, promote other sustainable transportation modes, reduce congestion, achieve the state of good repair, and develop new funding sources for regional transit financing.

According to the *CEQR Technical Manual*, a project is generally consistent with PlaNYC's transportation initiatives if it includes one or more of the following elements: transit-oriented development; promoting cycling and other sustainable modes of transportation; improving ferry services; making bicycling safer and more convenient; enhancing pedestrian access and safety; facilitating freight movements; maintaining and improving roads and bridges; managing roads more efficiently; increasing the capacity of mass transit; providing new commuter rail access to Manhattan; improving and expanding bus service; improving commuter rail service; or improving access to existing transit.

The Proposed Project would result in infill development in a dense urban setting with a diverse mixture of uses and proximity to multiple subway and bus lines. In addition, as described in Chapter 9, "Greenhouse Gas Emissions," the Proposed Project is located next to a major protected, southbound bike route on Columbus Avenue, (currently beginning at West 96th Street but planned to extend further north), and near the northbound bike route on Central Park West. Bicycle storage, showers, and changing rooms would be provided within the proposed building, and JHL would continue to provide its employees with access to tax-free options for commuter expenses. JHL operates a shuttle bus for patient transport and would continue to do so at the new location; JHL is investigating the option of upgrading to hybrid-engine shuttles. Therefore, the Proposed Project would encourage transit use, and promote cycling and other sustainable modes of transportation, and would be consistent with PlaNYC's transportation goals.

Public Policy-New York State Smart Growth Public Infrastructure Policy Act. A SGISAF was completed for the Proposed Project and is included in Appendix C. As described on the SGISAF, the Proposed Project would be consistent with *SSGPIPA* and would generally support the smart growth criteria established by the legislation. The compatibility of the Proposed Project with the 10 criteria of the *SSGPIPA* is detailed below.

To advance projects for the use, maintenance or improvement of existing infrastructure. The Proposed Project, which would result in the development of a new building to replace the existing accessory parking lot, would connect to water supply, sewer, and energy infrastructure on the Project Site superblock.

The Proposed Project demands on the New York City water supply and associated infrastructure would be negligible. To avoid impacts on New York City's sanitary and storm water infrastructure (which is a combined system in the location of the Project Site), the Proposed Project would employ storm water source control best management practices ("BMPs") to reduce storm water runoff volumes to the combined sewer system, thus alleviating the demand on the sewer system as compared to existing conditions (which comprise a surface parking lot with impervious surface coverage). BMPs would also include measures to reduce water consumption and sanitary sewer discharges (such as low-flow fixtures) to further minimize demand on the combined sewer system. The Proposed Project would replace an outdated existing nursing facility, located at 120 West 106th Street, which did not incorporate these measures.

In terms of energy infrastructure demand, the existing nursing facility, located at 120 West 106th Street, is housed in three distinct, outdated buildings constructed between 1898 and 1964 which are at the end of their useful lives and operating inefficiently. The existing facility presents physical challenges that negatively impact residents' quality of life, mobility, privacy, and independence; the buildings operate inefficiently, are antiquated and require major infrastructure replacement. The Proposed Project would result in the construction of a state-of-the-art and efficiently-designed facility that would support the 414 residents in a single building. The new facility would incorporate sustainable design elements and systems. Therefore, the Proposed Project would be supportive of this criterion.

To advance projects located in municipal centers. The Proposed Project would result in infill development in a dense urban setting with a diverse mixture of uses and proximity to multiple subway and bus lines. In addition, as described in Chapter 9, "Greenhouse Gas Emissions," JHL would continue to provide its employees with access to tax-free options for commuter expenses, and would continue to operate a shuttle bus for patient transport. Further, JHL is investigating the option of upgrading to hybrid-engine shuttles. Therefore, the Proposed Project would be consistent with this criterion.

To advance projects in developed areas or areas designated for concentrated infill development in a municipally-approved comprehensive land use plan, local waterfront revitalization plan and/or brownfield opportunity area plan. As described previously in Chapter 2, "Land Use, Zoning, and Public Policy," the Proposed Project is located in the former West Park URA, which expired in 2006. The URA was created in 1952, when the land acquisition and disposition were authorized for development according to the approved Redevelopment Plan for the area. The purpose of the West Park URA was to improve a deteriorating area and to preserve some existing buildings, including the Trinity Lutheran Church of Manhattan. The Redevelopment Plan established use and bulk controls for parcels in the URA, and originally called for 17 residential buildings clustered on portions of the URA as well as sites for commercial and recreational uses. The original Redevelopment Plan and subsequent modifications were to remain in effect for 40 years from the completion of the project, defined as the time when all certificates of occupancy have been issued for the residential buildings. The final residential certificate of occupancy for the URA was issued in 1966 and, as described above, the Redevelopment Plan expired on July 22, 2006. With expiration of the URA Plan, development on the Project Site is now governed by the applicable requirements of the *Zoning Resolution*.

To protect, preserve, and enhance the state's resources, including agricultural land, forests, surface and groundwater, air quality, recreation and open space, scenic areas, and significant historic and archeological resources. The shadows impact assessment in Chapter 3, "Shadows," concluded that the proposed building would cast new shadows on the Happy Warrior Playground for 2¼ hours in the early spring and fall, and up to approximately 4½ hours in winter. These new shadows would not reach any areas of the playground containing trees or other vegetation in March 21/September 21, and could not affect the trees in winter when they have no leaves. The analysis concluded that the new shadows would not significantly alter the public's use of the Happy Warrior Playground and that the Proposed Project would not cause a significant adverse impact to this resource, or any other resources. Otherwise, the Proposed Project would not have an adverse impact on agricultural land, forests, surface and groundwater, air quality, recreation and open space, scenic areas. Additionally, the New York State Office of Parks, Recreation and Historic Preservation ("OPRHP") has determined that the Proposed Project will not have an adverse impact on cultural resources listed in or eligible for listing in the National and/or State Registers of Historic Places.[1]

To foster mixed land uses and compact development, downtown revitalization, brownfield redevelopment, the enhancement of beauty in public spaces, the diversity and affordability of housing in proximity to places of employment, recreation and commercial development, and the integration of all income and age groups. The Proposed Project would foster compact development by replacing JHL's three existing nursing facility buildings located at 120 West 106th Street, which operate at 65 percent efficiency, and require major infrastructure replacement. The Proposed Project would result in the development of a state-of-the-art and efficiently-designed facility that would support the 414 residents in a single building, and would be designed with a commitment to LEED certification. Therefore, the Proposed Project would be supportive of this criterion.

To provide mobility through transportation choices including improved public transportation and reduced automobile dependency. The Project Site is well-served by public transit services, including the №. 1, №. 2, and №. 3 subway lines and the M7, M11, and M106 buses. However, the Proposed Project would not result in changes to the Project Site's worker populations, or their transportation choices. The Proposed Project is located next to a major protected, southbound bike route on Columbus Avenue, (currently beginning at West 96th Street but planned to extend further north), and near the northbound bike route on Central Park West. Bicycle storage, showers, and changing rooms would be provided within the proposed building, and JHL would continue to provide its employees with access to tax-free options for commuter expenses. JHL currently operates a shuttle bus for patient transport and would continue to do so at the new location; JHL is investigating the option of upgrading to hybrid-engine shuttles. Therefore, the Proposed Project would encourage transit use, and promote cycling and other sustainable modes of transportation, and would be supportive of this criterion.

To coordinate between state and local government and intermunicipal and regional planning. NYSDOH, as the only state agency with a discretionary action, is serving as the lead

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[1] In a letter dated December 13, 2013, OPRHP determined that the Proposed Project would not result in an impact upon cultural resources in or eligible for inclusion in the State and National Register of Historic Places (see Appendix B).

agency for the environmental review. Other involved agencies and interested parties include the OPRHP and the NYCDOB.[2]

To participate in community-based planning and collaboration. A public scoping meeting was held for the Proposed Project at 6:30 p.m. on September 17, 2013, at P.S. 163 (163 West 97th Street, in Manhattan, New York) allowing all involved agencies, interested parties and members of the public an opportunity to comment on the scope of the DEIS. The comment period for the *Draft Scoping Document* was extended beyond the customary 10-calendar-day period, and written comments were accepted until October 4, 2013. After all comments were considered, NYSDOH prepared and issued the *Final Scoping Document*. Once the DEIS is certified as complete, there will be a comment period during which the public may review and comment on the DEIS either in writing or at a public hearing that will be convened for the purpose of receiving such comments. Once the DEIS public comment period has closed, NYSDOH will prepare the Final Environmental Impact Statement ("FEIS"), which will summarize and respond to all substantive comments received during the public comment period. Once NYSDOH determines that the FEIS is complete, it will issue a Notice of Completion ("NOC") for the FEIS and circulate the document to the involved agencies, interested parties and the public. The FEIS will be made available to the public and agencies for a minimum of 10 days before NYSDOH makes its finding regarding the Proposed Project under *SEQR*. Therefore, the Proposed Project would be supportive of this criterion.

To ensure predictability in building and land use codes. As described previously in Chapter 2, "Land Use, Zoning, and Public Policy," the Proposed Project would be in keeping with existing residential uses in the study area, and would be compatible with community facility uses — including the William F. Ryan Community Health Center located at 110 West 97th Street and P.S. 163 Alfred E. Smith School — as well as commercial uses. The Proposed Project would not alter the mix of uses in the study area, and the study area would continue to include a mix of residential, commercial, institutional, parking, and open space uses. The Proposed Project would not affect the existing zoning of the Project Site or study area, and would comply with the *Zoning Resolution*. The Proposed Project would result in the construction of a building allowable under existing zoning, which permits up to 1,061,154 square feet of zoning floor area for community facilities within the zoning lot. In addition, the Proposed Project would comply with Section 22-42, "Certification of Certain Community Facility Uses," of the *Zoning Resolution*, which requires that, prior to any development, enlargement, extension or change in use involving a nursing home or health-related facility in a residence district, the CPC must certify to NYCDOB that none of the findings set forth in Section 22-42 of the *Zoning Resolution* exist in the Community District within which such use is to be located. The CPC determined that none of these findings exist in Community District 7 and the certification was approved on March 26, 2012. Overall, the Proposed Project would not result in any significant adverse impacts to land use, zoning, or public policy, and therefore, the Proposed Project would be supportive of this criterion.

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[2] Previously, a CPC certification pursuant to Section 22-42, "Certification of Certain Community Facility Uses," of the *Zoning Resolution of the City of New York* was approved on March 26, 2012. A foundation permit was obtained from NYCDOB.

To promote sustainability by strengthening existing and creating new communities which reduce greenhouse gas emissions and do not compromise the needs of future generations, by among other means encouraging broad based public involvement in developing and implementing a community plan and ensuring the governance structure is adequate to sustain its implementation. As discussed in Chapter 9, "Greenhouse Gas Emissions," energy measures to be implemented as part of the Proposed Project under LEED are expected to reduce energy expenditure by at least 10 percent, and may reduce energy expenditure by as much as 20 percent, as compared to a baseline building designed to meet but not exceed building energy code requirements. These measures would also result in development that is consistent with the city's emissions reduction goal, as demonstrated by the review of the PlaNYC goals of (1) building efficient buildings; (2) using clean power; (3) transit-oriented development and sustainable transportation; (4) reducing construction operation emissions; and (5) using building materials with low-carbon intensity, as defined in the *CEQR Technical Manual*. Therefore, the Proposed Project would be supportive of this criterion.

Based on the information presented above demonstrating consistency with PlaNYC and the New York *State Smart Growth Public Infrastructure Policy Act*, the Proposed Project would not result in any significant adverse impacts related to public policy.

Conclusions

The Proposed Project would result in a new land use on the Project Site, but would be in keeping with residential uses in the study area, and would be compatible with community facility uses — including the William F. Ryan Community Health Center located at 110 West 97th Street and P.S. 163 Alfred E. Smith School — as well as commercial uses. The Proposed Project would not alter the mix of uses in the study area, which include residential uses as well as community facilities. The Proposed Project would result in the construction of a building that is consistent with and permitted under existing zoning, would not affect the existing zoning of the Project Site or study area, and would comply with the *Zoning Resolution*. The Proposed Project would comply with Section 22-42, "Certification of Certain Community Facility Uses," of the *Zoning Resolution*, for which the certification was approved on March 26, 2012. The Proposed Project was found to be consistent with PlaNYC's sustainability objectives relevant to the Proposed Project, and the Proposed Project was found to be generally consistent with the relevant Smart Growth Criteria in the *SSGPIPA*. Overall, the Proposed Project would be compatible with uses in the study area, and would not result in any significant adverse impacts to land use, zoning, or public policy.

Chapter 3. Shadows

Introduction

According to the *CEQR Technical Manual*, a shadows assessment is required if the Proposed Project would result in structures of 50 feet or more, or if the Project Site is located adjacent to, or across the street from, a sunlight-sensitive resource. Sunlight-sensitive resources can include parks, playgrounds, gardens, and other publicly-accessible open spaces; sunlight-dependent features of historic resources; and important natural features such as water bodies. The Proposed Project would result in an approximately 275-foot-tall nursing facility on the Project Site. In addition, the Project Site is located adjacent to the Happy Warrior Playground. Therefore, a shadows assessment is warranted.

Definitions and Methodology

This analysis has been prepared in accordance with New York *CEQR* procedures and follows the guidelines of the *CEQR Technical Manual*.

Definitions. Incremental shadow is the additional, or new, shadow that a structure resulting from a Proposed Project would cast on a sunlight-sensitive resource.

Sunlight-sensitive resources are those resources that depend on sunlight or for which direct sunlight is necessary to maintain the resource's usability or architectural integrity. Such resources generally include:

- *Public open space* (e.g., parks, beaches, playgrounds, plazas, schoolyards, greenways, landscaped medians with seating). Planted areas within unused portions of roadbeds that are part of the Greenstreets program are also considered sunlight-sensitive resources.
- *Features of architectural resources that depend on sunlight for their enjoyment by the public*. Only the sunlight-sensitive features need be considered, as opposed to the entire resource. Such sunlight-sensitive features might include: design elements that depend on the contrast between light and dark (e.g., recessed balconies, arcades, deep window reveals); elaborate, highly carved ornamentation; stained glass windows; historic landscapes and scenic landmarks; and features for which the effect of direct sunlight is described as playing a significant role in the structure's importance as a historic landmark.
- *Natural resources* where the introduction of shadows could alter the resource's condition or microclimate. Such resources could include surface water bodies, wetlands, or designated resources such as coastal fish and wildlife habitats.

Non-sunlight-sensitive resources include, for the purposes of *CEQR*:

- City streets and sidewalks (except Greenstreets);

- *Private open space* (e.g., front and back yards, stoops, vacant lots, and any private, nonpublicly-accessible open space);
- *Project-generated open space* cannot experience a significant adverse shadow impact from the project, according to *CEQR*, because without the project the open space would not exist. However, a qualitative discussion of shadows on the project-generated open space should be included in the analysis.

A significant adverse shadow impact occurs when the incremental shadow added by a Proposed Project falls on a sunlight-sensitive resource and substantially reduces or completely eliminates direct sunlight, thereby significantly altering the public's use of the resource or threatening the viability of vegetation or other resources. Each case must be considered on its own merits based on the extent and duration of new shadow and an analysis of the resource's sensitivity to reduced sunlight.

Methodology. Following the guidelines of the *CEQR Technical Manual*, a preliminary screening assessment must first be conducted to ascertain whether a project's shadow could reach any sunlight-sensitive resources at any time of year. The preliminary screening assessment consists of three tiers of analysis. The first tier determines a simple radius around the proposed building representing the longest shadow that could be cast. If there are sunlight-sensitive resources within this radius, the analysis proceeds to the second tier, which reduces the area that could be affected by project shadow by accounting for the fact that shadows can never be cast between a certain range of angles south of the Project Site due to the path of the sun through the sky at the latitude of New York City.

If the second tier of analysis does not eliminate the possibility of new shadows on sunlight-sensitive resources, a third tier of screening analysis further refines the area that could be reached by project shadow by looking at specific representative days in each season and determining the maximum extent of shadow over the course of each representative day.

If the third tier of analysis does not eliminate the possibility of new shadows on sunlight-sensitive resources, a detailed shadow analysis is required to determine the extent and duration of the incremental shadow resulting from the project. The detailed analysis provides the data needed to assess the shadow impacts. The effects of the new shadows on the sunlight-sensitive resources are described, and their degree of significance is considered. The results of the analysis and assessment are documented with graphics, a table of incremental shadow durations, and narrative text.

Preliminary Screening Assessment. A base map was developed using Geographic Information Systems ("GIS")[1] showing the location of the Proposed Project and the surrounding street layout (see Figure 3-1). In coordination with the open space and historic and cultural resources assessments presented in other chapters of this Draft Environmental Impact Statement ("DEIS"), potential sunlight-sensitive resources were identified and shown on the map.

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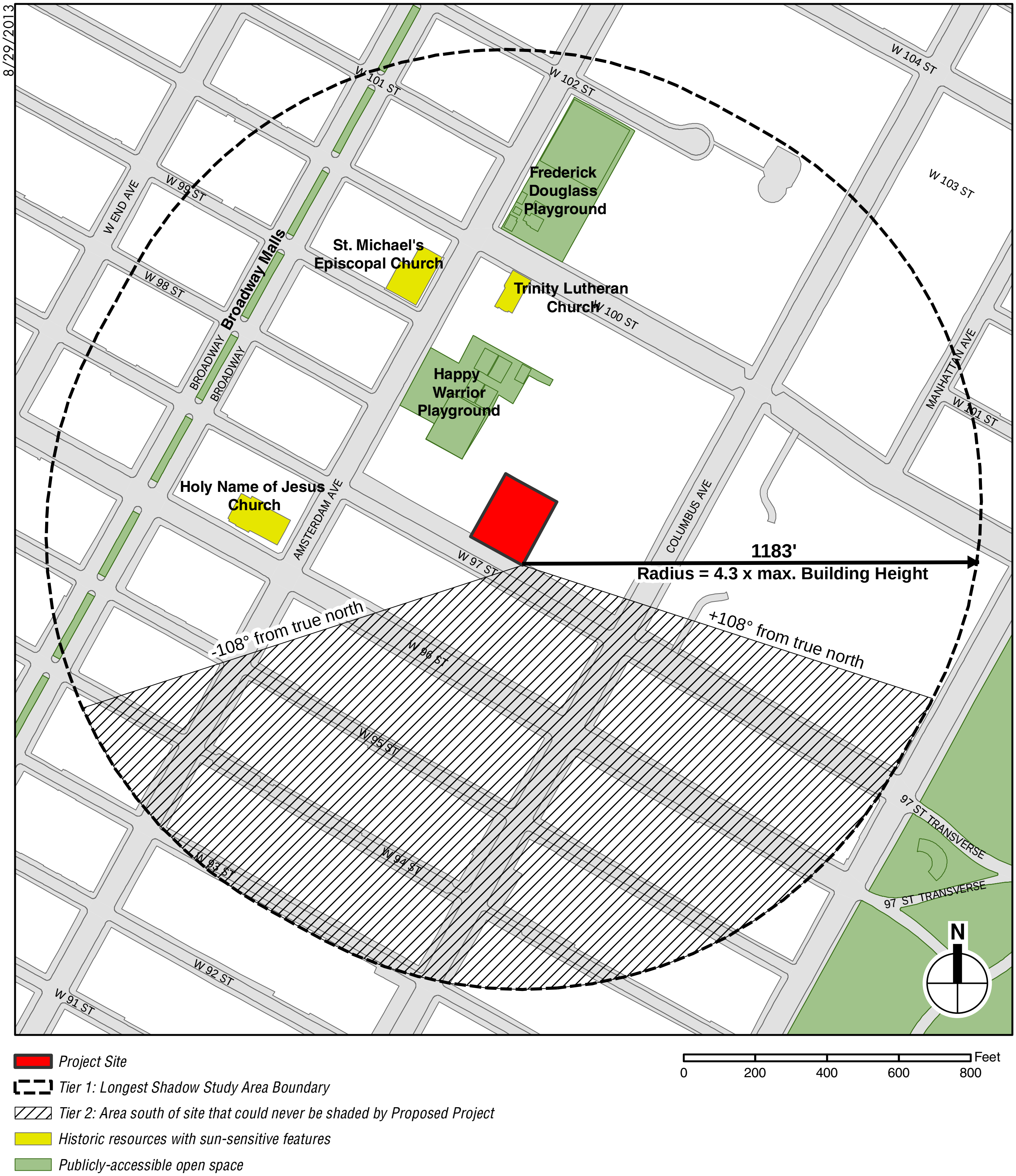
[1] Software: ESRI ArcGIS 10.1; Data: New York City Department of Information Technology and Telecommunications (DoITT) and other City agencies, and AKRF site visits.



Tier 1 and Tier 2 Assessment

Figure 3-1

Tier 1 Screening Assessment. For the Tier 1 assessment, the longest shadow that the proposed structure could cast is calculated, and, using this length as the radius, a perimeter is drawn around the Project Site. Anything outside this perimeter representing the longest possible shadow could never be affected by project generated shadow, while anything inside the perimeter needs additional assessment.

According to the *CEQR Technical Manual*, the longest shadow that a structure can cast at the latitude of New York City occurs on December 21, the winter solstice, at the start of the analysis day at 8:51 a.m., and is equal to 4.3 times the height of the structure.

Therefore, at a maximum height of approximately 275 feet above curb level, including rooftop mechanical structures, the proposed nursing facility could cast a shadow up to 1,183 feet in length (275 x 4.3). Using this length as the radius, a perimeter was drawn around the Project Site (see Figure 3-1). Since a number of sun-sensitive resources lay within the perimeter or longest shadow study area, the next tier of screening assessment was conducted.

Tier 2 Screening Assessment. Because of the path that the sun travels across the sky in the northern hemisphere, no shadow can be cast in a triangular area south of any given Project Site. In New York City this area lies between -108 and +108 degrees from true north. Figure 3-1 illustrates this triangular area south of the Project Site. The complementing area to the north within the longest shadow study area represents the remaining area that could potentially experience new project generated shadow.

Three open space resources (i.e., Happy Warrior Playground, Frederick Douglass Playground and Broadway Malls) and three historic resources with sunlight-sensitive features (i.e., Holy Name of Jesus Church, St. Michael's Church and Trinity Lutheran Church) are located within the remaining longest shadow study area, and additional assessment is required to determine whether new project-generated shadows could fall on them, and the extent and duration of any such new shadows.

Tier 3 Screening Assessment. The direction and length of shadows vary throughout the course of the day and also differ depending on the season. In order to determine whether project-generated shadow could fall on a sunlight-sensitive resource, three-dimensional ("3D") computer mapping software[2] is used in the Tier 3 assessment to calculate and display the Proposed Project's shadows on individual representative days of the year. A computer model was developed containing three-dimensional representations of the elements in the base map used in the preceding assessments, the topographic information of the study area, and a reasonable worst-case, three-dimensional representation of the Proposed Project.

Representative Days for Analysis. Following the guidance of the *CEQR Technical Manual*, shadows on the summer solstice (June 21), winter solstice (December 21) and spring and fall equinoxes (March 21 and September 21, which are approximately the same in terms of shadow patterns) are modeled to represent the range of shadows over the course of the year. An additional representative day during the growing season is also modeled, generally the day

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[2] MicroStation V8i (SELECTSeries 3).

halfway between the summer solstice and the equinoxes, i.e., May 6 or August 6, which have approximately the same shadow patterns.

Timeframe Window of Analysis. The shadow assessment considers shadows occurring between 1½ hours after sunrise and 1½ hours before sunset. At times earlier or later than this timeframe window of analysis, the sun is down near the horizon and the sun's rays reach the Earth at very tangential angles, diminishing the amount of solar energy and producing shadows that are very long, move fast, and generally blend with shadows from existing structures until the sun reaches the horizon and sets. Consequently, shadows occurring outside the timeframe window of analysis are not considered significant under *CEQR*, and their assessment is not required.

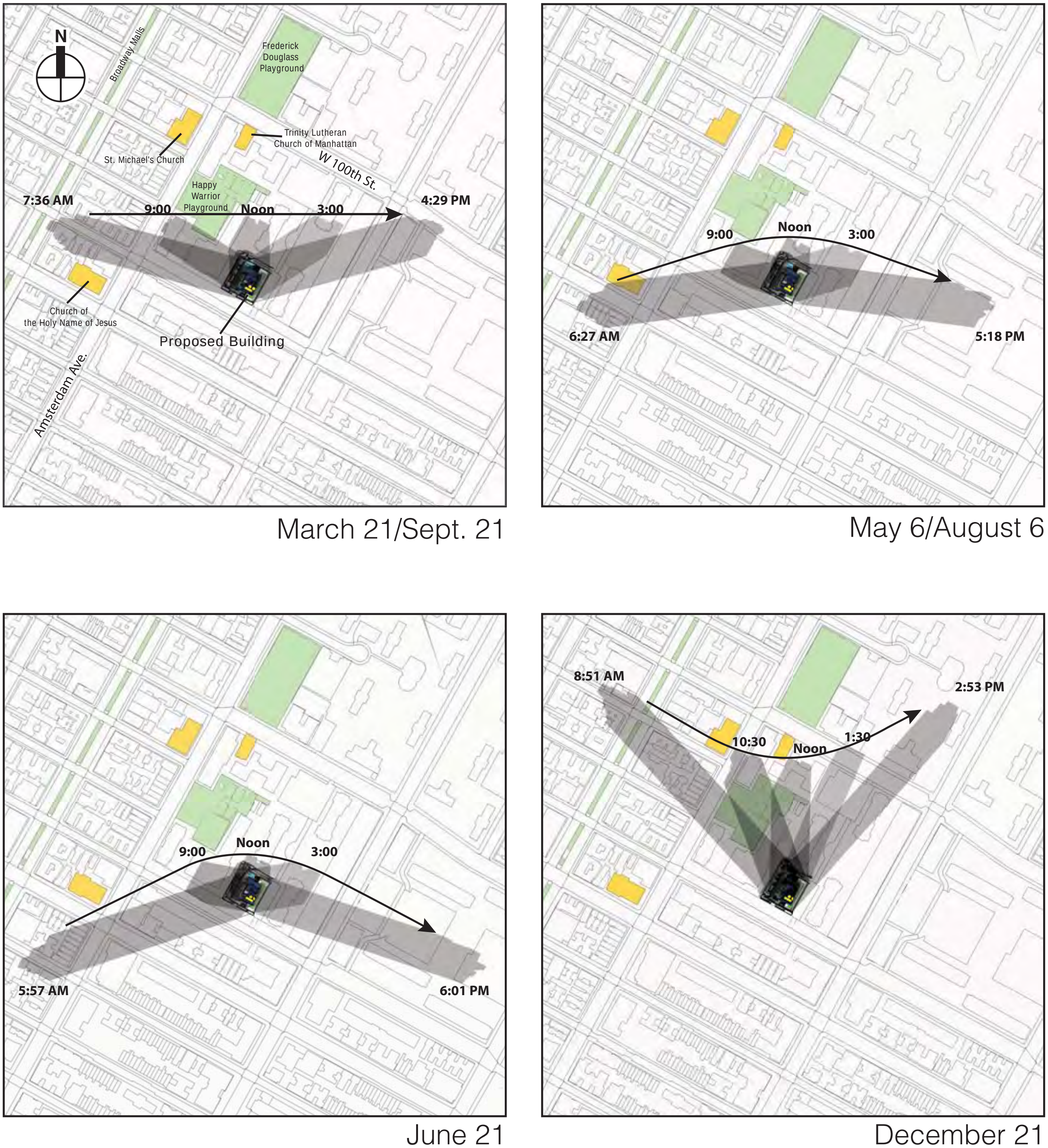
Tier 3 Screening Assessment Results. Figure 3-2 illustrates the range of shadows that would occur, in the absence of intervening buildings, from the proposed building on the four representative days for analysis. As they move east and clockwise over the landscape, the shadows are shown occurring approximately every 2 hours from the start of the analysis day (1½ hours after sunrise) to the end of the analysis day (1½ hours before sunset).

The analysis showed that on March 21/September 21, project-generated shadow could pass across the southern portion of the Happy Warrior Playground during the morning. No other resources could be affected on March 21/September 21. On May 6/August 6, project-generated shadow could potentially reach the east façade of the Holy Name of Jesus Church, located west of the Project Site, at the start of the analysis day, and would be too short to reach the Happy Warrior Playground or any other resources during the rest of the analysis day. On June 21, no sun-sensitive resources could be affected. On December 21, when shadows are longest, the proposed building's shadow would be long enough to reach the Broadway Malls at the start of the analysis day, could pass across the Happy Warrior Playground, and could potentially reach the southern façade of St. Michael's Church on West 99th Street and Amsterdam Avenue and possibly the southern façade of the Trinity Lutheran Church directly north.

In summary, the Tier 3 assessment concluded that, in the absence of intervening buildings, shadow from the proposed building could reach the Happy Warrior Playground on the March 21/September 21 and December 21 analysis days. Project-generated shadow could potentially reach the east façade of Holy Name of Jesus Church early on the May 6/August 6 analysis day. The Broadway Malls and the southern façades of the St. Michael's Church and the Trinity Lutheran Church could all potentially be reached on the December 21 analysis day only. Therefore, a detailed analysis was warranted for these resources on the relevant analysis days. The Frederick Douglass Playground, located further north, would not be affected by project-generated shadow on any analysis day and therefore did not require any additional analysis.

Detailed Shadow Analysis

The detailed analysis determines the extent and duration of new incremental shadows that fall on sunlight-sensitive resources as a result of the project, accounting for existing shadows from intervening and surrounding buildings, and assesses the potential effects of the incremental shadows. A baseline, the Future Without the Proposed Project (the "No-Build Condition"), is established, containing existing buildings and sunlight-sensitive resources and any future



Note: Daylight Saving Time not used.

Publicly-Accessible Open Space

Shadow

Historic Resource with Sun-sensitive Features

Tier 3 Assessment
Figure 3-2

developments planned in the area, to illustrate the baseline shadows from buildings and other structures in the study area defined in the preliminary assessment. The future condition with the Proposed Project and its shadows can then be compared to the baseline condition, to determine the incremental shadows that would result with the Proposed Project.

Three-dimensional representations of the existing buildings in the study area were developed using data obtained from NYC DoITT GIS data, Sanborn maps, and photos taken during Project Site visits, and were added to the three-dimensional model used in the Tier 3 assessment. Figure 3-3 shows a view of the computer model used in the analysis.

Resources of Concern. The Happy Warrior Playground (see Figure 3-4) is associated with P.S. 163 Alfred E. Smith School. On school days it is used by the school and is closed to the public from 8:00 a.m. to 4:00 p.m. according to a sign posted on the entrance gate (see Figure 3-5). It is open to the public at other times, including weekends, holidays and during summer vacation. On the west side, there is play equipment and benches, and a full tree canopy keeps the area mostly in shade during the growing season when leaves are out. The eastern side of the playground contains mostly hard-surface ball courts. A section in the northeast corner contains a vegetable garden and a tot lot. The garden and tot lot appear to be limited access for the school students only.

St. Michael's Church at 225 West 99th Street and Trinity Lutheran Church at 164 West 100th Street are both listed on the State and National Registers of Historic Places ("S/NR"). The south and east façades of St. Michael's Church face toward the Project Site and have large stained glass windows above the first floor. The rear façade of Trinity Lutheran Church faces the Project Site and has stained glass windows in the upper portion of the building. For both of these resources, the stained glass windows are sunlight-dependent architectural features. The Holy Name of Jesus Church, located at 207 West 96th Street, is not listed on the S/NR nor is it a New York City Landmark ("NYCL"), but it is a potential historic resource. It has large stained glass windows on its east façade facing toward the Project Site.

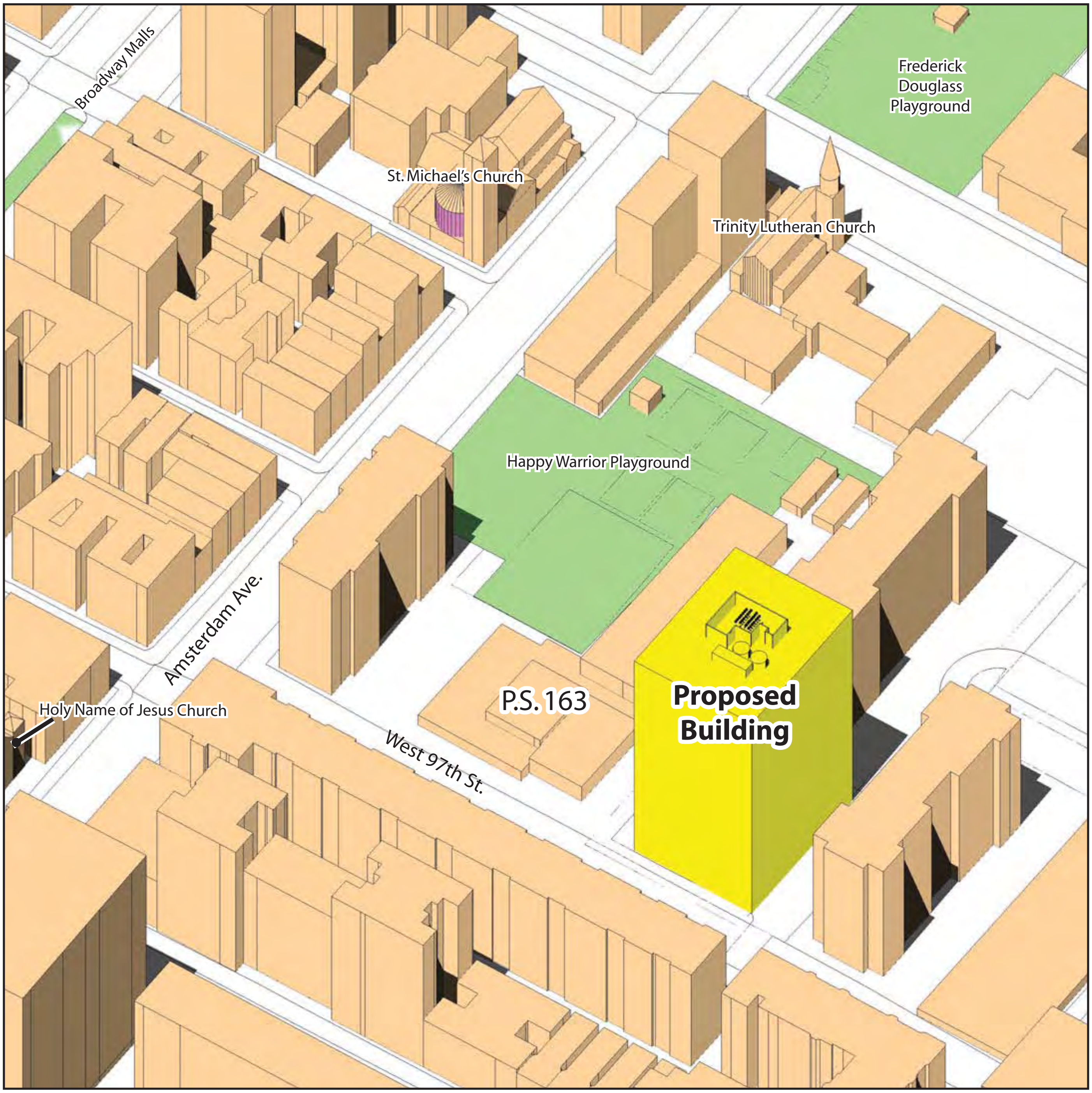
Analysis Methodology. Shadows are in constant movement. The computer simulation software produces an animation showing the movement of shadows over the course of each analysis period. The analysis determines the time when incremental shadow would enter each resource, and the time it would exit.

Following the analysis framework described in Chapter 1, "Project Description," the shadows assessment was performed for the 2018 analysis year, comparing the proposed development with the No-Build Condition in which the site would remain as in the existing condition.

Shadow analyses were performed for each of the representative days and analysis periods indicated in the Tier 3 assessment: March 21/September 21 for the Happy Warrior Playground; May 6/August 6 for the Holy Name of Jesus Church; and December 21 for the Broadway Malls, Happy Warrior Playground, St. Michael's Church, and Trinity Lutheran Church.

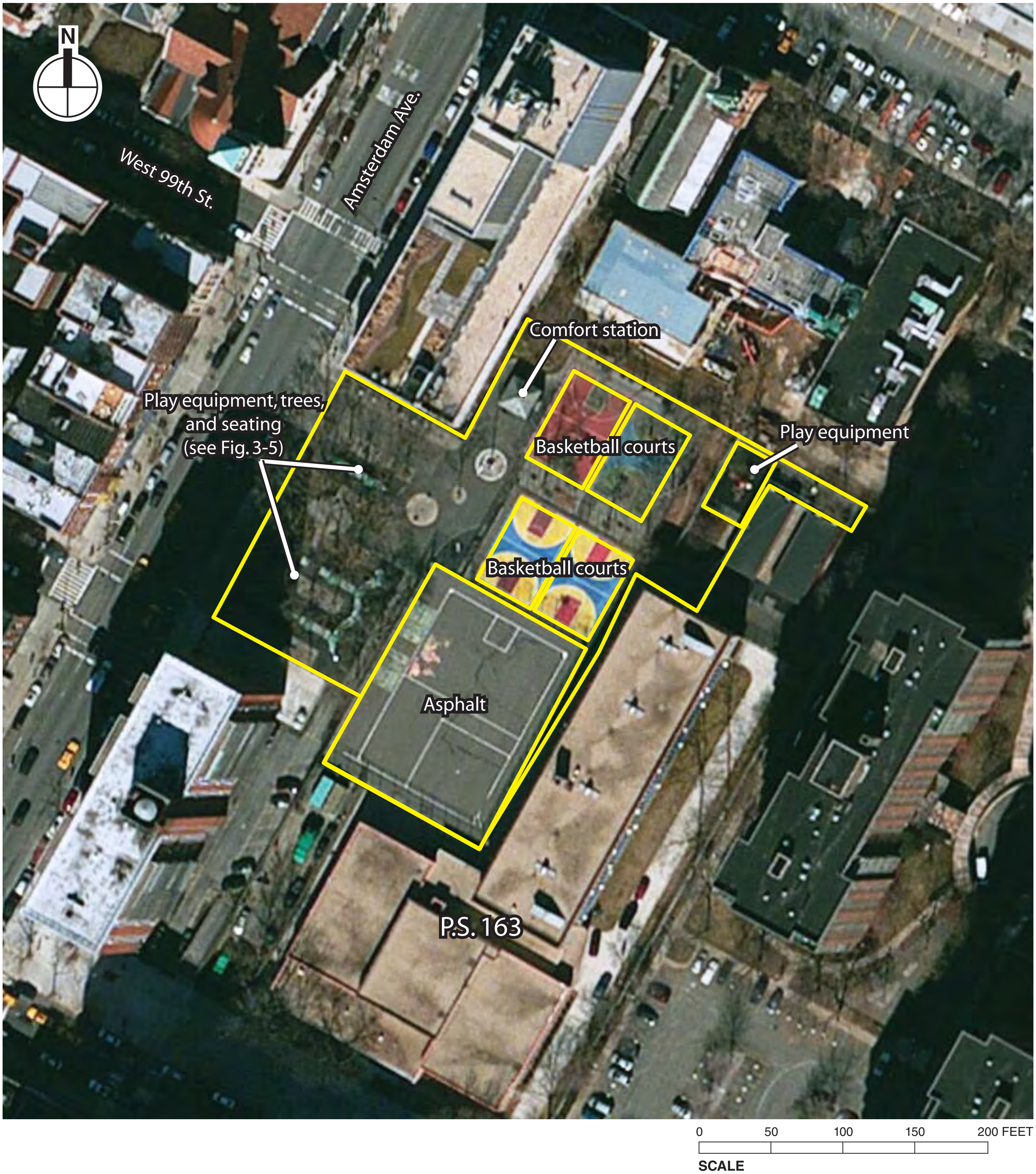
Analysis Results. Table 3-1 summarizes the entry and exit times and total duration of incremental shadows on each affected sun-sensitive resource. Figures 3-6 to 3-14 document the results of the analysis by providing graphic representations from the computer animation of times

1.27.14



3D Model for Detailed Analysis - View North

Figure 3-3



Happy Warrior Playground
Figure 3-4

Happy Warrior Playground
Views East from Amsterdam Avenue

Figure 3-5

8.30.13

Note: Daylight Saving Time not used.

0 100 FEET

SCALE

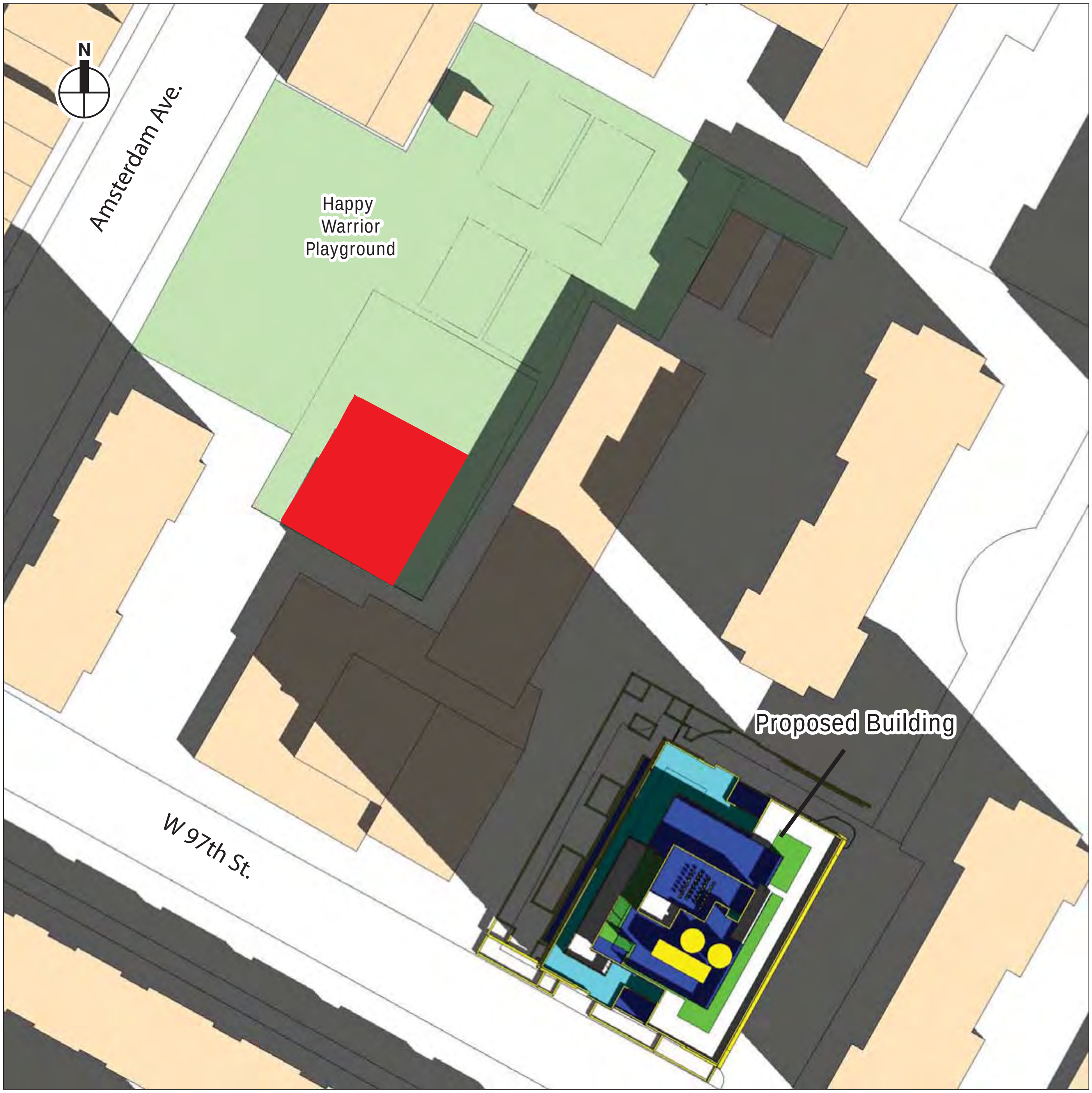
Publicly-Accessible Open Space (does not include project-generated open space)

Incremental Shadow

March 21 - 9:00 AM

Figure 3-6

8.30.13



Note: Daylight Saving Time not used.

0 100 FEET
SCALE

Publicly-Accessible Open Space (does not include project-generated open space)

Incremental Shadow

March 21 - 10:00 AM

Figure 3-7

Note: Daylight Saving Time not used.

0 100 FEET

SCALE

Publicly-Accessible Open Space (does not include project-generated open space)

Incremental Shadow

March 21 - 11:00 AM

Figure 3-8

Note: Daylight Saving Time not used.

Publicly-Accessible Open Space (does not include project-generated open space)

Incremental Shadow

December 21 - 9:00 AM

Figure 3-9

Note: Daylight Saving Time not used.

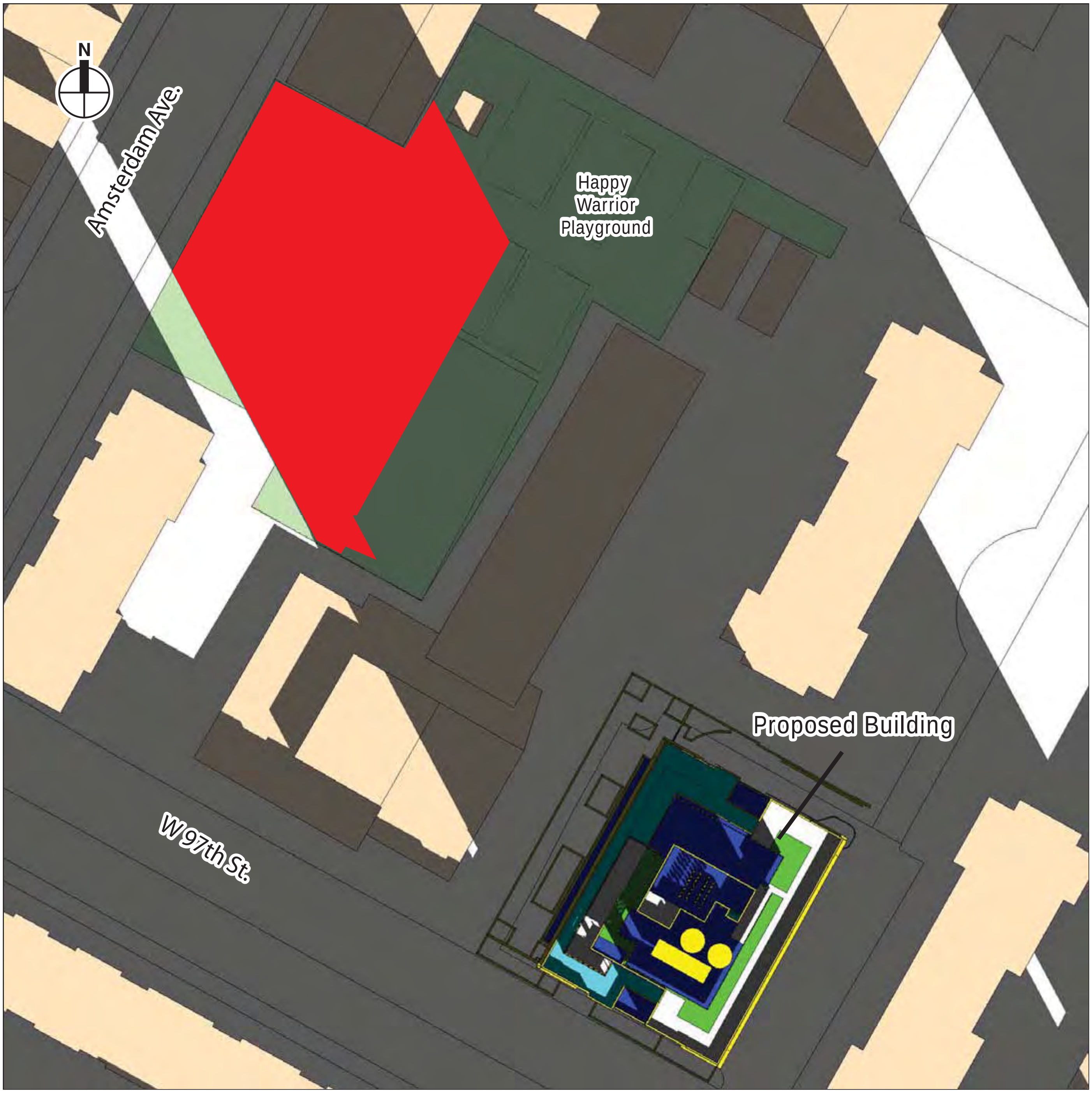
Publicly-Accessible Open Space (does not include project-generated open space)

Incremental Shadow

December 21 - 9:35 AM

Figure 3-10

8.30.13



Note: Daylight Saving Time not used.

0 100 FEET

SCALE

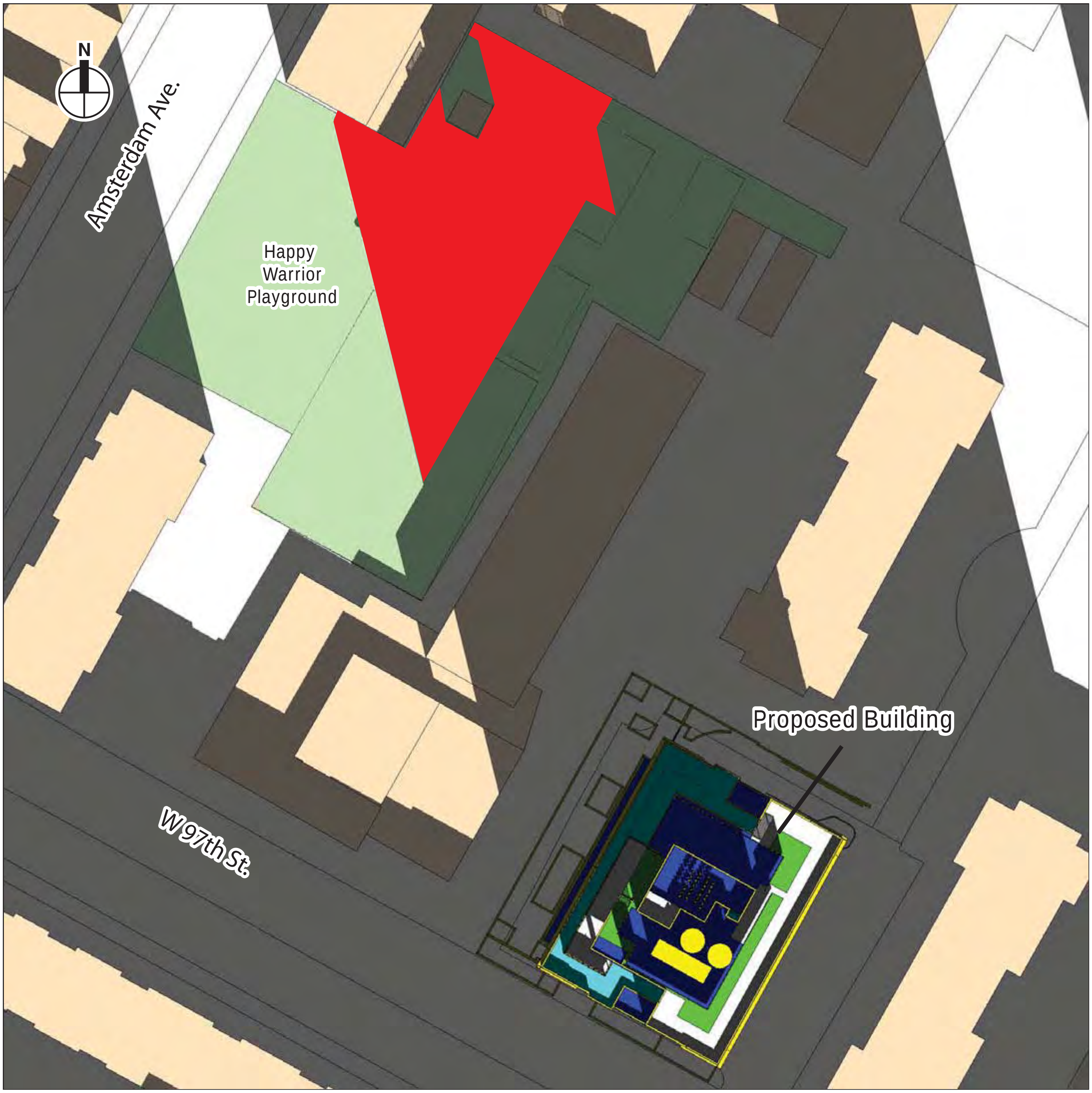
Publicly-Accessible Open Space (does not include project-generated open space)

Incremental Shadow

December 21 - 10:00 AM

Figure 3-11

8.30.13



Note: Daylight Saving Time not used.

0 100 FEET

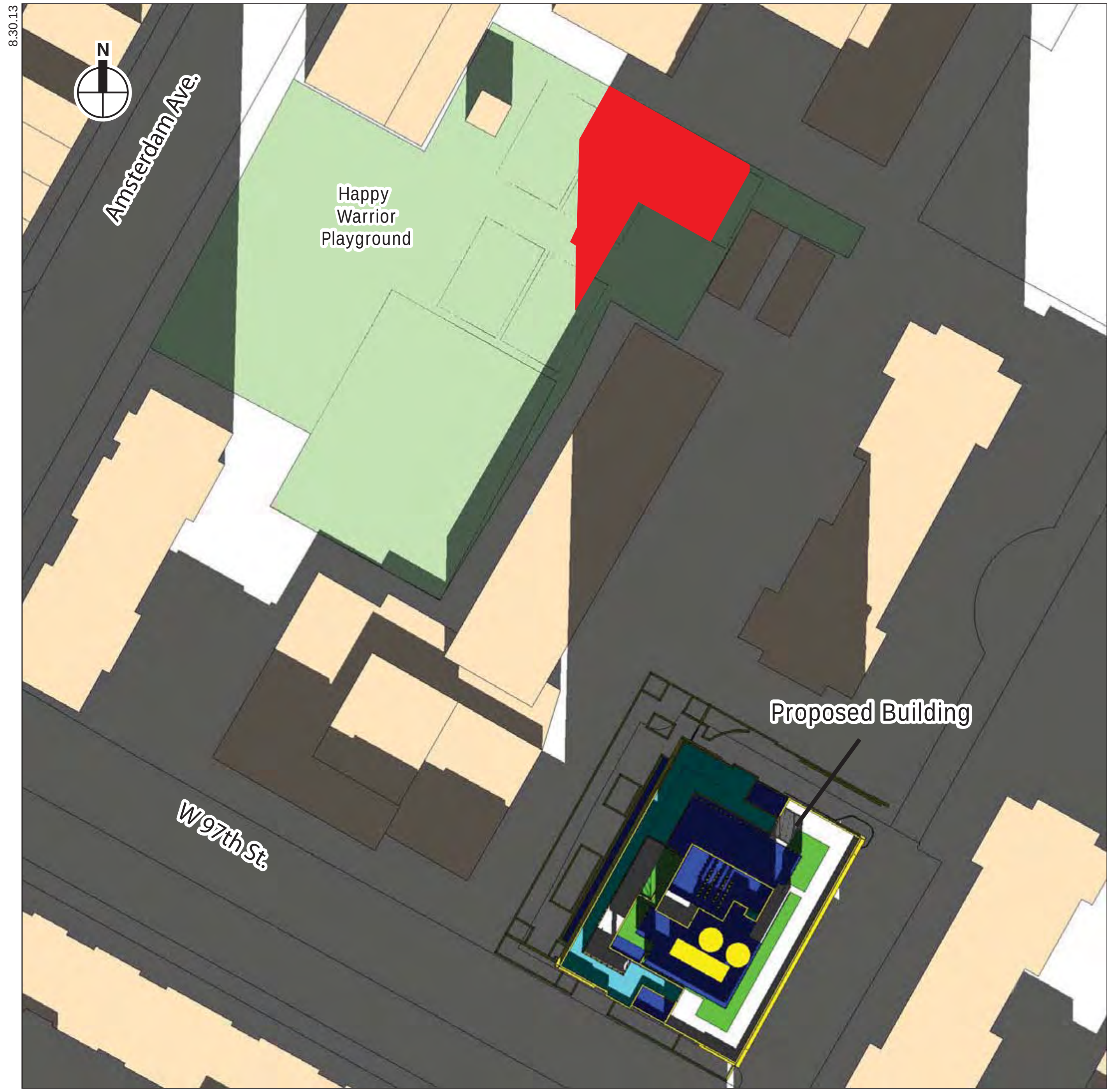
SCALE

Publicly-Accessible Open Space (does not include project-generated open space)

Incremental Shadow

December 21 - 11:00 AM

Figure 3-12



Note: Daylight Saving Time not used.

0 100 FEET

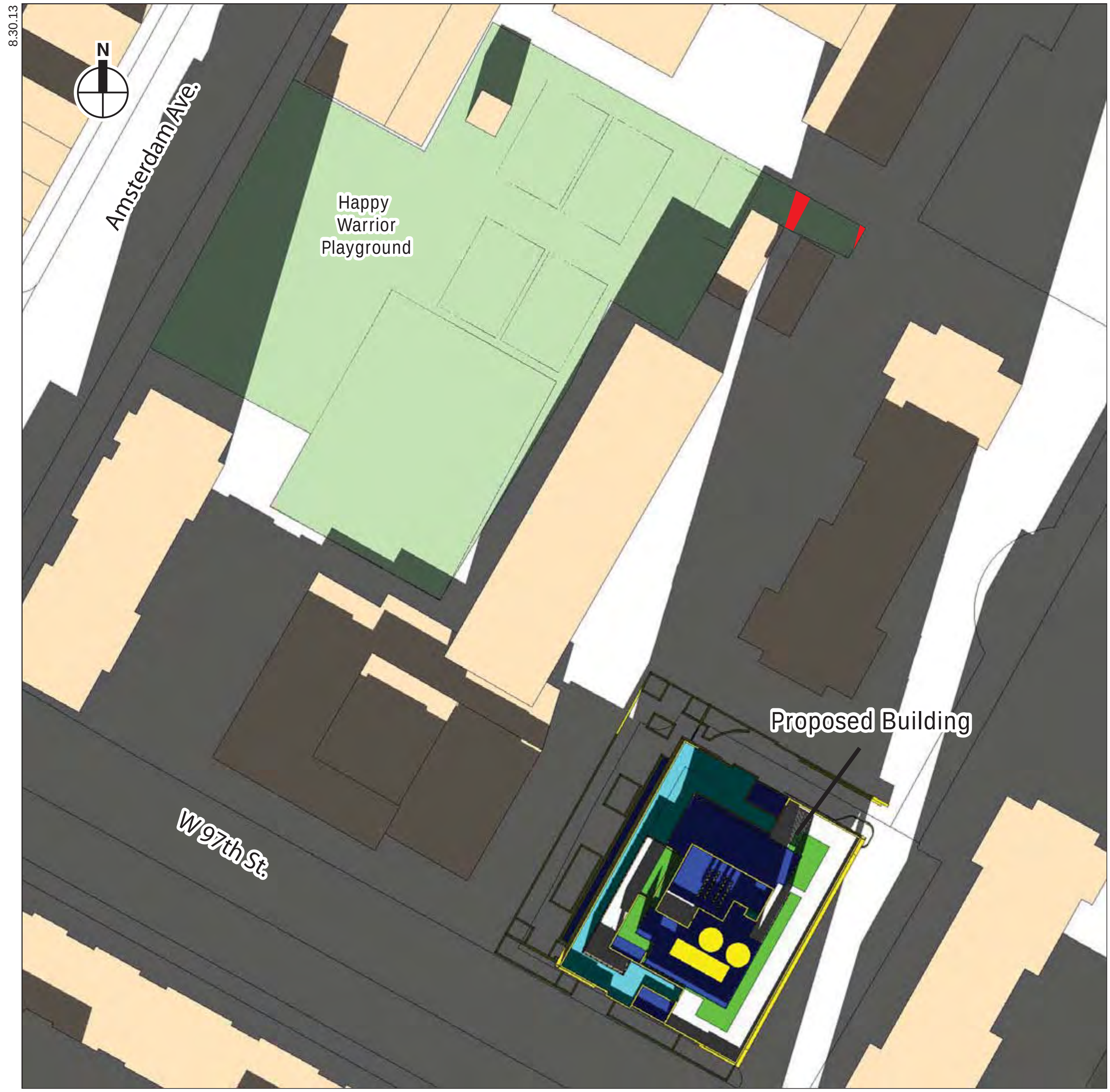
SCALE

Publicly-Accessible Open Space (does not include project-generated open space)

Incremental Shadow

December 21 - 12:00 PM

Figure 3-13



Note: Daylight Saving Time not used.

0 100 FEET
SCALE

Publicly-Accessible Open Space (does not include project-generated open space)

Incremental Shadow

December 21 - 1:00 PM

Figure 3-14

when incremental shadow would fall on a sunlight-sensitive resource. The figures illustrate the extent of additional, incremental shadow at that moment in time, highlighted in red, and also show existing shadow and remaining areas of sunlight.

Table 3-1. Incremental Shadow Durations by Sunlight-Sensitive Resource, Analysis Day and Timeframe Window

Analysis Day and Timeframe Window	March 21 / Sept. 21 7:36 a.m.-4:29 p.m.	May 6 / August 6 6:27 a.m.-5:18 p.m.	June 21 5:57 a.m.-6:01 p.m.	December 21 8:51 a.m.-2:53 p.m.
OPEN SPACES				
Happy Warrior Playground	8:46 a.m.–11:01 a.m. Total: 2 hr 15 min	—	—	8:51 a.m.–1:25 p.m. Total: 4 hr 34 min
Frederick Douglass Playground	—	—	—	—
Broadway Malls	—	—	—	—
HISTORIC RESOURCES				
Holy Name of Jesus Church	—	—	—	—
St. Michael's Church – south façade windows	—	—	—	9:30 a.m.–9:40 a.m. Total: 10 min
Trinity Lutheran Church	—	—	—	—

Notes:
Table indicates entry and exit times and total duration of incremental shadow for each sunlight-sensitive resource. Daylight saving time is not used — times are Eastern Standard Time, per *CEQR Technical Manual* guidelines. However, as Eastern Daylight Time is in effect for the March/September, May/August and June analysis periods, add one hour to the given times to determine the actual clock time.

March 21/September 21 (Figures 3-6 to 3-8). March is considered the beginning of the growing season in New York City, and September 21, which has the same shadow patterns as March 21, is also within the growing season. Shadows on March 21 and September 21 are of moderate length.

Beginning at 8:46 a.m., shadow from the proposed nursing facility would move across a portion of the fenced asphalt playground area in the southeast quarter of Happy Warrior Playground. The new shadow would cover a small area in the southern portion of the asphalt area at first (see Figure 3-6 showing 9:00 a.m.), expand into the middle of the asphalt area by 10:00 a.m. (Figure 3-7), and decrease in size after 10:00 a.m. as it moved eastward and off the asphalt area, finally exiting it completely at 11:01 a.m. (see Figure 3-8 showing 11:00 a.m.).

This asphalt-surfaced section of the open space has painted lines for organized play, but no vegetation nor any play equipment. At its greatest extent, at around 10:00 a.m., the incremental shadow would cover about one-half of the asphalt area. However, a large section of this asphalt area would remain in sun even during this time. The incremental shadow would not affect the asphalt area from 11:01 a.m. until the end of the day. In addition, other portions of the Happy Warrior Playground would remain in sun throughout the morning as well as afternoon.

May 6/August 6. May 6 falls halfway between the March 21 equinox and the June 21 summer solstice. August 6 falls halfway between June 21 and the September 21 equinox, and has the same shadow patterns as May 6. The May 6/August 6 analysis day is representative of the growing season in the city. Shadows on this day are shorter than on the equinoxes, and the length of the day is longer.

The analysis showed that on May 6/August 6, the east façade windows of the Holy Name of Jesus Church would be in existing shadows from intervening buildings during the brief early morning period when project-generated shadow could otherwise fall on them. Therefore, no incremental shadow would fall on the church windows.

December 21 (Figures 3-9 to 3-14). December 21, representing the winter months, does not fall within New York's growing season, according to the *CEQR Technical Manual*. Shadow falling on vegetation in winter is not generally considered to cause a significant adverse impact. However, winter shadow can potentially adversely impact users of open space who may rely on sunlight for warmth.

On December 21, the Broadway Malls would be in existing shadows from intervening buildings in the morning when project-generated shadow could otherwise reach them. Therefore, no incremental shadow would fall on them.

In the middle of the day, project-generated shadow would not be long enough to reach up onto the rear façade windows of the Trinity Lutheran Church. However, incremental shadow would be cast for 10 minutes on a small portion of the windows on the south façade of St. Michael's Church. The rest of the windows would continue to be in sun during the 10-minute period (see Figure 3-10).

New shadow would fall on portions of Happy Warrior Playground for a total of about 4½ hours, beginning at the start of the analysis day at 8:51 a.m. Shadows move quickly in winter, however, and after around 11:00 a.m. the extent of incremental shadow would be limited. At the start of the analysis day, most of the open space would be in existing shadow, and the proposed building's shadow would eliminate an additional area of sunlight on the western side of the playground leaving only a small remaining area of sun (see Figure 3-9). From 9:00 a.m. to 10:00 a.m. the incremental shadow would eliminate a large area of sunlight, continuing to leave a small area in sun (Figures 3-10 and 3-11). By 11:00 a.m. nearly one-half of the playground would be in sun, including most of the western playground area as well as much of the asphalt area in the southeast (Figure 3-12). Incremental shadow would fall across a large area in the central and northern part of the open space, affecting primarily the basketball courts. By noon, a much smaller area in the northeast section of the open space would continue to be affected by project-generated shadow while most of the space would be in sun (Figure 3-13). The incremental shadow would continue to decrease in size as it moved east and off the open space, and by 1:00

p.m. only a very small area in the northeast corner would be affected, while most of the open space would continue to be in sun (see Figure 3-14). The incremental shadow would exit altogether at 1:25 p.m.

Conclusions

The detailed analysis showed that two sunlight-sensitive resources would receive project-generated incremental shadow.

The 10 minutes of incremental shadow on the windows of St. Michael's Church, which would occur on the December 21 analysis day only, would be too limited in duration and size to cause an adverse impact.

The Happy Warrior Playground would receive 2¼ hours of incremental shadow in the morning of the March 21/September 21 analysis day, and about 4½ hours of new shadow in the morning and early afternoon of the December 21 analysis day.

On the March 21/September 21 analysis day, the new shadow would not fall on any trees or other vegetation, only on the asphalt play area. According to the *CEQR Technical Manual*, the loss of direct sunlight on paved or hardscape open spaces that accommodate active uses — such as basketball or tennis courts — is not generally considered significant, although it depends on the specific nature and rates of utilization of each individual case. In any event, large areas of sunlight would remain on portions of the playground during the affected period. Therefore, the new shadow would not cause a significant adverse impact to the use of the space on this analysis day.

December 21 is not within New York City's growing season. The trees and other vegetation do not have leaves and cannot photosynthesize, and, following *CEQR Technical Manual* guidelines, shadows and sunlight cannot have a significant effect on vegetation in this season.

Large areas of the playground would be shaded by the proposed building as well as existing buildings from the start of the analysis day until late morning on the December 21 analysis day. However, the use of the playground in winter is likely somewhat limited due to the cold weather. In the late morning and early afternoon, when the school could use the playground for recess on school days, large areas of the open space would be in sun. The areas of new shadow could reduce the attractiveness of the playground during the first 2 hours of winter mornings on nonschool days, but by 11:00 a.m. and onwards into the afternoon much of the playground would be in sun. Therefore, it is unlikely that the incremental shadow would significantly alter the public's use of the resource. The *CEQR Technical Manual* states that a significant adverse impact generally occurs when there is substantial reduction in the usability of open space as a result of increased shadow. This would not be the case with Happy Warrior Playground, where the greatest shadow impacts occur in winter and, therefore, the Proposed Project would not result in a significant adverse shadow impact.

In summary, the assessment concluded that the proposed building would cast new shadows on the Happy Warrior Playground for 2¼ hours in the early spring and fall, and up to approximately 4½ in winter. These new shadows would not reach any areas of the playground containing trees or other vegetation in March 21/September 21, and could not affect the trees in winter when they have no leaves. The analysis concluded that the new shadows would not significantly alter the public's use of the Happy Warrior Playground and that the Proposed Project would not cause a significant adverse impact to this resource, or any other resources.

Chapter 4. Historic and Cultural Resources

Introduction

This chapter considers the potential for the Proposed Project to affect historic and cultural resources. The Project Site is currently occupied by a surface parking lot. The Proposed Project would result in the redevelopment of the Project Site with a new, 20-story (plus cellar floor), approximately 376,000-gross-square-foot ("gsf") building.

Historic and cultural resources include both archaeological and architectural resources. The study area for archaeological resources is the area that would be disturbed for project construction, the Project Site itself. The New York State Office of Parks, Recreation, and Historic Preservation ("OPRHP") was consulted for a determination of the Project Site's potential archeological sensitivity. In a letter dated December 13, 2013, OPRHP determined that the Proposed Project would not result in an impact upon cultural resources in or eligible for inclusion in the State and/or National Registers of Historic Places ("S/NR") (see Appendix B). Therefore, no additional analysis is required for archaeological resources, and the Proposed Project is not expected to result in any significant adverse impacts to archaeological resources.

In general, potential impacts to architectural resources can include both direct physical impacts and indirect, contextual impacts. Direct impacts include demolition of a resource and alterations to a resource that cause it to become a different visual entity. A resource could also be damaged from vibration (i.e., from construction blasting or pile driving), and additional damage from adjacent construction could occur from falling objects, subsidence, collapse, or damage from construction machinery. Adjacent construction is defined as any construction activity that would occur within 90 feet of an architectural resource, as defined in the New York City Department of Buildings ("NYCDOB") Technical Policy and Procedure Notice ("TPPN") #10/88.[1] Contextual impacts can include the isolation of a property from its surrounding environment, or the introduction of visual, audible, or atmospheric elements that are out of character with a property or that alter its setting. The study area for architectural resources is, therefore, larger than the archaeological resources study area to account for any potential impacts that may occur where proposed construction activities could physically alter architectural resources or be close enough to them to potentially cause physical damage or visual or contextual impacts.

Following the guidelines of the *CEQR Technical Manual*, the architectural resources study area for the Proposed Project is defined as being within an approximately 400-foot radius of the Project Site (see Figure 4-1). Within the study area, architectural resources that were analyzed include National Historic Landmarks ("NHL"), S/NR-listed properties or properties determined eligible for such listing ("S/NR-eligible"), New York City Landmarks ("NYCLs"),

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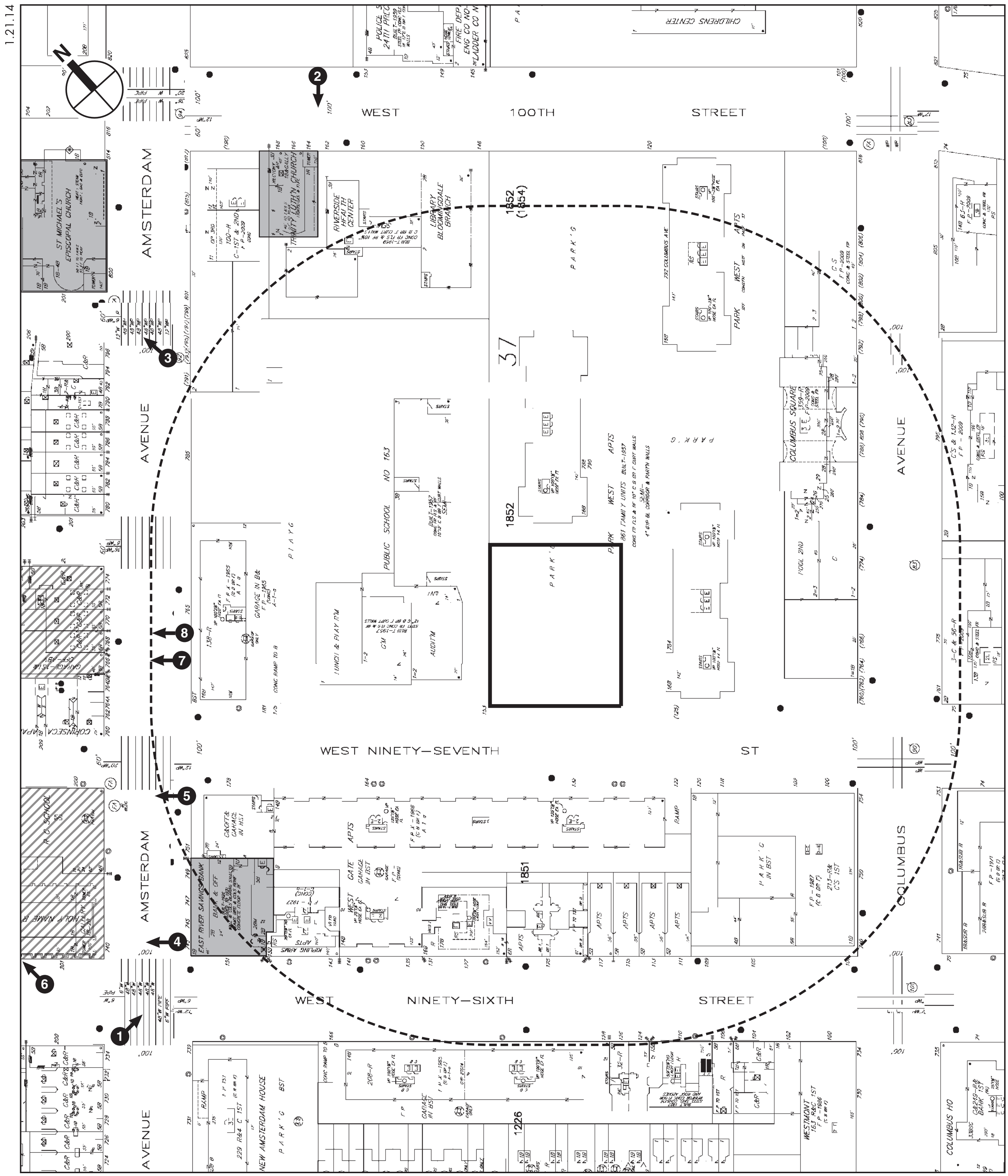
[1] TPPN #10/88 was issued by NYCDOB on June 6, 1988, to supplement Building Code regulations with regard to historic structures. TPPN #10/88 outlines procedures for the avoidance of damage to historic structures resulting from adjacent construction, defined as construction within a lateral distance of 90 feet from the historic resource.



Project Site

Study Area Boundary (400-Foot Perimeter)

Photograph View Direction and Reference Number

Known Architectural Resources

Potential Architectural Resources

0 200 FEET

SCALE

Historic and Cultural Resources Reference Map and properties determined eligible for landmark status ("collectively, known architectural resources"). Additionally, a survey was conducted to identify any previously undesignated properties that appear to meet S/NR or NYCL eligibility criteria[2] ("potential architectural resources"). OPRHP was provided with information on all buildings adjacent to the Project Site. In a letter dated December 13, 2013, OPRHP determined that the Proposed Project would not result in an impact upon cultural resources in or eligible for inclusion in the S/NR.

Methodology

Consistent with the guidance of the *CEQR Technical Manual*, in order to determine whether the Proposed Project could potentially affect architectural resources, this attachment considers whether the Proposed Project would result in a physical change to any resource, a physical change to the setting of any resource (such as context or visual prominence), and, if so, whether the change is likely to alter or eliminate the significant characteristics of the resource that make it important. More specifically, as set forth in the *CEQR Technical Manual*, potential impacts to architectural resources may include the following:

- Physical destruction, demolition, damage, alteration, or neglect of all or part of an historic property;
- Changes to an architectural resource that cause it to become a different visual entity;
- Isolation of the property from, or alteration of, its setting or visual relationships with the streetscape, including changes to the resource's visual prominence;
- Introduction of incompatible visual, audible, or atmospheric elements to a resource's setting;
- Replication of aspects of the resource so as to create a false historical appearance;
- Elimination or screening of publicly-accessible views of the resource;
- Construction-related impacts, such as falling objects, vibration, dewatering, flooding, subsidence, or collapse; and
- Introduction of significant new shadows, or significant lengthening of the duration of existing shadows, over an historic landscape or on an historic structure (if the features that make the resource significant depend on sunlight) to the extent that the architectural details that distinguish that resource as significant are obscured.

[2] Evaluation criteria include historic, architectural, and cultural significance.

Existing Conditions

Project Site. The Project Site is currently occupied by a surface parking lot. The Project Site contains no structures and, thus, no known or potential architectural resources.

Study Area. There are three known architectural resources within and immediately adjacent to the study area, including the former East River Savings Bank, Trinity Lutheran Church of Manhattan, and St. Michael's Church. In addition, three buildings in the surrounding area have been identified as potential architectural resources, including the Church of the Holy Name of Jesus, a 3-story building at 766 Amsterdam Avenue, and a group of four 5-story flats at 768-774 Amsterdam Avenue. These resources are described below.

Known Architectural Resources. The former East River Savings Bank, which is a NYCL, is located within 400 feet of the Project Site, at the northeast corner of West 96th Street and Amsterdam Avenue. The bank was initially constructed in 1926-1927 and then enlarged in 1931-1932, and was designed by the firm of Walker & Gillette. It was built as the first branch of the East River Savings Bank. There are large Ionic colonnades on the West 96th Street and Amsterdam Avenue facades, supporting a massive entablature (see Photo 2 of Figure 4-2). The 1931-1932 addition doubled the number of bays facing Amsterdam Avenue, while maintaining the original materials and classical vocabulary.

Immediately adjacent to the study area is the Trinity Lutheran Church of Manhattan (S/NR-listed), which is located on the north side of the project block, at 164 West 100th Street. Built in 1908, it was designed by architect George W. Conable in the Late Gothic Revival style. The building has a central, front-gabled nave block with one-story, low-pitched, shed roof, side-aisle blocks to the east and west; a small vestry block at the rear southwest corner; and a prominent bell tower with steeple at the front northeast corner (see Photo 1 of Figure 4-2). The building is faced with beige-colored Roman brick at the main façade and common red brick at the rear and side walls, with a stone foundation. There is decorative trim in stone and terra cotta at the primary windows, doors, belt courses, and parapets. In addition to its architecture, the church also is important for its role in the social history and community activism of Manhattan Valley, including the campaign to save the church from demolition during the urban renewal activities in the 1950s that created Park West Village ("PWV"). As described in Chapter 3, "Shadows," the rear facade of Trinity Lutheran Church faces the Project Site and has stained glass windows in the upper portion of the building.[3]

Just outside the study area is St. Michael's Church (S/NR-listed), which is located at 225 West 99th Street, at the northwest corner of West 99th Street and Amsterdam Avenue. The complex includes the church, a parish house, and a rectory; the parish house is located on West 99th Street between the rectory and church, and is deeply recessed behind a small landscaped yard, while the rectory and church meet the street line. The complex was designed by Robert W. Gibson (with the assistance of Charles T. Merry for the parish house). The church was completed in 1891, the parish house in 1902, and the rectory in 1912. The church's most notable

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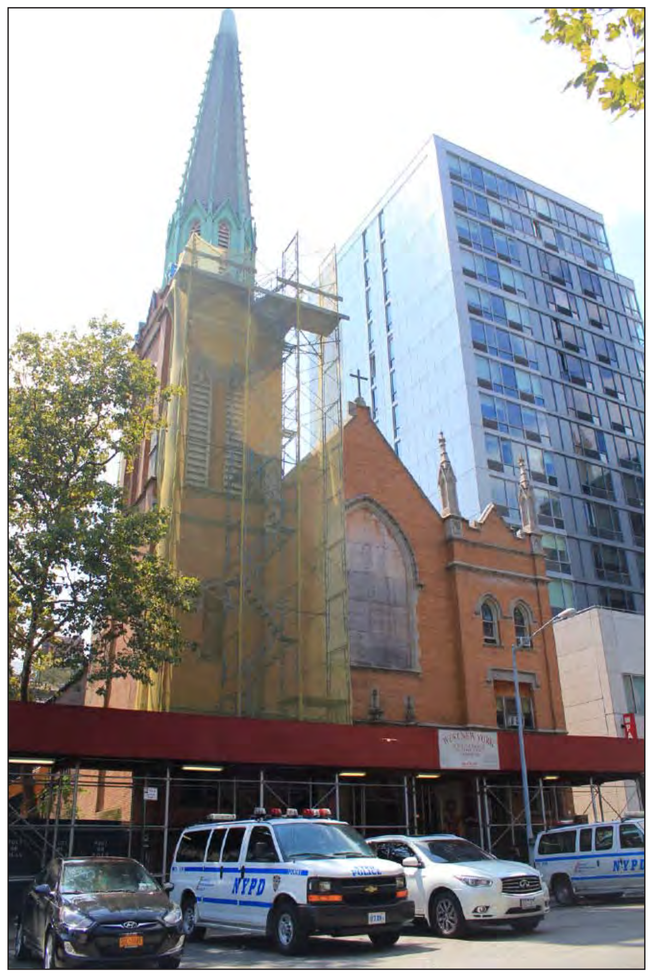
[3] The stained glass windows at Trinity Lutheran Church are known to have been put in storage during the construction of 808 Columbus Avenue.

Former East River Savings Bank **2**



Trinity Lutheran Church of Manhattan **1**

Known Architectural Resources in Study Area

Figure 4-2

exterior feature is its 150-foot-tall campanile (see Photo 3 of Figure 4-3); the interior of the church includes a Tiffany-decorated chancel and stained glass windows by Connick Studios, Maitland Armstrong, Frederick Wilson, R. Geissler, the firm of J.R. Lamb, and the Tiffany studios. The parish house is a 3½-story structure with a columned entryway, tall, arched windows, projecting gables, and wall dormers. All of the structures are faced with rock-faced random ashlar limestone.

Potential Architectural Resources. All of the potential resources identified below are located just outside of the study area boundaries, on the west side of Amsterdam Avenue.

The Church of the Holy Name of Jesus is located at 207 West 96th Street, at the northwest corner of West 96th Street and Amsterdam Avenue. The church complex also includes a 4-story school on West 96th Street. The church was completed in 1900 and replaced an earlier wooden church for the congregation on the same site, which was built in 1868. The church was designed in the Gothic style and is faced with pink Milford granite (see Photos 4 through 6 of Figures 4-3 and 4-4). The school was built in 1905 and designed by the firm of Elliott, Lynch and Orchard.

The 3-story building at 766 Amsterdam Avenue was built circa 1876-1882, and functioned for much of its history as a New York City firehouse. It was first the home of Ladder Company 16, which was reorganized in 1882 as Combination Engine Company №. 47; when Engine Company №. 47 relocated in 1891, Ladder Company 22 was organized and quartered at 766 Amsterdam through 1960. Given the date of its construction, it is assumed that the building may have been designed by the firm of Napoleon LeBrun & Sons, the official architects for the New York City Fire Department ("FDNY") in the latter half of the nineteenth century. The building is faced with red brick above the first floor with brownstone detail around windows and patterned brick above the top floor, below a simple metal cornice (see Photo 7 of Figure 4-5). The first floor is clad in black-painted metal and has a wide central opening, originally used for fire engines.

The group of four 5-story apartments at 768-774 Amsterdam Avenue was built ca. 1887-1888; the architect is unknown. The buildings are faced with red brick with stone detailing and are designed as a group (see Photo 8 of Figure 4-5). The two center structures have gabled parapets, while the outer two structures have simpler, rectangular parapets. The second- and fourth-floor window enframements are rectangular; the third-floor window enframements are segmentally arched; and the fifth-floor window enframements are arched. While the first-floor storefronts of the buildings exhibit alterations, the decorative stone building entrances and stoops at this level appear to be intact.

Future Without the Proposed Project

Project Site. In the Future Without the Proposed Project (the "No-Build Condition), the Project Site would remain in its current state and continue to function as an accessory parking lot. JHL would maintain its existing 514 beds in three distinct buildings on the West 106th Street campus.

Study Area. As described in Chapter 2, "Land Use, Zoning, and Public Policy," in the No-Build Condition, the configuration of Park West Drive, the north-south access road within the PWV complex, may be modified as part of the PWV property owner's planning for the

St. Michael's Church **3**

Church of the Holy Name of Jesus, view from Amsterdam Avenue **4**

Known and Potential Architectural Resources in Study Area
Figure 4-3

Holy Name School, view from Amsterdam Avenue **5**

Church of the Holy Name of Jesus, Rectory **6**

Potential Architectural Resources in Study Area
Figure 4-4

766 Amsterdam Avenue **7**

768-776 Amsterdam Avenue **8**

Potential Architectural Resources in Study Area
Figure 4-5

complex, but will continue to function as a discontinuous two-way access road for PWV parkers. If these potential changes were to be implemented, they would occur independently of the Proposed Project. No other development projects are currently anticipated to be built within the 400-foot study area by 2018.

The status of historic and cultural resources could change in the No-Build Condition. Eligible historic and cultural resources could be listed on the S/NR. Changes to the historic and cultural resources identified above or to their settings could occur irrespective of the Proposed Project. Future projects could also affect the settings of architectural resources. It is possible that some architectural resources in the study area could deteriorate, while others could be restored. In addition, future projects could accidentally damage architectural resources through adjacent construction.

Historic and cultural resources that are listed on the S/NR or that have been found eligible for listing are given a measure of protection under Section 106 of the *National Historic Preservation Act ("NHPA")* from the effects of projects sponsored, assisted, or approved by federal agencies. Although preservation is not mandated, federal agencies must attempt to avoid adverse effects on such resources through a notice, review, and consultation process. Properties listed on the S/NR are similarly protected against effects resulting from projects sponsored, assisted, or approved by state agencies under the *New York State Historic Preservation Act of 1980 ("SHPA").* However, private owners of properties eligible for, or even listed on, the S/NR using private funds can alter or demolish their properties without such a review process. Privately-owned properties that are NYCLs, in New York City Historic Districts, or pending designation as NYCLs are protected under the New York City Landmarks Law, which requires New York City Landmarks Preservation Commission ("LPC") review and approval before any alteration or demolition permits can be issued, regardless of whether the project is publicly or privately funded. Publicly-owned resources are also subject to review by LPC before the start of a project. However, LPC's role in projects sponsored by other city or state agencies generally is advisory only.

The *New York City Building Code* provides some measures of protection for all properties against accidental damage from adjacent construction by requiring that all buildings, lots, and service facilities adjacent to foundation and earthwork areas be protected and supported. While these regulations serve to protect all structures adjacent to construction areas, they do not afford special consideration for historic structures.

Probable Impacts of the Proposed Project

Project Site. As described above, there are no known or potential architectural resources on the Project Site. Therefore, the proposed redevelopment of the Project Site with a new, 20-story (plus cellar floor), approximately 376,000-gsf building would not have a direct or indirect effect on any on-site architectural resources.

Study Area Direct Impacts. Using the *CEQR Technical Manual* direct impact criteria noted above, the Proposed Project would not result in the replication of aspects of any of the resources so as to cause a false historical appearance, or the introduction of significant new shadows or significant lengthening of the duration of existing shadows over historic landscapes or structures**.** There would be no physical changes to any of the architectural resources identified above.

None of the known or potential architectural resources in the study area are located within 90 feet of the Project Site, which as described above is the distance defined as "adjacent construction" in NYCDOB's TPPN #10/88, which outlines procedures for the avoidance of damage to historic structures resulting from adjacent construction. Therefore, no such resources could be potentially physically affected during construction-period activities on the Project Site. In addition, in a letter dated December 13, 2013, OPRHP determined that the Proposed Project would not result in an impact upon cultural resources in or eligible for inclusion in the S/NR (Appendix B).

Study Area Indirect Impacts. The *CEQR Technical Manual* criteria for indirect, contextual impacts are as follows:

- Isolation of a property from, or alteration of, its setting or visual relationships with the streetscape, including changes to the resource's visual prominence;
- Introduction of incompatible visual, audible, or atmospheric elements to a resource's setting; and
- Elimination or screening of publicly-accessible views of the resource.

Each of these criteria is discussed in more detail below, with respect to the architectural resources in the study area.

The Proposed Project would not isolate any architectural resource from its setting or visual relationship with the streetscape, or otherwise adversely alter a historic property's setting or visual prominence. The proposed building would be of a comparable height, bulk, and footprint to other modern structures in the surrounding area — including the 29-story building fronting onto Columbus Avenue and the 15-story building at the northwest corner of the project block — as well as the surrounding 16-story PWV structures. The proposed institutional/community facility use of the building is comparable to the use of many of the historic buildings in the study area.

The Proposed Project would not introduce incompatible visual, audible, or atmospheric elements to a resource's setting and would not eliminate or screen significant publicly accessible views of any architectural resource.

As described in Chapter 3, "Shadows," the Proposed Project would not cast any incremental shadows on the stained glass windows of Trinity Lutheran Church or the Holy Name of Jesus Church. While incremental shadows would be cast for 10 minutes on a small portion of the windows on the south façade of St. Michael's Church, the shadows would be too limited in duration and size to adversely affect this sun-sensitive feature of the architectural resource.

The Proposed Project could potentially be visible from the two potential architectural resources facing Amsterdam Avenue (766 and 768-744 Amsterdam Avenue), and the upper floors of the development could potentially be visible from the sidewalks adjacent to the other known and potential resources in the study area. This potential limited visibility would not be anticipated to adversely affect these resources, as they have limited visual relationships with the Project Site, and as discussed above, the height and bulk of the Proposed Project would be of a comparable height, bulk, and footprint to other modern structures in the surrounding area. Additionally, the Proposed Project would not obstruct significant views of any architectural resource or adversely alter the visual setting of any architectural resources in the study area.

Overall, the Proposed Project is not expected to result in any significant adverse impacts to architectural resources on the Project Site or in the study area.

Conclusions

In a letter dated December 13, 2013, OPRHP determined that the Proposed Project would not result in an impact upon cultural resources in or eligible for inclusion in the State and/or National Register of Historic Places. Therefore, no additional analysis is required for archaeological resources, and the Proposed Project is not expected to result in any significant adverse impacts to archaeological resources.

There are no known or potential architectural resources on the Project Site, and none of the known or potential architectural resources in the study area are located within 90 feet of the Project Site. Hence, no such resources could be potentially physically affected during construction-period activities on the Project Site. There are three known architectural resources and three potential architectural resources within and immediately adjacent to the study area. The Proposed Project would not isolate any architectural resource from its setting or visual relationship with the streetscape, or otherwise adversely alter a historic property's setting or visual prominence. The proposed building would be of a comparable height, bulk, and footprint to other structures in the surrounding area and the proposed institutional/community facility use of the building is comparable to the use of many of the historic buildings in the study area.

The Proposed Project would not introduce incompatible visual, audible, or atmospheric elements to a resource's setting and would not eliminate or screen significant publicly-accessible views of any architectural resource. The Proposed Project would also not cast any incremental shadows on the stained-glass windows of Trinity Lutheran Church or the Holy Name of Jesus Church. While incremental shadows would be cast on a small portion of the windows of St. Michael's Church, the shadows would be too limited in duration and size to adversely affect this sun-sensitive feature of the architectural resource. The proposed development could potentially be visible from the two potential architectural resources facing Amsterdam Avenue, and the upper floors of the development could potentially be visible from the sidewalks adjacent to the other known and potential resources in the study area. This potential limited visibility would not be anticipated to adversely affect these resources, as they have limited visual relationships with the Project Site, and the height and bulk of the Proposed Project would be comparable to other modern structures in the surrounding area. Additionally, the Proposed Project would not obstruct significant views of any architectural resource or adversely alter the visual setting of any architectural resources in the study area.

This analysis concludes that the Proposed Project would not result in any significant adverse impacts to historic or cultural resources on the Project Site or in the study area.

Chapter 5. Hazardous Materials

Introduction

This chapter assesses the potential presence for subsurface (i.e., soil and groundwater) contamination at the Project Site and the potential presence of hazardous materials in current (or debris from former) site structures that could be affected by the construction and operation of the Proposed Project. The potential for impacts related to hazardous materials can generally occur when elevated levels of hazardous materials (i.e., above guidance values) exist on a site and an action would create pathways (particularly during construction) for exposure, to either humans or the environment; or when an action would introduce new activities or processes using hazardous materials and the risk of human or environmental exposure would be increased.

Past uses and regulatory history at (and near to) a property are often good indicators of potential contaminants that may be present. Hazardous materials include any substance posing a threat to human health or to the environment. Such substances include, but are not limited to: metals (including lead); volatile organic compounds ("VOCs"), commonly found in petroleum products and solvents; semi-volatile organic compounds ("SVOCs"), typically associated with fuel oil, coal, and ash; polychlorinated biphenyls ("PCBs"), usually associated with transformers and utilities; and pesticides (typically associated with past use of pest control products). Hazardous materials also include substances used in building materials and fixtures, such as asbestos-containing materials ("ACM"), lead-based paint ("LBP"), and mercury ("Hg"). The presence of hazardous materials does not necessarily indicate a threat to human health and/or the environment. For a threat to exist there must also be both an exposure pathway to a receptor, and an unacceptable dose. The most likely routes of human exposure from the hazardous materials evaluated would occur during construction and would include the inhalation of VOCs, the ingestion of particulate matter containing SVOCs or metals, or dermal (skin) contact with hazardous materials that can be released during soil-disturbing activities, such as excavation of soil and extraction of groundwater. The Proposed Project would require excavation to approximately 20 feet below grade over most of the Project Site for the construction of the new building's cellar and foundations, as well as shallower disturbance for new paved and landscaped outdoor areas. Construction methods and sequencing that would be involved with the Proposed Project, as well as measures to avoid significant impacts that could result from construction of the Proposed Project, are discussed further in Chapter 13, "Construction."

Additionally, the operation of the new nursing-care facility would use a variety of chemical products related to day-to-day functions and would produce regulated medical waste ("RMW"). Management of RMW would be undertaken in compliance with applicable federal and state regulatory requirements, including those related to generator permits, storage, signage, employee training, recordkeeping and reporting, and off-site transportation/disposal.

Methodology

Phase I Environmental Site Assessment. The Project Site generally serves as the hazardous materials study area, but as discussed below the potential for nearby sites to have affected the Project Site is also evaluated. The potential for hazardous materials effects was based on a *Phase I Environmental Site Assessment ("ESA")*[1] prepared by Ethan C. Eldon Associates, Inc. in May 2011. An updated regulatory database evaluation was undertaken by AKRF, Inc. in January 2014 and a *Subsurface (Phase II) Investigation* was performed in September 2013 by AKRF, Inc.[2] The Phase II investigation was conducted in agreement with a work plan approved by the New York State Department of Health ("NYSDOH"). Note that potential exposure to lead ("Pb") is addressed both in this chapter and in Chapter 11, "Public Health."

The *Phase I ESA* was performed in accordance with the American Society for Testing and Materials ("ASTM") *Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process* (E 1527-05). The purpose of the *Phase I ESA* was to evaluate, to the extent feasible, the presence or potential presence of recognized environmental conditions ("RECs") that may require further investigation or mitigation.[3] The *Phase I ESA* consisted of the following activities:

- A visual inspection of the Project Site (and to the extent practical, adjacent properties) to identify obvious signs of potential environmental concern such as the current/past presence of underground or aboveground storage tanks, on-site hazardous material storage or disposal practices, PCB-containing transformers or capacitors, and any other obvious signs of use, storage, or disposal of hazardous/toxic materials;
- The identification of the current and/or past presence of potential waste disposal structures such as septic systems, dry wells, and groundwater wells;
- An assessment of possible adverse environmental conditions associated with current and/or past uses at or near the Project Site;
- A review of historical development and land use at and in the vicinity of the Project Site and an assessment of any possible adverse environmental conditions which may have resulted;

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[1] Phase I Environmental Site Assessment, Block 1852, Lot 5 (125 West 97 th Street, Manhattan, New York 10025), May 24, 2011. Prepared for: Jewish Home Lifecare, 120 West 106th Street, New York, New York 10025. Ethan C. Eldon Associates, 1350 Broadway Suite 612, New York, New York 10018

[2] Subsurface (Phase II) Investigation, October 2013, Jewish Home Lifecare – 125 West 97th Street, New York, New York. Prepared for: Greenberg Traurig, LLP, Metlife Building, 200 Park Avenue, New York, New York 10166. Prepared by:AKRF, Inc., 440 Park Avenue South, New York, New York 10016.

[3] A REC is defined by ASTM as "the presence or likely presence of any hazardous substances or petroleum products on a property under conditions that indicate an existing release, a past release, or a material threat of a release of any hazardous substances or petroleum products into structures on the property or into the ground, groundwater, or surface water of the property." A REC does not include *de minimis* conditions, which ASTM defines as "conditions that generally do not present a material risk of harm to public health or the environment and that generally would not be the subject of an enforcement action if brought to the attention of appropriate governmental agencies."

- A review of available federal, state, and local agency records for the purpose of identifying any history of hazardous waste activity or environmental concerns at or in close proximity to the Project Site;
- A literature review of the geology and groundwater conditions in the area of the Project Site; and
- Interviews with facility management personnel to inquire about the use, storage or disposal of hazardous materials.

Subsurface (Phase II) Investigation

A Phase II Investigation consists of the collection (typically using a drill rig) of multiple subsurface (typically soil and groundwater) samples from a variety of locations and depths at a property. These samples are then analyzed by a state-certified environmental laboratory for a suite of classes of elements and compounds (typically the VOCs, SVOCs, metals, PCBs and pesticides discussed in the Introduction of this Chapter). The results of these analyses are then compared to a variety of federal/state standards and guidelines.

Existing Conditions

Subsurface Conditions. The Project Site is approximately 90 feet above sea level, with topography sloping slightly down toward the west. Based on the borings conducted as part of the Phase II Investigation, the primarily paved Project Site is underlain by an approximately 10- to 20-foot-thick layer of urban fill materials (including sand, gravel, silt, coal, brick, ash, and/or slag). Refusal on apparent bedrock was encountered 12 to 20 feet below grade.

Groundwater was first encountered at approximately 11 to 18 feet below grade and would be expected to flow in an approximately westerly direction toward the Hudson River, approximately one-half mile away. However, actual groundwater flow may be affected by various factors such as utilities, basements, subway tunnels, and bedrock geology. Groundwater in Manhattan is not used as a source of potable water.

Hazardous Materials Assessment. The Phase I ESA identified that the Project Site once included rowhouses and tenements, which were demolished by the 1960s. A closed-status (i.e., cleaned up) petroleum spill with an address matching that of the Project Site was noted, but it related to a Con Edison manhole located off site within the West 97th Street roadway, and was in any event unlikely to have resulted in subsurface contamination based on the listing details. A spill of №. 6 fuel oil (Spill №. 9702659) was reported at 784 Columbus Avenue, the east-adjacent property, in May 1997. This spill, which reportedly involved subsurface contamination, was given a closed status by the New York State Department of Environmental Conservation ("NYSDEC") in July 2005. The updated regulatory database review in January 2014 identified the active-status, on-site spill (Spill №. 1306324) discussed below, but no other significant changes from the findings of the May 2011 Phase I ESA.

The Phase II investigation included the collection of soil and groundwater samples from 8 borings advanced up to 20 feet below grade, and soil samples from 6 on-site tree pits, for laboratory analysis. Urban fill materials (sand, gravel, silt, coal, brick, ash, and/or slag) were encountered throughout the borings. Laboratory analytical data indicated the following (see Section 5 of the Subsurface (Phase II) Investigation report for more detail):

- In general, AKRF concluded, based on their experience at numerous NYC properties that the detected levels of metals and compounds in soil (and groundwater) samples were consistent with those typically found in the kinds of fill material encountered in the borings, which included brick and other building materials. Several VOCs, SVOCs, metals, and pesticides were detected in exceedance of conservative NYSDEC Subpart 375 Unrestricted Use Soil Cleanup Objectives ("USCOs"), which assume long-term exposure to unpaved soils. In particular, the VOCs benzene, ethylbenzene, m&p-xylene, and o-xylene were detected in soil sample WC-7 bottom at concentrations ranging from 120 to 9,700 micrograms per kilogram (µg/kg), all of which exceeded USCOs but were below Restricted Residential Use Soil Cleanup Objectives ("RRSCOs"). The RRSCOs are a more appropriate (but still highly conservative) comparison as they assume multifamily residences with some potential for soil contact. (In reality, long-term exposure to existing soils does not currently occur and would not occur with the anticipated use of the Project Site in which all existing soil not removed by excavation would be beneath a building, paving or new imported soils used for landscaping).
- Only certain SVOCs — (benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, chrysene, dibenz(a,h)anthracene, and ideno(1,2,3-cd)pyrene) and metals (arsenic, barium, lead, and mercury) — exceeded the RRSCOs. In particular, lead levels in 3 of the 38 soil samples exceeded 1,000 parts per million ("ppm") with a maximum of 3,850 ppm, but the overall average lead level was 290 ppm. The average lead level in the samples from the top 6 inches of tree pits was 304 ppm (maximum 681 ppm). These findings do not indicate a "soil-lead hazard" defined by the USEPA at 40 *Code of Federal Regulations ("CFR")* 745.65(c) as, *"bare soil on residential real property or on the property of a child-occupied facility that contains total lead equal to or exceeding 400 parts per million in a play area or average of 1,200 parts per million of bare soil in the rest of the yard based on soil samples."* Additional information on lead and the potential for exposure to lead is in Chapter 11, "Public Health."
- The barium level in one sample (132 milligrams per liter ["mg/L"]) collected beneath the paving, analyzed by the toxicity characteristic leaching procedure ("TCLP"), exceeded the USEPA Hazardous Waste threshold (100 mg/L). Bricks, paint, tiles, glass, and rubber can contain elevated levels of barium and the detected levels are likely associated with existing urban fill material. Soils exceeding TCLP thresholds require special handling/transport/disposal if they are excavated. No other soil samples exceeded USEPA hazardous waste criteria.

Field screening (including staining, petroleum-like odors and photoionization detector instrument readings) and laboratory data suggested petroleum-contaminated soil was present between approximately 5 and 15 feet below grade in the southeast corner of the Project Site. This most likely related to a historical (i.e., removed) petroleum tank once present at one of the former Project Site buildings. Based on these observations and laboratory analytical data, Spill №. 1306324 was reported to NYSDEC on September 16, 2013. The spill is believed to be isolated in this small part of the Project Site, based on the absence of similar signs of contamination in additional borings conducted nearby. The observed contamination is not likely attributable to off-site Spill №. 9702659 (as this spill involved №. 6 fuel oil which typically contains very low levels of VOCs and because the contamination was seemingly encountered at such a shallow depth, above the water table), but more likely associated with an on-site source, such as a fuel oil storage tank once present in one of the former site buildings. Based on the field observations and laboratory data, Spill №. 1306324 was reported to the NYSDEC.

Future Without the Proposed Project

In the Future Without the Proposed Project, the Project Site would continue in its current uses. Since a spill has been reported to NYSDEC, the current or any future site owner would be subject to any NYSDEC requirements to further investigate and/or remediate the spill area.

Probable Impacts of the Proposed Project

The future with the Proposed Project would involve subsurface disturbance for the construction of the proposed new building and outdoor improvements. Soil that would be disturbed by the Proposed Project includes widespread historical fill materials, limited petroleum-contaminated soil (in the southeastern corner of the Project Site), for which Spill №. 1306324 has been reported to NYSDEC, and some soil exceeding the hazardous waste threshold for barium (“Ba”) content. The Proposed Project would disturb these materials, potentially increasing pathways for human exposure. However, impacts would be avoided by implementing the following measures as a part of construction of the Proposed Project:

- A NYSDOH-approved Remedial Action Plan (“RAP”) and associated Construction Health and Safety Plan (“CHASP”) would be prepared for implementation during the subsurface disturbance associated with the Proposed Project. The RAP would address requirements for the identified petroleum contamination, barium soils and historical fill material as well as soil stockpiling, soil disposal and transportation; dust control; quality assurance; and contingency measures, should petroleum storage tanks or additional contamination be encountered. The RAP would include the requirement for a vapor barrier surrounding the new building’s cellar slab and sidewalls to prevent vapor intrusion. The RAP would also require a cap of clean imported soil in areas not covered by buildings or paving. The CHASP would identify potential hazards that may be encountered during construction and specify appropriate health and safety measures to be undertaken to ensure that subsurface disturbance is performed in a manner protective of workers, the community, and the environment (such as dust control, personal protective equipment for construction workers, dust and VOCs monitoring, and emergency response procedures). The CHASP would include the requirements for implementation of a Community Air Monitoring Plan ("CAMP") and Fugitive Dust and Particulate Monitoring in accordance with the requirements set out in the May 2010 NYSDEC DER-10 Appendices 1A and 1B during soil disturbance.

- During subsurface disturbance, excavated soil would be handled and disposed of in accordance with applicable regulatory requirements (e.g., NYSDEC Part 360 regulations for Solid Waste Management Facilities and Parts 370-374 for hazardous wastes and federal requirements 49 *CFR* Parts 170-180 for transporting hazardous materials) and the requirements of the receiving facility, which may well be in another state — e.g., *New Jersey Adminstrative Code ("N.J.A.C.")* 7:26 Solid Waste Regulations.
- Spill №. 1306324 would be remediated in accordance with NYSDEC requirements sufficient to close the spill. If any petroleum storage tanks are encountered, they would be properly closed and removed along with any associated contaminated soil. If applicable, additional spill reporting and tank registration would be performed.
- If dewatering is required, it would be performed in accordance with New York City Department of Environmental Protection ("NYCDEP") sewer use requirements. These requirements require testing to ensure contaminated groundwater is treated before it can be discharged to the sewer system. Although the data from the Phase II investigation suggests treatment would not be necessary, since dewatering can draw water from off-site areas, additional testing would be required as a part of the NYCDEP approval process. Were treatment to be required (such as settling or carbon filtration), it would be in enclosed containers with any residuals disposed off site in accordance with the same regulatory requirements as the excess soil.

Once operational, the Proposed Project would use a variety of chemical products related to day-to-day functions and would produce regulated medical waste ("RMW"). To ensure the safety of workers, residents, and the general public, management of RMW would be undertaken in compliance with applicable federal and state regulatory requirements, including those related to generator permits, storage, signage, employee training, recordkeeping and reporting, and off-site transportation/disposal.

Conclusions

The Proposed Project would involve subsurface disturbance for the construction of the proposed new building and outdoor improvements. Soil that would be disturbed by the Proposed Project includes widespread historical fill materials, limited petroleum-contaminated soil for which Spill №. 1306324 has been reported to NYSDEC, and some soil exceeding the hazardous waste threshold for barium content. The Proposed Project would disturb these materials, potentially increasing pathways for human exposure. However, impacts would be avoided by implementing a NYSDOH-approved RAP and associated CHASP during the subsurface disturbance associated with the Proposed Project. During subsurface disturbance, excavated soil would be handled and disposed of in accordance with applicable regulatory requirements and the requirements of the receiving facility, and Spill №. 1306324 would be remediated in accordance with NYSDEC requirements sufficient to close the spill. Finally, if dewatering is required, it would be performed in accordance with NYCDEP sewer use requirements. Although the data from the Phase II ESA subsurface investigation suggests treatment would not be necessary, since dewatering can draw water from off-site areas, additional testing would be required as a part of the NYCDEP approval process. If treatment would be required, it would be in enclosed containers with any residuals disposed off site in accordance with the same regulatory requirements as the excess soil. Once operational, the Proposed Project would use a variety of chemical products related to day-to-day functions and would produce RMW. To ensure the safety of workers, residents, and the general public, management of RMW would be undertaken in compliance with applicable federal and state regulatory requirements, including those related to generator permits, storage, signage, employee training, recordkeeping and reporting, and off-site transportation/disposal.

With the above measures in place during construction, significant adverse impacts related to hazardous materials would not be expected due to construction or operation of the Proposed Project.

Chapter 6. Water and Sewer Infrastructure

Introduction

This chapter evaluates the potential for the Proposed Project to result in significant adverse impacts on the city's water supply, as well as its wastewater and storm water conveyance and treatment infrastructure.

As described in Chapter 1, "Project Description," the Proposed Project would replace an existing, approximately 31,804-square-foot ("sf"), surface accessory parking lot with a new, 20-story, approximately 376,000-gross-square-foot ("gsf") building. Users of the existing surface parking lot would receive substitute nearby parking within the Park West Village ("PWV") complex (the property owner commenced construction of the relocated surface parking lot in March 2014). The new facility at 125 West 97th Street, in Manhattan's Upper West Side neighborhood, would include 414 beds in total. The Proposed Project would employ approximately 625 full-time-equivalent ("FTE") employees at the proposed facility.

Methodology

This analysis follows the methodologies set forth in the *CEQR Technical Manual*. According to the *CEQR Technical Manual*, a preliminary water analysis is needed if a project would result in an exceptionally large demand of water — over 1,000,000 gallons per day ("gpd") — or is located in an area that experiences low water pressure (i.e., at the end of the water supply distribution system such as the Rockaway Peninsula or Coney Island). The Project Site is not located in an area that experiences low water pressure and the Proposed Project would generate an incremental water demand of approximately 117,509 gpd as compared to the Future Without the Proposed Project (the "No-Build Condition"). While this would represent an increase in demand on the New York City water supply system, it does not meet the *CEQR Technical Manual* threshold requiring a detailed analysis. Therefore, an analysis of water supply is not warranted. It is expected that there would be adequate water service to meet the incremental water demand, and that there would be no significant adverse impacts on the city's water supply.

The *CEQR Technical Manual* indicates that a preliminary sewer analysis is warranted if a project site is over 5 acres and the proposed project would result in an increase of impervious surface; or if a project is located in a combined sewer area in Manhattan and would result in the incremental development of 1,000 residential units or 250,000 gsf of commercial, public facility and institution and/or community facility space. A preliminary analysis of the Proposed Project's effects on wastewater and storm water infrastructure is warranted because the Proposed Project is located in a combined sewer area and would exceed 250,000 gsf of community facility space in Manhattan.

For the preliminary infrastructure analysis, existing and future water demands and sanitary sewage generation are calculated based on use generation rates set by the *CEQR*

Technical Manual and industry standard generation rates. The New York City Department of Environmental Protection ("NYCDEP") Flow Volume Calculation Matrix is then used to calculate the overall combined sanitary sewage and storm water runoff volume discharged to the combined sewer system for four rainfall volume scenarios with varying durations. The ability of the city's sewer infrastructure to handle the anticipated demand from the Proposed Project is assessed by estimating existing sewage generation rates and then comparing these existing rates to the future with and without the Proposed Project, per *CEQR Technical Manual* methodology.

Existing Conditions

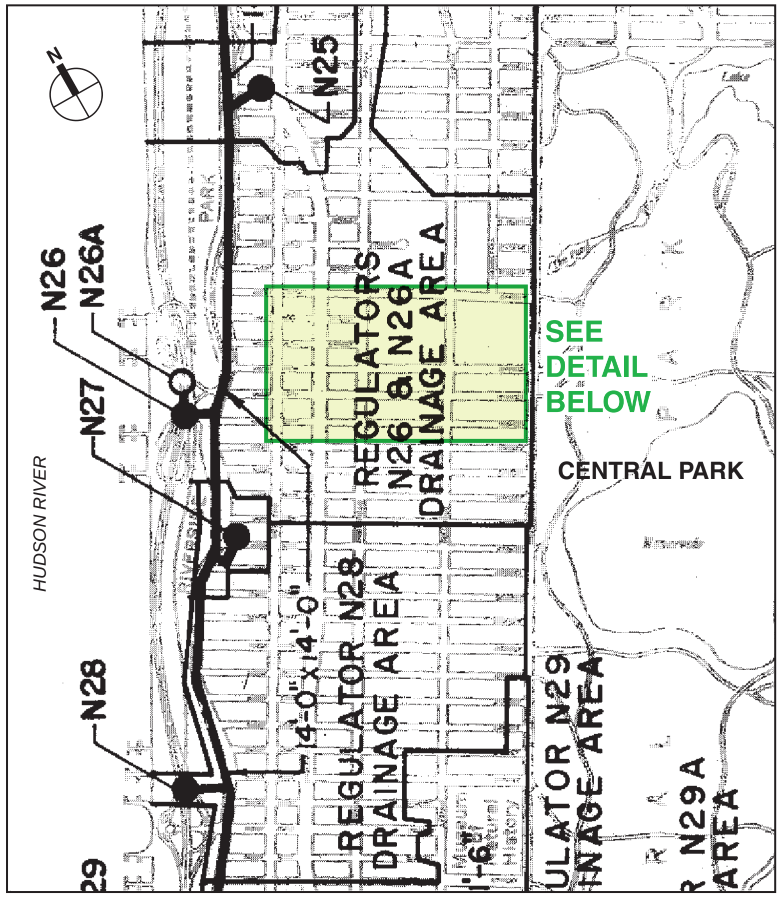
The Project Site is located in a part of New York City served by a combined sewer system that collects both sanitary sewage and storm water. In periods of dry weather, the combined sewers in the adjacent streets (which are sized to convey an amount of sanitary sewage that is based on zoning regulations) convey only sanitary sewage. Sanitary sewage from the Project Site is conveyed via a 25-inch combined sewer within West 97th Street, to a 42-inch sewer within Amsterdam Avenue, to an 86-inch diameter sewer main within West 96th Street. From there, sewage is conveyed to Regulators NR-N26 and NR-N26A located at the foot of West 96th Street. Regulators are structures that control the flow of sewage to interceptors, larger sewers that connect the combined sewer system to the city's sewage treatment system; the nearest interceptor to the Project Site runs under Riverside Drive (see Figure 6-1).

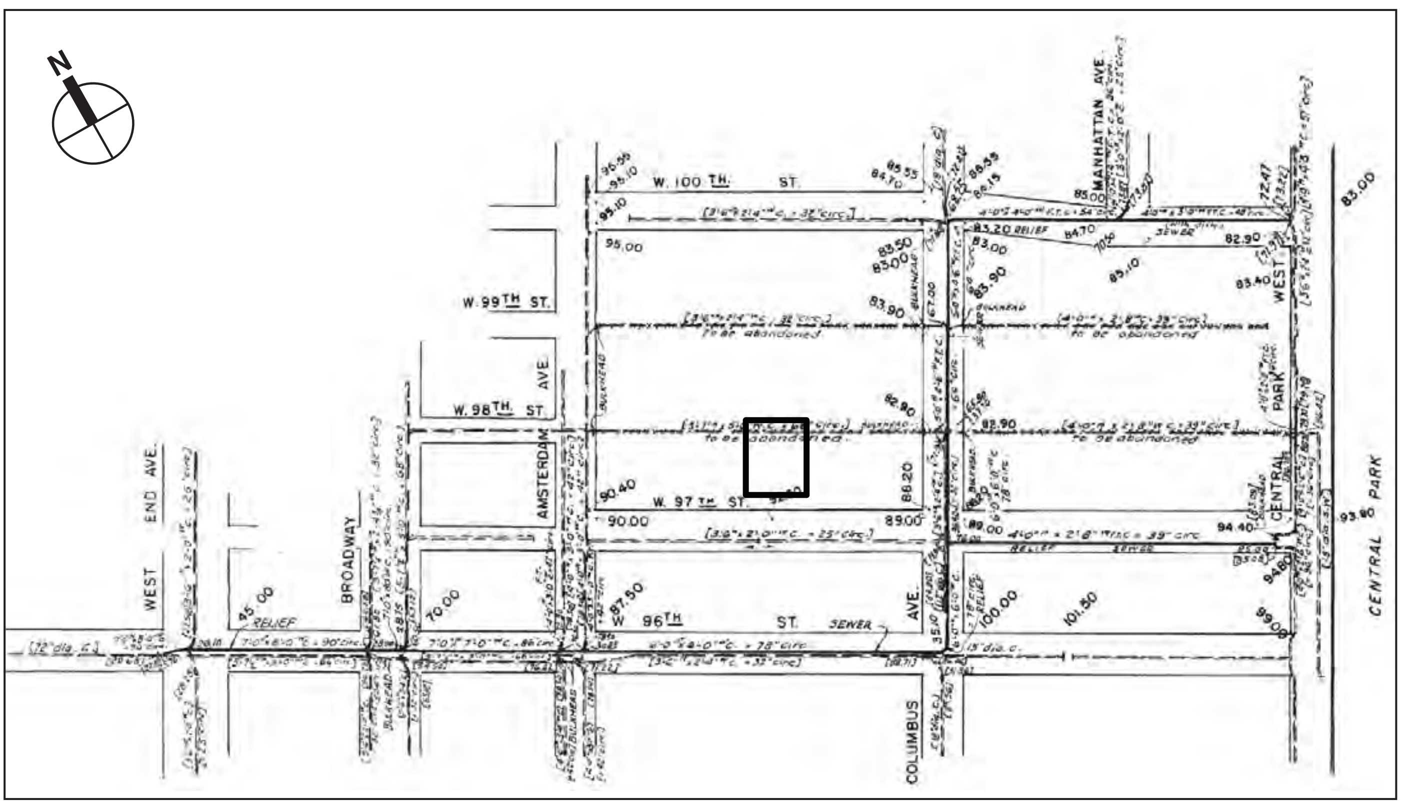
From there, flow is conveyed to the North River Wastewater Treatment Plant ("WWTP"). At the WWTP, wastewater is fully treated by physical and biological processes before it is discharged into the Hudson River. The quality of the treated wastewater ("effluent") is regulated by a State Pollutant Discharge Elimination System ("SPDES") permit issued by the New York State Department of Environmental Conservation ("NYSDEC"). The SPDES permit establishes limits for effluent parameters (i.e., suspended solids, fecal coliform bacteria, other pollutants). Since the volume of flow to a WWTP affects the level of treatment a plant can provide, the maximum permitted capacity for the North River WWTP is 170 million gallons per day ("mgd"). The average monthly flow over the past 12 months (October 2012 through September 2013) is 113 mgd, well below the maximum permitted level.

During and immediately after wet weather, combined sewers can experience a much larger flow due to storm water runoff collection. To control flooding at the North River WWTP the regulators built into the system to allow only approximately two times the amount of design dry weather flow into the interceptors. The interceptor then takes the allowable flow to the North River WWTP, while the excess flow is discharged to the nearest water body as combined sewer overflow ("CSO"). The Project Site falls within one CSO drainage area: in wet weather, sanitary flow and storm water runoff is conveyed to CSO outfall NR-040, located at the Hudson River at the foot of West 96th Street.

Sanitary Flows (Dry Weather). Since the Project Site comprises only a surface parking lot, it does not currently generate any sanitary sewage.

1.22.14





Project Site

0 400 FEET
SCALE

Sewers and Regulators in the Study Area

Figure 6-1

Storm Water Flows (Wet Weather). Table 6-1 describes the existing Project Site surface and surface area; the weighted runoff coefficient (the fraction of precipitation that becomes surface runoff) for each surface type is also listed. The Project Site totals approximately 31,804 sf, with surface area comprising exclusively pavement, since the Project Site is currently a parking lot. This means that during wet weather, 85 percent of precipitation falling on the Project Site runs off the site, directly to the combined sewer. Approximately 15 percent of stormwater permeates through the surface of the pavement (and cracks and gaps in the pavement) to the subsurface.

Table 6-1. Existing Surface Coverage by Affected Combined Sewer Overflow (CSO) Outfall and by Surface Type (Square Feet)

Affected CSO Outfall	Surface Type	Roof	Pavement	Other	Grass	TOTAL
NR-026	**Area** (percent)	0	100	0	0	**100**
	Surface Area (sq. ft.)[1]	0	31,804	0	0	**31,804**
	Runoff Coefficient	0.95	0.85	0.70	0.20	**0.85**

Note: Weighted Runoff Coefficient calculations based on the NYCDEP Flow Volume Calculation Matrix provided in the *CEQR Technical Manual*.
Source: AKRF, 2013

Future Without the Proposed Project

In the No-Build Condition, the Project Site would remain in its current state and continue to function as a parking area. JHL would maintain its existing 514 beds on the West 106th Street campus; sewage generated by the existing campus would continue to flow to the North River WWTP.

Probable Impacts of the Proposed Project

Table 6-2 shows the estimated water consumption and sewage generation under the Proposed Project. For purposes of analysis, the amount of sanitary sewage resulting from these uses is conservatively estimated as all water demand, except water used by air conditioning, since this water is typically not discharged to the sewer system.

The estimated amount of water supply demand by the Proposed Project would be approximately 117,509 gpd. The sanitary sewage generated from domestic water use (i.e., regular tap water use) on the Project Site would be approximately 53,587 gpd. This volume would represent approximately 0.05 percent of the average daily flow of 113 mgd at the North River WWTP, and would not result in an exceedance of the plant's permitted capacity, which is 170 mgd. In addition, this amount would not be a net new increase in sewer demand because JHL currently generates a comparable amount at its existing West 106th Street campus, where sewage is also conveyed to the North River WWTP. Therefore, the Proposed Project would not create a significant adverse impact on the city's sanitary sewage treatment system. In addition, per the New York City Plumbing Code (Local Law 33 of 2007), low-flow fixtures would be required to be implemented and would help to reduce sanitary flows.

Table 6-2. Water Consumption and Sewage Generation under Proposed Project by Use and by Consumption (Gallons per Day)

Use	Unit	Size (Square feet)	Rate	Consumption (gallons per day)
Patient beds[1] – Floors 4 through 19				
Domestic	414 beds	-	100 gpd/person	41,400
Air Conditioning	-	316,640	0.17 gpd/sf	53,829
Administrative, service and support, common areas[2] – Floors 1 through 3				
Domestic	-	59,370	0.10 gpd/sf	5,937
Air Conditioning	-	59,370	0.17 gpd/sf	10,093
Other – Facility employees				
Domestic	625 FTEs	-	10 gpd/person	6,250
			Total water supply demand	**117,509**
			Total sewage generation	**53,587**

Note: (1) Calculation uses *CEQR Technical Manual* rates for residential use. This represents a conservative assumption for long term and short term care patients.
(2) Calculation uses *CEQR Technical Manual* rates for commercial/office use
Source: Rates from *CEQR Technical Manual* (2012 Edition, Revised June 5, 2013); AKRF, 2013.

Storm Water Flows. As a result of the Proposed Project, the weighted runoff coefficient of CSO outfall subcatchment area NR-026 would increase slightly, from 0.85 to 0.93, since a large portion of the Project Site would be covered by impervious building rooftop (see Table 6-3 for incremental changes to the weighted runoff coefficients).

Table 6-3. Proposed Surface Coverage by Affected Combined Sewer Overflow (CSO) Outfall and by Surface Type (Square Feet)

Affected CSO Outfall	Surface Type	Roof[1]	Pavement	Other	Grass	TOTAL
NR-026	**Area** (percent)	90	7	0	3	**100**
	Surface Area (sq. ft.)[1]	28,774	2,300	0	730	**31,804**
	Runoff Coefficient	0.95	0.85	0.70	0.20	**0.93**

Notes: Weighted Runoff Coefficient calculations based on the NYCDEP Flow Volume Calculation Matrix provided in the 2012 *CEQR Technical Manual*.
(1) Roof surface area includes roof overhang over the ground floor garden terrace
Source: AKRF, 2013

Using these sanitary and storm water flow calculations, the NYCDEP Flow Volume Calculation Matrix was completed for the existing conditions, the No-Build Condition, and the Future With the Proposed Project (the “Build Condition”). As the Project Site would remain in its current state in the No-Build Condition, no additional flow volume would be generated, and the No-Build Condition would have the same flow volume as existing conditions. The calculations from the Flow Volume Calculation Matrix help to determine the change in peak wastewater flow volumes to the combined sewer system from existing/No-Build to Build Conditions during various rainfall scenarios chosen by NYCDEP. The summary tables, taken from the NYCDEP Flow Volume Calculation Matrix, are included in Table 6-4.

Table 6-4. NYCDEP Flow Volume Matrix: Existing, No-Build and Build Volume Comparison

Rainfall Volume (in.)	Rainfall Duration (hr.)	Runoff Volume Direct Drainage (MG)	Runoff Volume To CSS** (MG)	Sanitary Volume To CSS (MG)	Total Volume To CSS (MG)	Runoff Volume Direct Drainage (MG)	Runoff Volume To CSS** (MG)	Sanitary Volume To CSS (MG)	Total Volume To CSS (MG)	Increased Total Volume to CSS** (MG)	Percentage Increase From Existing Conditions (%)
NR-026		Existing / No Build 31,804 / 0.73 Acres				Build 31,804 / 0.73 Acres				**NR-026 Increment**	
0.00	3.80	0.00	0.00	0.00	**0.00**	0.00	0.00	0.01	**0.01**	0.01	*
0.40	3.80	0.00	0.01	0.00	**0.01**	0.00	0.01	0.01	**0.02**	0.01	135%
1.20	11.30	0.00	0.02	0.00	**0.02**	0.00	0.02	0.03	**0.05**	0.03	134%
2.50	19.50	0.00	0.04	0.00	**0.04**	0.00	0.05	0.04	**0.09**	**0.05**	**112%**

Notes:
* Percent increase computed for rainfall events only.
** Assumes no on-site detention/Best Management Practices ("BMPs") for purposes of calculations
CSS = Combined Sewer System; MG = Million Gallons

As noted previously, sanitary sewage generated from domestic water use (i.e., regular tap water use) on the Project Site would be approximately 53,587 gpd; therefore, a large portion of the percentage increases shown in Table 6-4 is due to the addition of sanitary flow, since the Proposed Project would add sanitary flow to a site where no flow is currently generated. In the future with the Proposed Project, the amount of completely impervious surface on the site would also increase, since a large portion of the Project Site would be covered with completely impervious roof surface (approximately 90 percent), instead of partly pervious pavement (7 percent), whereas in the existing condition and under the No-Build Condition, 100 percent of the site would be covered with partly pervious pavement. Consequently, under the most extreme rainfall scenario analyzed in the NYCDEP Flow Volume Calculation Matrix, nearly 50,000 gallons of storm water would be generated on the Project Site, as compared to the existing and No-Build conditions.

However, the Flow Volume Matrix calculations do not reflect the use of any sanitary and storm water source control best management practices ("BMPs") to reduce sanitary and storm water runoff volumes to the combined sewer system. As noted in the *CEQR Technical Manual*, if NYCDEP-approved BMPs are incorporated into the project design, further detailed analysis of the Proposed Project's potential impacts on the sewer system is not warranted. As the BMPs described below would be required as a part of the NYCDEP site-connection approval process, no further detailed analysis of the Proposed Project is conducted in this EIS.

In addition to required measures to reduce water consumption and sanitary sewer discharges (such as low-flow fixtures), the Proposed Project would incorporate BMPs designed to control storm water runoff from the Project Site. For the Proposed Project, such measures are anticipated to include controlled drainage on the roof and first floor garden levels and plantings throughout the Project Site. With the incorporation of these BMPs, the overall volume of sanitary sewer discharge and storm water runoff, and the peak storm-water-runoff rate would be reduced to allowable flow requirements.[1] As sewer conveyance near the Project Site and wastewater treatment capacity at the North River WWTP is sufficient to handle wastewater flow that would result from the Proposed Project, there would not be any significant adverse impacts on wastewater treatment or storm water conveyance infrastructure.

Conclusions

The estimated amount of water supply demand by the Proposed Project and the sanitary sewage generated from domestic water use on the Project Site would represent approximately 0.05 percent of the average daily flow at the North River WWTP, and would not result in an exceedance of the plant's permitted capacity. In addition, volume of water supply demand and generated sanitary sewage would not be a net new increase in sewer demand because JHL currently generates a comparable amount at its existing West 106th Street campus, where sewage is also conveyed to the WWTP. Therefore, the Proposed Project would not create a significant adverse impact on the city's sanitary sewage treatment system.

As a result of the change in impervious surface that would result from the Proposed Project, the weighted runoff coefficient of CSO outfall subcatchment area NR-026 would increase slightly. Therefore, under the most extreme rainfall scenario, nearly 50,000 gallons of stormwater would be generated on the Project Site, as compared to the existing and No-Build Conditions. To offset this increase, in addition to required measures to reduce water consumption and sanitary sewer discharges, the Proposed Project would incorporate BMPs — such as controlled drainage on the roof and first floor garden levels and plantings throughout the Project Site — designed to control storm water runoff from the Project Site. With the BMPs, the overall volume of sanitary sewer discharge and storm water runoff, and the peak storm water runoff rate would be reduced to allowable flow requirements.

Overall, the analysis concludes that the Proposed Project would not result in significant adverse impacts on the city's water supply, or on its wastewater and storm water conveyance and treatment infrastructure.

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[1] NYCDEP's storm water performance standards require that the release rate of storm water flow from a project site be no more than the greater of 0.25 cubic feet per second ("cfs") of the drainage plan allowable flow or 10 percent of the allowable flow or, if the allowable flow is less than 0.25 cfs, no more than the allowable flow.

Chapter 7. Transportation

Introduction

Although a detailed analysis is not warranted based on *CEQR Technical Manual* threshold criteria, following *CEQR* guidelines, a detailed transportation analysis is being performed as congestion has been noted along West 97th Street between Amsterdam and Columbus Avenues. This chapter examines the potential traffic, parking, transit, and pedestrian impacts, and assesses the potential vehicular and pedestrian safety issues associated with the Proposed Project in Manhattan. The Proposed Project would result in the relocation of the existing Jewish Home Lifecare ("JHL") facility from 120 West 106th Street to a new LEED-certified replacement facility on the Project Site, located at 125 West 97th Street between Columbus Avenue and Amsterdam Avenue. The development site is located on a superblock bounded by Amsterdam Avenue to the west, Columbus Avenue to the east, West 100th Street to the north, and West 97th Street to the south. The specific location of the Proposed Project on the site is currently a surface parking lot with 88 parking spaces used by the residents of 784 Columbus Avenue. Users of the existing surface parking lot would receive substitute nearby parking within the Park West Village ("PWV") complex (the property owner commenced construction of the relocated surface parking lot in March 2014). The Proposed Project is a nursing home with 414 beds for residents and 625 FTE staff.

Vehicular access to the Project Site would be along West 97th Street via an existing curb cut at Park West Drive. A turnaround located at the rear of the building would serve as a pick-up/drop-off zone. Truck access to the loading docks would be provided via West 97th Street. Pedestrian access to the Project Site would be along West 97th Street. The Project Site plan is provided on Figure 7-1.

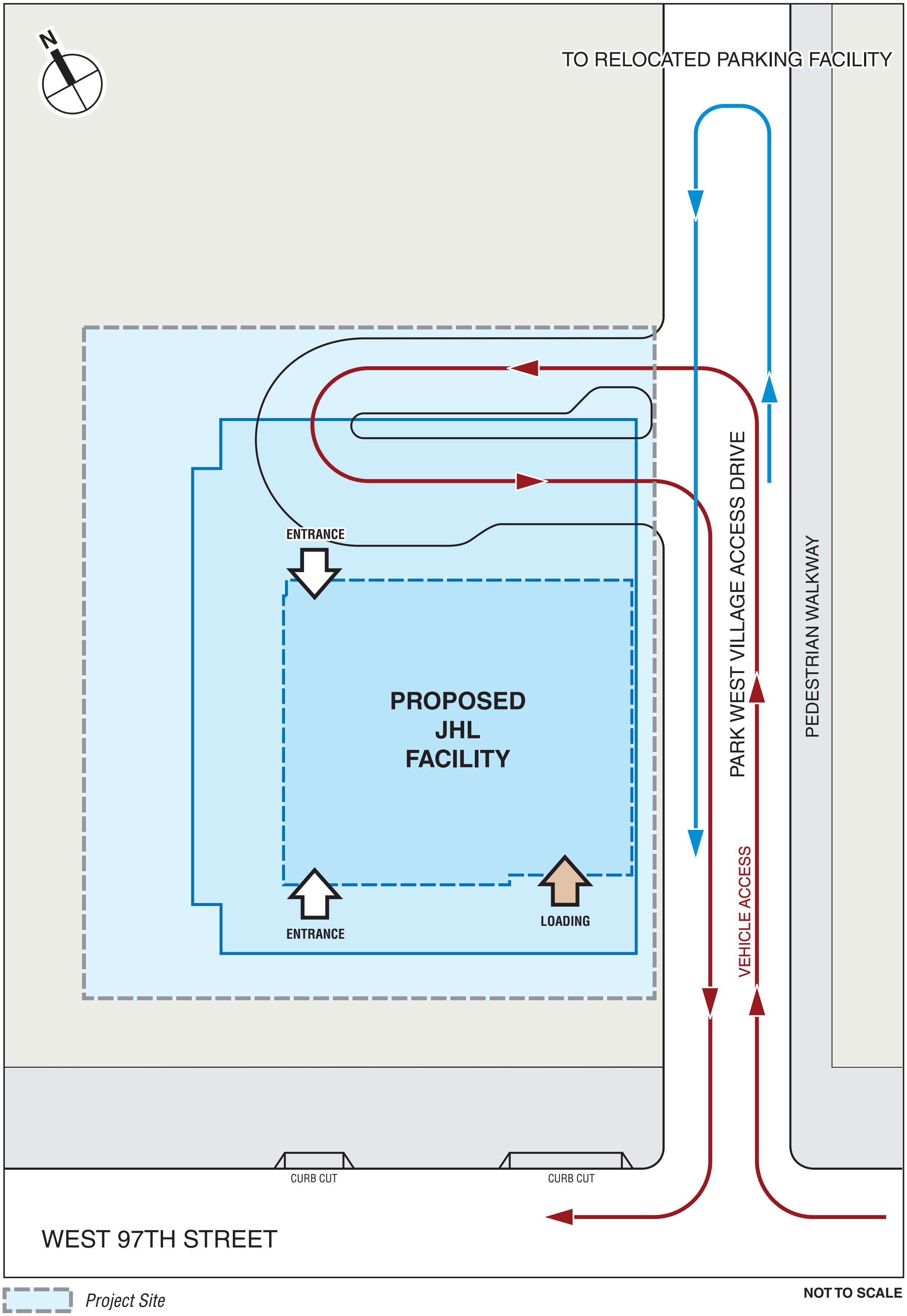
Three peak hours were considered for the transportation analysis: Weekday a.m. (8:00 a.m. to 9:00 a.m.), Weekday midday (2:45 p.m. to 3:45 p.m.), and Weekday p.m. (5:45 p.m. to 6:45 p.m.). The study area for the transportation analysis consists of the two signalized intersections on West 97th Street located closest to the development site.

Screening Methodology

Transportation impact analysis methodologies for projects in New York City are defined in the *CEQR Technical Manual*. The first step of the transportation screening analysis is the calculation of the trip generation and trip assignment, which are based on the location, size, and land uses of the Proposed Project.

Traffic. According to the criteria specified in the *CEQR Technical Manual*, traffic analyses are generally required at intersections where more than 50 new vehicle trips would be generated by a project during an individual peak hour based on the results of the vehicle trip assignment. Although the Proposed Project would not exceed this threshold during any critical peak hours, detailed intersection analyses were conducted for the following peak hours:

3.6.14



Proposed Site Access Plan

Figure 7-1

- Weekday a.m. peak hour: 8:00 a.m. to 9:00 a.m.
- Weekday midday peak hour: 2:45 p.m. to 3:45 p.m.
- Weekday p.m. peak hour: 5:45 p.m. to 6:45 p.m.

Transit. The transit criteria specified in the *CEQR Technical Manual* and thresholds used by New York City Metropolitan Transportation Authority ("MTA") agencies were used to determine which subway and bus routes in the study area would be analyzed. According to the criteria for subways, if the Proposed Project is projected to result in fewer than 200 peak-hour subway passengers assigned to a single subway station or on a single subway line, then further transit analyses for subways are not required, as the Proposed Project is considered unlikely to create a significant subway transit impact. According to the criteria for buses, if the Proposed Project is projected to result in fewer than 50 bus passengers assigned to a single bus line (in one direction), further transit analyses are not typically required, as the Proposed Project is considered unlikely to create a significant bus transit impact.

Subway Transit. The №. 1, №. 2 and №. 3 subway lines operate along Broadway with a station stop at West 96th Street. The B and C subway lines operate along Central Park West, also with a stop at West 96th Street. Both subway stations are approximately one-quarter mile from the Project Site. However, it has been determined that the subway trips generated by the Proposed Project would not exceed the 200 peak-hour subway passenger threshold. Therefore, subway transit analyses were not conducted for any peak period.

Bus Transit. The M7 and M11 bus routes operate northbound along Amsterdam Avenue and southbound along Columbus Avenue, respectively. The M96 and M106 operate along West 96th Street. Bus stops for each bus route are located within one-quarter mile of the Project Site. However, it has been determined that the bus trips generated by the Proposed Project would not exceed the 50 peak-hour bus passenger threshold. Therefore, bus transit analyses were not conducted for any peak period.

Pedestrians. Based on criteria specified in the *CEQR Technical Manual*, projected pedestrian volume increases of more than 200 pedestrians per hour at any sidewalk, crosswalk, or intersection corner would be considered a location with the potential for significant impacts and would require a detailed analysis. The Proposed Project would generate fewer than 200 pedestrians per hour during each of the 3 peak hours. Therefore, detailed pedestrian analyses were not conducted for any peak period.

Parking Conditions. A parking analysis identifies the extent to which on-street and off-street parking is available and utilized under existing, Future Without the Proposed Project ("No-Build"), and Build Conditions. Based on the trip generation data, it has been determined that a detailed parking analysis is warranted. Typically, this analysis encompasses a study area within one-quarter mile of the Project Site. If the analysis produces a shortfall in parking in the one-quarter-mile study area, the study area could be extended to one-half mile to identify additional parking supply. A detailed analysis of parking in the one-quarter-mile radius from the study area and a detailed on-site parking accumulation analysis have been prepared for the Proposed Project.

Vehicular and Pedestrian Safety Assessment. An evaluation of traffic safety is necessary for locations within the study area that have been identified as high-accident locations as specified in the *CEQR Technical Manual*. These locations are defined as those with more than 48 total reportable and nonreportable crashes or 5 or more pedestrian/bicycle injury crashes that occur during any consecutive 12 months of the most recent 3-year period for which data is available. Crash histories are reviewed to determine whether projected vehicular and pedestrian traffic would further impact safety at these locations or whether existing unsafe conditions could adversely impact the flow of the projected new vehicular or pedestrian/bicycle trips.

Study Area

To assess the potential transportation impacts associated with the Proposed Project, the study area was defined based on principal access routes to and from the Project Site, traffic conditions in the surrounding area, and key intersections likely to be affected by project-generated trips. In total, two signalized intersections were selected for the traffic analysis. The safety assessment was conducted for both study locations; the geographic locations of these intersections are depicted in Figure 7-2.

Study Area Intersections and Roadway Characteristics. The Project Site is located on West 97th Street between Columbus and Amsterdam Avenues in Manhattan. As shown on Figure 7-2, the study area consists of two signalized intersections:

1. West 97th Street and Amsterdam Avenue
2. West 97th Street and Columbus Avenue

The physical and operational characteristics of the major roadways in the study area are as follows:

- West 97th Street is an east-west roadway that operates westbound across Manhattan, through Central Park. Between Central Park West and Amsterdam Avenue, West 97th Street operates with two travel lanes, and narrows to one travel lane west of Amsterdam Avenue. There is parallel on-street curbside parking on both sides of the street except between Central Park West and Columbus Avenue, where there is angled on-street parking.
- Amsterdam Avenue is a north-south roadway that operates northbound within Manhattan between West 191st Street and West 58th Street. In the study area, Amsterdam Avenue operates with on-street parking on both sides of the street and four travel lanes.
- Columbus Avenue is a north-south roadway that operates southbound within Manhattan between West 110th Street and West 58th Street. In the study area, Columbus Avenue operates with 2 on-street parking lanes, 3 travel lanes, and a protected bike lane.

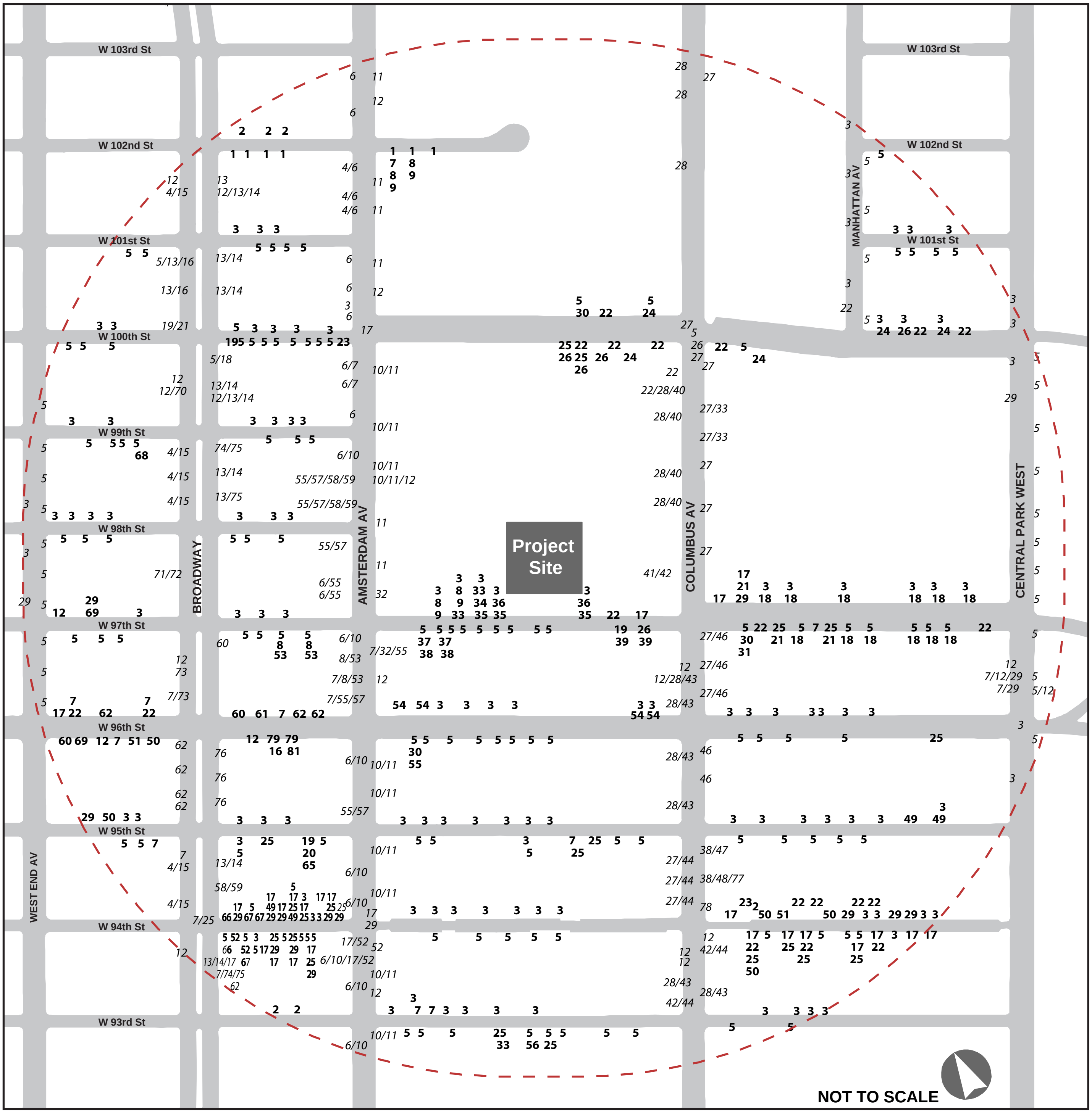
Parking Supply and Inventory. Existing study area parking conditions for on-street and off-street parking were evaluated through site visits. On-street parking regulations are shown on Figures 7-3a and 7-3b. Parking utilization surveys were conducted for on-street and off-street

1 West 97th Street at Amsterdam Avenue

2 West 97th Street at Columbus Avenue

Study Area Intersections

Figure 7-2



1/4 mile radius

23 On Street Parking Regulation (East-West Street)

23 On Street Parking Regulation (North-South Street)

1 NO PARKING (SANITATION BROOM SYMBOL) 9:30 a.m. TO 11:00 a.m. TUES & FRI <---->

2 NO PARKING (SANITATION BROOM SYMBOL) 9:30 a.m. TO 11:00 a.m. MON & THURS <--->

3 NO PARKING (SANITATION BROOM SYMBOL) 11:30 a.m. TO 1:00 p.m. MON & THURS <---->

4 NO PARKING (SANITATION BROOM SYMBOL) 8:00 a.m. TO 8:30 a.m. EXCEPT SUN <---->

5 NO PARKING (SANITATION BROOM SYMBOL) 11:30 a.m. TO 1:00 p.m. TUES & FRI <---->

6 NO PARKING (SANITATION BROOM SYMBOL) 8:30 a.m. TO 11:00 a.m. TUES THURS SAT <---->

7 NO PARKING ANYTIME (SINGLE ARROW)

8 NO PARKING 7:00 a.m. TO 4:00 p.m. SCHOOL DAYS W/SINGLE ARROW

9 DEPARTMENT OF EDUCATION (DOE)

10 1 HR MUNI-METER PARKING 9:00 a.m. TO 11:00 p.m. EXCEPT SUNDAY <---->

11 NO PARKING (SANITATION BROOM SYMBOL) 8:30 a.m. TO 11:00 a.m. MON WED FRI <---->

12 BUS STOP SIGN (BUS & HANDICAP SYMBOLS) NO STANDING W/ SINGLE ARROW

13 NO PARKING (SANITATION BROOM SYMBOL) 7:30 a.m. TO 8:00 a.m. EXCEPT SUN <---->

14 1 HR MUNI TO METER PARKING 8:00 a.m. TO 11:00 p.m. EXCEPT SUNDAY <---->

15 1 HR MUNI-METER PARKING 8:30 a.m. TO 11:00 p.m. EXCEPT SUNDAY <---->

16 1 HR MUNI-METER PARKING 8:00 a.m. TO 11:00 p.m. EXCEPT SUNDAY <---->

17 NO STANDING ANYTIME <--->

18 ANGLE PARKING ONLY <--->

19 NO STANDING ANYTIME EXCEPT AUTHORIZED VEHICLES (SINGLE ARROW)

20 AMBULANCE

21 ANGLE PARKING ONLY W/SINGLE ARROW

22 NO STANDING ANYTIME (SINGLE ARROW)

23 NO STANDING ANYTIME EXCEPT AUTHORIZED VEHICLES <---->

24 BACK IN ANGLE PARKING ONLY <---->

25 NO PARKING (SANITATION BROOM SYMBOL) 11:30 a.m. TO 1:00 p.m. TUES & FRI W/SINGLE ARROW

26 BACK IN ANGLE PARKING ONLY (SINGLE ARROW)

27 NO PARKING (SANITATION BROOM SYMBOL) 6:30 a.m. TO 11:00 a.m. EXCEPT SUNDAY <---->

28 NO STANDING 7:00 a.m. TO 11:00 a.m. MON THRU FRI <---->

29 NO PARKING (SANITATION BROOM SYMBOL) 11:30 a.m. TO 1:00 p.m. MON & THURS W/ SINGLE

30 METERS ARE NOT IN EFFECT ABOVE TIMES (RIDER)

31 2 HOUR PARKING 9:00 a.m. TO 11:00 p.m. EXCEPT SUNDAY <---->

32 NO PARKING (SANITATION BROOM SYMBOL) 8:30 a.m. TO 11:00 a.m. MON WED FRI W/ SINGLE ARROW

33 NO STANDING 7:00 a.m. TO 4:00 p.m. SCHOOL DAYS (SINGLE ARROW)

34 NO PARKING 6:00 a.m. TO 3:00 p.m. FRIDAY W/ SINGLE ARROW

35 FARMERS MARKET

36 NO PARKING 6:00 a.m. TO 3:00 p.m. FRIDAY <---->

37 OTHER TIMES (RIDER FOR PARKING RESTRICTED SIGNS - RED/WHITE)

38 NO STANDING EXCEPT TRUCKS LOADING & UNLOADING 7:00 a.m. TO 11:00 p.m. MON THRU FRI (ARROW)

39 AMBULANCE ONLY

40 1 HR MUNI-METER PARKING 10:00 a.m. TO 11:00 p.m. MON THRU FRI 9:00 a.m. TO 11:00 p.m. SATURDAY <---->

41 1 HR MUNI-METER PARKING 10:00 a.m. TO 11:00 p.m. MON THRU FRI 9:00 a.m. TO 11:00 p.m. SATURDAY W/ SINGLE ARROW

42 NO STANDING 7:00 a.m. TO 11:00 a.m. MON THRU FRI W/ SINGLE ARROW

43 2 HOUR PARKING 10:00 a.m. TO 11:00 p.m. MON THRU FRI 9:00 a.m. TO 11:00 p.m. SATURDAY <---->

44 2 HOUR PARKING 10:00 a.m. TO 11:00 p.m. MON THRU FRI 9:00 a.m. TO 11:00 p.m. SATURDAY W/ SINGLE ARROW

45 NO STANDING EXCEPT TRUCKS LOADING & UNLOADING 10:00 a.m. TO 11:00 p.m. MON THRU FRI (ARROW)

46 2 HOUR PARKING 7:00 a.m. TO 11:00 p.m. EXCEPT SUNDAY <---->

47 2 HOUR PARKING 7:00 a.m. TO 11:00 p.m. SATURDAY <---->

48 2 HOUR PARKING 7:00 a.m. TO 11:00 p.m. SATURDAY W/ SINGLE ARROW

49 NO PARKING 7:00 a.m. TO 4:00 p.m. SCHOOL DAYS (ARROW)

50 NO PARKING 8:00 a.m. TO 6:00 p.m. MON THRU FRI (SINGLE ARROW)

51 NO PARKING 8:00 a.m. TO 6:00 p.m. MON THRU FRI <---->

52 NO STANDING ANYTIME

53 EXCEPT FACULTY VEHICLES

54 NO STANDING<---->HANDICAP BUS STOP(SYMBOL) W/4 ROUTES

55 1 HR MUNI-METER PARKING 9:00 a.m. TO 11:00 p.m. EXCEPT SUNDAY W/ SINGLE ARROW

56 NO STANDING 7:00 a.m. TO 4:00 p.m. SCHOOL DAYS <---->

57 NO PARKING (SANITATION BROOM SYMBOL) 8:30 a.m. TO 11:00 a.m. TUES THURS SAT W/ SINGLE ARROW

58 NO STANDING EXCEPT TRUCKS LOADING & UNLOADING 8:00 a.m. TO 6:00 p.m. MON THRU FRI (SINGLE ARROW)

59 1 HR MUNI-METER PARKING 9:00 a.m. TO 11:00 p.m. SATURDAY W/ SINGLE ARROW

60 BUS STOP SIGN (BUS & HANDICAP SYMBOLS) NO STANDING <---->

61 NO STANDING EXCEPT TRUCKS LOADING & UNLOADING 7:00 a.m. TO 11:00 p.m. MON THRU FRI (SINGLE ARROW)

62 NO PARKING ANYTIME <---->

63 NO PARKING (SANITATION BROOM SYMBOL) 7:30 a.m. TO 8:00 a.m. EXCEPT SUNDAY <->

64 1 HR MUNI-METER PARKING 8:00 a.m. TO 11:00 p.m. EXCEPT SUNDAY W/ SINGLE ARROW

65 AMBULETTE

66 NO STANDING HOTEL LOADING ZONE <---->

67 NO STANDING HOTEL LOADING ZONE W/ SINGLE ARROW

68 NO STANDING EXCEPT TRUCKS LOADING & UNLOADING 7:00 a.m. TO 5:00 p.m. EXCEPT SUNDAY W/ SINGLE ARROW

69 NO ENGINE IDLING (SYMBOL) NO ENGINE IDLING

70 NO STANDING EXCEPT TRUCKS LOADING & UNLOADING 8:00 a.m. TO 11:00 p.m. EXCEPT SUNDAY <--->

71 NO PARKING (SANITATION BROOM SYMBOL) 8:00 a.m. TO 8:30 a.m. EXCEPT SUN W/ SIGNLE ARROW

72 1 HR MUNI-METER PARKING 8:30 a.m. TO 11:00 p.m. EXCEPT SUNDAY W/ SINGLE ARROW

73 NO STANDING EXCEPT TRUCKS LOADING & UNLOADING 7:00 a.m. TO 11:00 p.m. EXCEPT SUNDAY W/SINGLE ARROW

74 NO PARKING (SANITATION BROOM SYMBOL) 7:30 a.m. TO 8:00 a.m. EXCEPT SUN W/ SINGLE ARROW

75 1 HR MUNI-METER PARKING 8:00 a.m. TO 11:00 p.m. EXCEPT SUNDAY W/ SINGLE ARROW

76 NO STANDING EXCEPT TRUCKS LOADING & UNLOADING 7:00 a.m. TO 11:00 p.m. INCLUDING SUNDAY <---->

77 NO STOPPING ANYTIME W/ SINGLE ARROW

78 NO STOPPING ANYTIME <---->

On-Street Parking Regulations within 1/4 Mile Radius of Project Site

Figure 7-3b

parking facilities within a one-quarter mile of the Project Site. The location of the off-street parking facilities are shown on Figure 7-4.

Operational Analysis Methodology

The following sections summarize the operational analysis methodologies and significant impact criteria in accordance with the *CEQR Technical Manual* guidelines for traffic, parking, transit, pedestrians, and safety.

Traffic Operations. The operations of the study area intersections were analyzed in accordance with the *CEQR Technical Manual* guidelines by applying the methodologies presented in the *2000 Highway Capacity Manual* (2000 HCM) using the Highway Capacity Software (HCS+ 5.5). A description of these methodologies is provided below.

Signalized Intersections. The level of service ("LOS") of a signalized intersection is defined in terms of control delay per vehicle (seconds per vehicle). Control delay is the portion of total delay experienced by a motorist that is attributed to the traffic signal. Several factors contribute to the delay at a signalized intersection including cycle length, progression/signal coordination, and volume-to-capacity ("v/c") ratios. For signalized intersections, LOS A describes operations with minimal delays, up to 10 seconds per vehicle, while LOS F describes operations with delays in excess of 80 seconds per vehicle. Delays experienced at LOS A, B, C, or mid-D (less than 45 seconds per vehicle) are generally considered "acceptable" operating conditions according to the *CEQR Technical Manual*. Conversely, LOS E and F are generally considered "unacceptable" operating conditions. The LOS criteria for signalized intersections, as defined in the 2000 HCM, are provided in Table 7-1.

Table 7-1. Level of Service Criteria for Signalized Intersections by Level of Service (LOS) and by Average Delay (Seconds)

Level of Service (LOS)	Average Delay (Seconds)
A	≤ 10.0
B	> 10.0 to ≤ 20.0
C	> 20.0 to ≤ 35.0
D	> 35.0 to ≤ 55.0
E	> 55.0 to ≤ 80.0
F	> 80.0

Source: Transportation Research Board. *Highway Capacity Manual*, 2000.

*Significant Impact Criteria: Traffic Operations***.** According to the criteria presented in the *CEQR Technical Manual*, a lane group under the Build Condition operating within LOS A, B, or C, or mid-LOS D up to a maximum average control delay of 45.0 seconds/vehicle is not considered significant. However, if a lane group under the No-Build Condition is within LOS A,

1 Quick Park
2 Imperial Parking Systems
3 Manhattan Parking Group
4 Imperial Parking Systems
5 Icon Parking Systems
6 Chelnik Parking Co
7 Icon Parking Systems
8 Rapid Park
9 Quik Park
10 Central Parking Systems
11 Icon Parking Systems
12 Rapid Park
13 Quik Park
14 Hertz
15 95 W. 95th St. (anticipated in No-Build)

1/4 mile radius
\# Parking Location
\#a Alternate Entrance

Off-Street Parking Locations within 1/4 Mile Radius of Project Site

Figure 7-4

B, or C, then deterioration under the Build Condition to worse than mid-LOS D (delay greater than 45.0 seconds/vehicle) is considered a significant impact.

For lane groups operating at LOS D, E, or F under the No-Build Condition, then deterioration under the Build Condition that meet the following criteria are considered significant impacts:

- For a lane group operating at LOS D under the No-Build Condition, an increase in projected average control delay of 5 or more seconds is considered significant if the Build condition delay exceeds mid-LOS D.
- For a lane group operating at LOS E under the No-Build Condition, an increase in projected average control delay of 4 or more seconds is considered significant when compared with the Build Condition delay.
- For a lane group operating at LOS F under the No-Build Condition, impacts are considered significant if they result in an increase of 3 or more seconds when compared with the Build Condition.

Parking Conditions Assessment. The parking analysis identifies the extent to which on-street and off-street parking is available and utilized under Existing, No-Build, and Build Conditions. Typically, this analysis encompasses a study area within one-quarter mile of the Project Site. If the analysis produces a shortfall in parking in the one-quarter-mile study area, the study area could be extended to one-half mile to identify additional parking supply. The analysis, which takes into consideration anticipated changes in area parking supply, provides a comparison of parking needs versus availability to determine if a parking shortfall is likely to result from additional demand generated by the Proposed Project.

Determination of Significant Parking Shortfalls. According to the *CEQR Technical Manual*, if the Proposed Project generates more parking demand than it supplies, this shortfall may be considered significant. However, the available parking supply should consider the parking spaces within one-quarter mile of the Proposed Project Site. If the project generated parking demand can be accommodated with the on-site project parking supply and on-street/off-street parking spaces within a one-quarter-mile radius of the Project Site, then the shortfall would not be considered significant. If the project-generated parking demand cannot be accommodated with the on-site project parking supply and on-street/off-street parking spaces within a one-quarter-mile radius of the Project Site, then the shortfall may be considered significant, depending on the location of the project.

Vehicular and Pedestrian Safety Assessment. Crash data is collected for the most recent 3-year period from NYCDOT and classified as Reportable, Nonreportable, or Property Damage Only. For locations that are identified as a high-crash locations, the assessment of safety should include accident types and severity (including pedestrian and bicycle accidents), type of intersection control, and any discernible patterns of accidents. High-crash locations are defined as those with more than 48 total reportable and nonreportable crashes or 5 or more pedestrian/bicycle injury crashes during any consecutive 12 months of the most recent 3-year period for which data is available. Other factors should be considered such as high volumes of at-risk pedestrian age groups (children or the elderly), crossing locations with difficult sight lines, or uncontrolled locations.

Assessment of Vehicular and Safety Issues. The assessment of safety impacts is often subjective and depends largely on the location of the Proposed Project and the circumstances under which historic crashes have taken place. It is the goal of this analysis to determine whether the Proposed Project would increase the potential for pedestrian and bicycle crashes at study intersections that are considered high crash locations. In cases where this determination is made, measures to improve pedestrian and bicycle safety should be identified and coordinated with NYCDOT.

Existing Conditions

Once the project characteristics have been defined, baseline conditions ("existing conditions") are established for traffic, transit, pedestrian data, parking, and other physical and operational characteristics.

Traffic Conditions. Existing study area traffic volumes were based on traffic data collected in May 2013 and November 2013 during peak periods where background traffic is typically greatest and/or when the Proposed Project is projected to generate the greatest number of trips that would be added to the roadway network. The field programs included manual traffic counts at study area intersections during the Weekday a.m., Weekday midday, and Weekday p.m. peak periods while local schools were in session. Crosswalk counts were collected during all peak periods for all intersections.

The manual traffic counts provided turning movement counts and vehicle classification counts at each study intersection. Traffic volumes were balanced between intersections where appropriate. Automated Traffic Recorders ("ATRs") were placed at 3 locations for a continuous 9-day period in May 2013 and in November 2013 to collect 24-hour counts. The ATR counts were used to identify daily and temporal traffic variations.

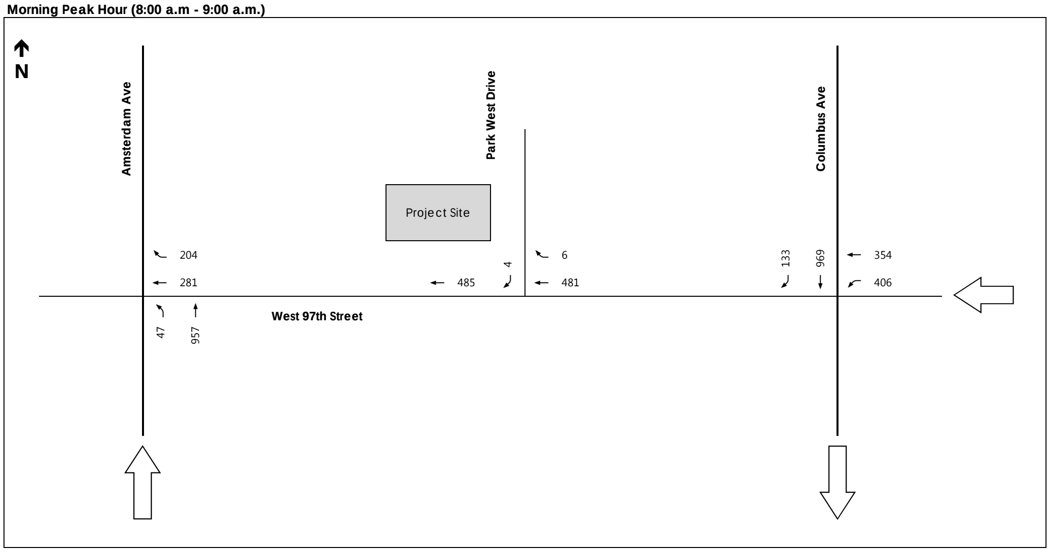
An inventory of the study intersections was performed to determine traffic signal timing, phasing, and cycle length; street and curbside signage; pavement markings; and lane dimensions to be used in the calculation of street capacities. Also, official signal timing data were obtained from NYCDOT to confirm field observations and for incorporation into the capacity analysis.

Figure 7-5 shows the Existing condition traffic volumes for the 3 peak hours. The representative peak hours of background traffic in the study area were determined to be:

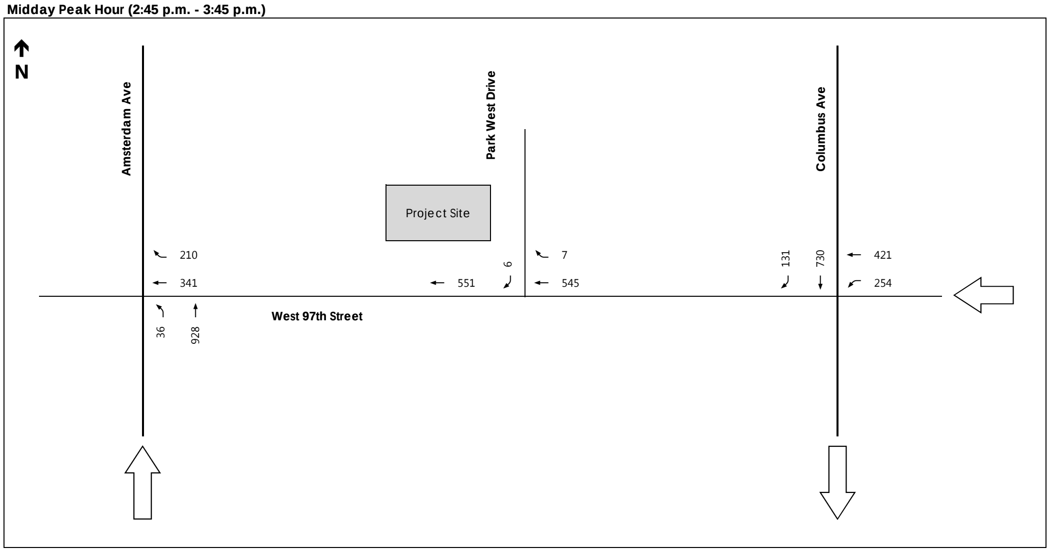
- Weekday a.m. peak hour: 8:00 a.m. to 9:00 a.m.
- Weekday midday peak hour: 2:45 p.m. to 3:45 p.m.
- Weekday p.m. peak hour: 5:45 p.m. to 6:45 p.m.

Level of Service. Table 7-2 presents the capacity analysis results for the signalized intersections included in the study area. The Columbus and Amsterdam Avenue approaches and lane groups operate at an acceptable level of mid-LOS D or better (45.0 seconds of delay for

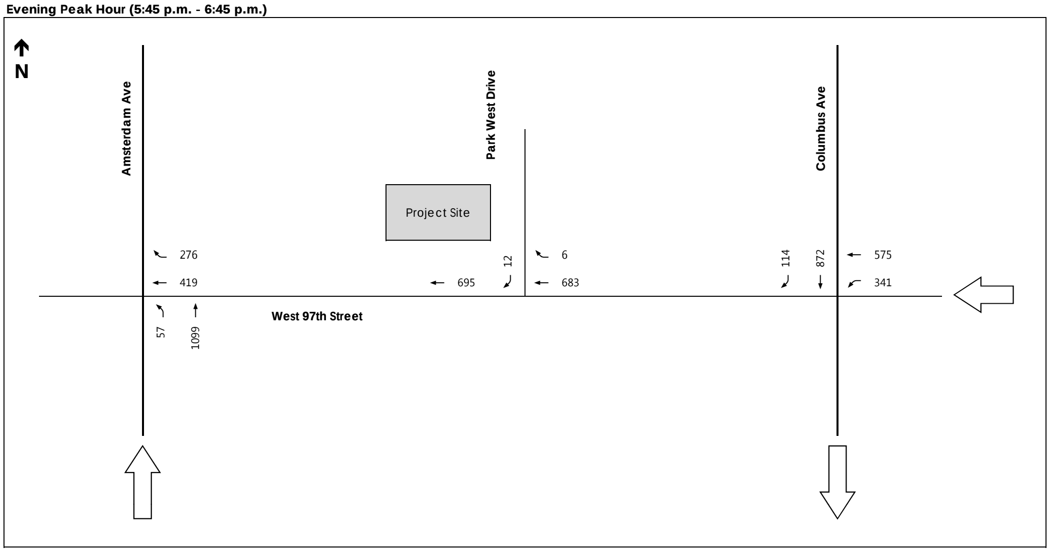
Morning Peak Hour (8:00 a.m - 9:00 a.m.)



Midday Peak Hour (2:45 p.m. - 3:45 p.m.)



Evening Peak Hour (5:45 p.m. - 6:45 p.m.)



2013 Existing Conditions Traffic Volumes
Weekday Peak Hours
Figure 7-5

signalized intersections) during the 3 analysis peak hours. The West 97th Street approaches and lane groups do not operate at an acceptable LOS, as described below:

West 97th Street and Amsterdam Avenue

- During the Weekday a.m. peak hour, the westbound through-right-lane group operates at LOS E with an average delay of 58.9 seconds and v/c ratio of 0.97.
- During the Weekday midday peak hour, the westbound through-right-lane group operates at LOS E with an average delay of 78.8 seconds and v/c ratio of 1.05.
- During the Weekday p.m. peak hour, the westbound through-right-lane group operates at LOS E with an average delay of 73.4 seconds and v/c ratio of 1.04.

West 97th Street and Columbus Avenue

- During the Weekday a.m. peak hour, the westbound left-turn-lane group operates at LOS E with an average delay of 78.1 seconds and a v/c ratio of 1.01. The through-left-lane group operates at LOS E with an average delay of 66.2 seconds and v/c ratio of 0.98.
- During the Weekday midday peak hour, the westbound through-left-lane group operates at LOS F with an average delay of 82.1 seconds and v/c ratio of 1.05.
- During the Weekday p.m. peak hour, the westbound left-turn-lane group operates at LOS E with an average delay of 60.5 seconds and a v/c ratio of 0.94. The through-left-lane group operates at LOS E with an average delay of 73.7 seconds and v/c ratio of 1.03.

Table 7-2. Existing Conditions Level of Service Analysis Signalized Intersections by Intersection and Approach and by Weekday A.M., Midday, and P.M. Peak Hour

	Intersection & Approach	Weekday a.m. Peak Hour				Weekday Midday Peak Hour				Weekday p.m. Peak Hour			
		Lane Group	v/c Ratio	Delay (sec)	LOS	Lane Group	v/c Ratio	Delay (sec)	LOS	Lane Group	v/c Ratio	Delay (sec)	LOS
1	**Amsterdam Avenue & West 97th Street**												
	Westbound	TR	0.97	58.9	E	TR	1.05	78.8	E	TR	1.04	73.4	E
	Northbound	LT	0.53	16.3	B	LT	0.51	16.0	B	LT	0.52	16.0	B
		Intersection		31.1	C	Intersection		40.5	D	Intersection		38.3	D
2	**Columbus Avenue & West 97th Street**												
	Westbound	L	1.01	78.1	E	L	0.80	43.3	D	L	0.94	60.5	E
		LT	0.98	66.2	E	LT	1.05	82.1	F	LT	1.03	73.7	E
	Southbound	TR	0.79	21.0	C	TR	0.60	16.2	B	TR	0.66	17.2	B
		Intersection		42.1	D	Intersection		41.0	D	Intersection		41.6	D
	Notes: L = Left Turn, T= Through, R = Right Turn, DefL = Defacto Left Turn; LOS = Level of Service.												

Parking. Existing study area conditions for on-street and off-street parking were evaluated via a field inventory of parking regulations and utilization within a one-quarter-mile radius of the Project Site. On-street parking regulations are shown in Figures 7-3a and 7-3b. Based on the information collected, it was determined that while there was available on-street parking during the peak periods, the parking spaces closest to the Project Site were generally close to 100 percent utilized and double-parked cars were often observed. As a result, a detailed study of on-street parking was not performed. A detailed field inventory of off-street parking facilities and utilization within a one-quarter-mile radius of the Proposed Project was conducted. Basic data was collected for each facility including the name of the operator, licensed capacity, owner name, facility address, license number, hours of operation, and parking rates. A map identifying the locations of all off-street facilities is provided on Figure 7-4.

These facilities have a combined licensed capacity of 2,366 spaces. The combined parking utilization rate was observed to be between 76 and 79 percent during the course of the day, with the maximum combined parking utilization rate observed during the overnight hours. The 2013 Existing off-street parking supply and utilization are presented in Table 7-3.

Table 7-3. Existing One-Quarter-Mile Radius Off-Street Parking Utilization Summary by Garage Operator and by Percentage Occupied and Available Spaces

ID	Garage Operator	Address	License Number	Capacity	Percentage Occupied				Available Spaces			
					a.m.	Midday	p.m.	Overnight	a.m.	Midday	p.m.	Overnight
1	Quik Park	808 Columbus Ave	1345532	324	50%	40%	40%	75%	162	194	194	81
2	Imperial Parking Systems	750 Columbus Ave	1010033	80	100%	90%	50%	95%	0	8	40	4
3	Manhattan Parking Group	120 W 97th St	N/A	250	75%	60%	50%	95%	63	100	125	13
4	Imperial Parking Systems[1]	730 Columbus Ave	1010044	44	80%	80%	80%	Closed	9	9	9	0
5	Icon Parking Systems	50 W 97th St	691393	114	50%	50%	100%	95%	57	57	0	6
6	Chelnik Parking Co	70 W 95th St	1316580	142	75%	75%	50%	50%	36	36	71	71
7	Icon Parking Systems	721 Amsterdam Ave	1184053	185	N/A	50%	N/A	95%	N/A	93	N/A	9
8	Rapid Park	9-11 W 100th St	901540	75	75%	50%	60%	75%	19	38	30	19
9	Quik Park	801 Amsterdam Ave	1387697	40	90%	N/A		90%	4	N/A		4
10	Central Parking System	100 W 93rd St	N/A	285	75%	N/A		75%	71	N/A		71
11	Icon Parking Systems	215 W 95th St	838371	77	50%	50%	N/A	50%	39	39	N/A	39
12	Rapid Park	205 W 101st St	427235	300	60%	N/A		60%	120	N/A		120
13	Quik Park	2561 Broadway	1192927	200	N/A			75%	N/A			50
14	Hertz	214 W 95th St	1231683	250	N/A				N/A			
			Total Available Spaces:	2,366	76%	76%	80%	79%	578	572	469	486

Notes:
1. Operator only provided peak data which will be assumed for all time periods
2. An accessory garage at 95 West 95th Street received a special permit from the City Planning Commission under ULURP No. 070381 ZSM allowing 57 public spaces. The conversion to public use has not yet occurred but is expect to occur prior to the build year of the proposed project.
3. Where noted, data was not available or not provided by the parking operator. Where no data was available, no available spaces were assumed.

Future Without the Proposed Project

The No-Build Condition builds on the existing conditions analysis by incorporating background growth, other nearby projects expected to be complete, and anticipated changes in the transportation network. The No-Build Condition analysis focuses on conditions in 2018, when the project is expected to be complete. The analysis of the No-Build Condition serves as the baseline to which the future condition with the project will be compared to identify impacts.

The *CEQR Technical Manual* guidelines (Table 16-4) provide an annual background growth rate for Manhattan of 0.25 percent. The annual growth rate was applied, over a period of 5 years, to the existing condition volumes to develop the No-Build Condition background traffic and parking volumes. In addition to the background growth, the development projects expected to be complete by 2018 located within and adjacent to the one-quarter-mile radius were considered to forecast the No-Build Condition volumes.

There is one No-Build development project located at 15-17 West 96th Street, which includes residential and community facility uses. The No-Build development project at 15-17 West 96th Street is projected to generate a maximum of 6 peak-hour trips. It is unlikely that any of these trips would use Columbus Avenue, Amsterdam Avenue or West 97th Street given the location of the No-Build development site and the 2-way access available from West 96th Street. However, this analysis conservatively assumes an additional 5 vehicle trips on all through approaches for both study area intersections to account for this No-Build project and any other development that might occur in this area. The background growth and additional trips to account for the No-Build development were added to the existing condition volumes to develop the No-Build Condition volumes.

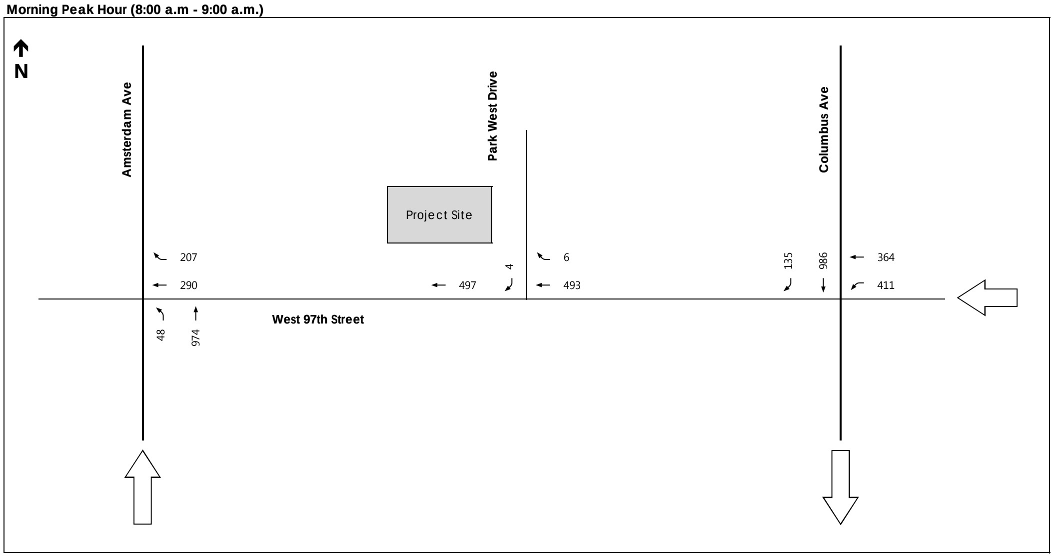
Based on the NYCDOT 10-year Capital Plan, no roadway improvements are planned within the study area beyond the extension of the protected bicycle lane on Columbus Avenue between West 96th Street and Cathedral Parkway (West 110th Street), which was installed in September 2013.

Traffic Conditions. Figure 7-6 shows the No-Build Condition traffic volumes for the 3 peak hours. Table 7-4 presents a comparison of existing and No-Build Conditions for the signalized study intersections. Based on the analysis results, the Columbus Avenue and Amsterdam Avenue approaches and lane groups would continue to operate at an acceptable level of mid-LOS D or better (45.0 seconds of delay for signalized intersections) during the 3 analysis peak hours. The addition of traffic in the Future Without the Proposed Project would result in a degradation of operations on West 97th Street, as described below:

West 97th Street and Amsterdam Avenue

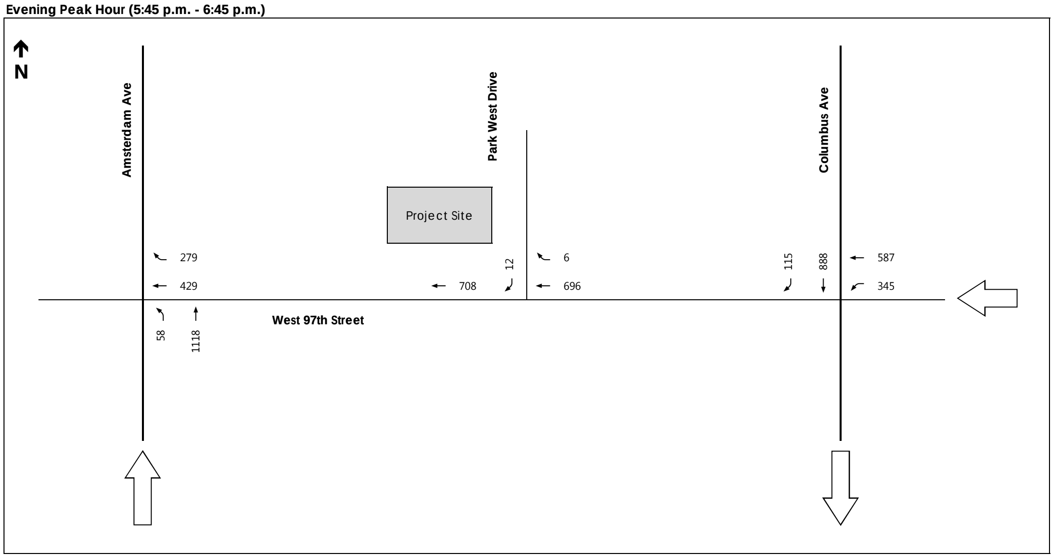
- During the Weekday a.m. peak hour, the westbound through-right-lane group would deteriorate within LOS E from an average delay of 58.9 seconds and v/c ratio of 0.97 to an average delay of 64.0 seconds and a v/c ratio of 0.99.
- During the Weekday midday peak hour, the westbound through-right-lane group would deteriorate from LOS E from an average delay of 78.8 seconds and v/c ratio of 1.05 to LOS F with an average delay of 85.7 seconds and v/c ratio of 1.07.
- During the Weekday p.m. peak hour, the westbound through-right-lane group would deteriorate within LOS E from an average delay of 73.4 seconds and v/c ratio of 1.04 to an average delay of 78.8 seconds and v/c ratio of 1.05.

Morning Peak Hour (8:00 a.m - 9:00 a.m.)



Midday Peak Hour (2:45 p.m. - 3:45 p.m.)

Evening Peak Hour (5:45 p.m. - 6:45 p.m.)



2018 No-Build Conditions Traffic Volumes
Weekday Peak Hours
Figure 7-6

West 97th Street and Columbus Avenue

- During the Weekday a.m. peak hour, the westbound left-turn-lane group would deteriorate from LOS E with an average delay of 78.1 seconds and a v/c ratio of 1.01 to LOS F with an average delay of 81.7 seconds and a v/c ratio of 1.02. The through-left-lane group would deteriorate within LOS E from an average delay of 66.2 seconds and v/c ratio of 0.98 to an average delay of 73.0 seconds and a v/c ratio of 1.01.
- During the Weekday midday peak hour, the through-left-lane group would deteriorate within LOS F from an average delay of 82.1 seconds and a v/c ratio of 1.05 to an average delay of 90.2 seconds and a v/c ratio of 1.07.
- During the Weekday p.m. peak hour, the westbound left-turn-lane would deteriorate within LOS E from an average delay of 60.5 seconds and a v/c ratio of 0.94 to an average delay of 63.6 seconds and a v/c ratio of 0.96. The through-left-lane group would deteriorate from LOS E with an average delay of 73.7 seconds and v/c ratio of 1.03 to LOS F with an average delay of 80.2 seconds and a v/c ratio of 1.05.

Table 7-4. Existing Condition and No-Build Condition Signalized Intersection Level of Service Analysis by Intersection and Approach and by Weekday A.M., Midday and P.M. Peak Hour

#	Intersection & Approach	Weekday a.m. Peak Hour								Weekday Midday Peak Hour								Weekday p.m. Peak Hour							
		Existing 2013				No-Build 2018				Existing 2013				No-Build 2018				Existing 2013				No-Build 2018			
		Lane Group	v/c Ratio	Delay (sec)	LOS	Lane Group	v/c Ratio	Delay (sec)	LOS	Lane Group	v/c Ratio	Delay (sec)	LOS	Lane Group	v/c Ratio	Delay (sec)	LOS	Lane Group	v/c Ratio	Delay (sec)	LOS	Lane Group	v/c Ratio	Delay (sec)	LOS
1	**Amsterdam Avenue & West 97th Street**																								
	Westbound	TR	0.97	58.9	E	TR	0.99	64.0	E	TR	1.05	78.8	E	TR	1.07	85.7	F	TR	1.04	73.4	E	TR	1.05	78.8	E
	Northbound	LT	0.53	16.3	B	LT	0.54	16.4	B	LT	0.51	16.0	B	LT	0.52	16.1	B	LT	0.52	16.0	B	LT	0.52	16.1	B
		Intersection		31.1	C	Intersection		33.0	C	Intersection		40.5	D	Intersection		43.3	D	Intersection		38.3	D	Intersection		40.5	D
2	**Columbus Avenue & West 97th Street**																								
	Westbound	L	1.01	78.1	E	L	1.02	81.7	F	L	0.80	43.3	D	L	0.81	44.6	D	L	0.94	60.5	E	L	0.96	63.6	E
		LT	0.98	66.2	E	LT	1.01	73.0	E	LT	1.05	82.1	F	LT	1.07	90.2	F	LT	1.03	73.7	E	LT	1.05	80.2	F
	Southbound	TR	0.79	21.0	C	TR	0.81	21.5	C	TR	0.60	16.2	B	TR	0.61	16.4	B	TR	0.66	17.2	B	TR	0.68	17.5	B
		Intersection		42.1	D	Intersection		44.7	D	Intersection		41.0	D	Intersection		43.9	D	Intersection		41.6	D	Intersection		44.2	D

Notes: L = Left Turn, T= Through, R = Right Turn, DefL = Defacto Left Turn; LOS = Level of Service.

Parking Supply and Utilization. The utilization of off-street parking facilities in the study area is expected to increase due to the area's background growth (annual growth rate of 0.25 percent). To account for parking demand for the one No-Build development project located at 15-17 West 96th Street, a total of 10 extra vehicles were assumed to park in the two nearest parking facilities to this development. A new accessory parking garage received a special permit from the New York City Planning Commission ("CPC") under ULURP №. 070381ZSM that would allow 57 public parking spaces to be added at 95 West 95th Street. The new garage was included in the No-Build Condition parking analysis and the utilization of this garage was assumed to be the average utilization of all the off-site parking facilities in the study area.

The maximum utilization rate of off-street parking facilities in the study area is estimated to increase to approximately 80 percent during the Weekday p.m. and overnight periods, with two facilities at 100 percent occupancy. Table 7-5 shows the No-Build Condition parking utilization analysis.

Table 7-5. No-Build Off-Street/Off-Site Parking Utilization Summary by Garage Operator and by Percentage Occupied and Available Spaces

ID	Garage Operator	Address	License Number	Capacity	Percentage Occupied				Available Spaces			
					a.m.	Midday	p.m.	Overnight	a.m.	Midday	p.m.	Overnight
1	Quik Park	808 Columbus Ave	1345532	324	51%	41%	41%	76%	160	193	193	78
2	Imperial Parking Systems	750 Columbus Ave	1010033	80	100%	91%	51%	96%	0	7	39	3
3	Manhattan Parking Group	120 W 97th St	N/A	250	76%	61%	51%	96%	59	98	122	10
4	Imperial Parking Systems[1]	730 Columbus Ave	1010044	44	81%	81%	81%	Closed	8	8	8	0
5	Icon Parking Systems	50 W 97th St	691393	114	55%	55%	100%	96%	51	51	0	4
6	Chelnik Parking Co	70 W 95th St	1316580	142	79%	79%	58%	58%	29	29	60	60
7	Icon Parking Systems	721 Amsterdam Ave	1184053	185	N/A	51%	N/A	96%	N/A	91	N/A	7
8	Rapid Park	9-11 W 100th St	901540	75	76%	51%	61%	76%	18	37	29	18
9	Quik Park	801 Amsterdam Ave	1387697	40	91%	N/A		91%	4	N/A		4
10	Central Parking System	100 W 93rd St	N/A	285	76%	N/A		76%	69	N/A		69
11	Icon Parking Systems	215 W 95th St	838371	77	51%	51%	N/A	51%	38	38	N/A	38
12	Rapid Park	205 W 101st St	427235	300	61%	N/A		61%	118	N/A		118
13	Quik Park	2561 Broadway	1192927	200	N/A			76%	N/A			48
14	Hertz	214 W 95th St	1231683	250	N/A				N/A			
15	-	95 W 95th St[2]	-	57	77%	77%	81%	81%	13	13	11	11
			Total Available Spaces:	2,423	77%	77%	81%	81%	567	566	463	467

Notes:
1. Operator only provided peak data which will be assumed for all time periods
2. An accessory garage at 95 West 95th Street received a special permit from the City Planning Commission under ULURP No. 070381 ZSM allowing 57 public spaces. The conversion to public use has not yet occurred but is expect to occur prior to the build year of the proposed project.
3. Where noted, data was not available or not provided by the parking operator. Where no data was available, no available spaces were assumed.

Description of the Proposed Project

The Proposed Project would result in the relocation of the existing Jewish Home Lifecare ("JHL") facility from 120 West 106th Street to a new LEED-certified replacement facility on the Project Site, located at 125 West 97th Street between Columbus Avenue and Amsterdam Avenue. The development site is located on a superblock bounded by Amsterdam Avenue to the west, Columbus Avenue to the east, West 100th Street to the north, and West 97th Street to the south.

The Project Site is currently occupied by a surface parking lot with 88 parking spaces. As noted above, users of the existing surface parking lot would receive substitute nearby parking within the PWV complex (the property owner commenced construction of the relocated surface parking lot in March 2014). The Proposed Project would result in a nursing-care facility, with 414 beds for residents and 625 FTE staff.

Site Access and Egress. Vehicular access to the Project Site would be along West 97th Street via an existing curb cut at Park West Drive. A turnaround located at the rear entrance of the building would serve as a pick-up/drop-off zone. Truck access to the loading docks would be provided via West 97th Street. Pedestrian access to the Project Site would be along West 97th Street.

As noted above, users of the existing surface parking lot would receive substitute nearby parking within the PWV complex (the property owner commenced construction of the relocated surface parking lot in March 2014). The configuration of Park West Drive, the north-south access road within the PWV complex, may be modified as part of the PWV property owner's planning for the complex, but will continue to function as a discontinuous 2-way access road for PWV parkers. Vehicle circulation is anticipated to remain similar to current conditions outside of the PWV complex.

Analysis Scenarios. Three peak hours were considered for the transportation analysis: Weekday a.m. (8:00 a.m. to 9:00 a.m.), Weekday midday (2:45 p.m. to 3:45 p.m.), and Weekday p.m. (5:45 p.m. to 6:45 p.m.). These peak hours represent the hours during which background traffic is greatest. The peak hours for the existing JHL facility Project Site are expected to occur at slightly different times of day based on survey and count data. The analysis conservatively applies the peak project volume to the peak hours for background traffic.

Trip Generation. Trip generation rates were developed based on travel characteristics and operation of the existing JHL facility. The proposed JHL facility would include 414 beds and 625 FTE employees. Trip generation rates based on the existing facility were scaled to match the proposed program.

Staff. Staff trip generation estimates were developed based on punch-in/punch-out schedules provided by JHL for the week of Monday, January 6, 2014, through Friday, January 10, 2014, for the current JHL facility. This data provided the arrival and departure times for all employees for this week. The volume data was averaged incorporating Tuesday through Thursday to calculate volume for a typical weekday. Monday and Friday data showed slightly lower volumes (possibly due to differing travel patterns for employees on days adjacent to the weekend) and therefore were excluded from the averaged data. The JHL facility had 653.24

FTE employees at the time of the count and the proposed facility would have no more than 625 FTE employees. The total number of trips was scaled by a ratio of 0.96 (625 proposed FTE employees to the 653.24 FTE employees at the time of the count). These data were used to determine daily trip estimates, temporal distributions, and directional distributions. Modal splits and auto occupancies for staff were determined using the 2000 Census Reverse Journey to Work data. The taxi occupancy was conservatively assumed to be 1.00 for staff.

Visitors. To develop visitor trip generation estimates, JHL provided the visitor arrival log for the current JHL facility for the week of Sunday, January 5, 2014, through Saturday, January 11, 2014. Weekday data was averaged to calculate volume for a typical weekday. In contrast to employee data, Monday and Friday data were included in the weekday average as the daily volumes for Monday and Friday were similar to or higher than daily volumes for Tuesday through Thursday. Typically, 1 person per visitor group would sign in. To adjust this information to account for the total number of visitors per group, it was assumed that the auto occupancy would represent a typical group size and, therefore, each signed-in visitor was assumed to represent 1.6 arriving trips (based on the *Hospital for Special Surgery Expansion FEIS* [2008]). As the number of NYSDOH-certified beds at the proposed facility would decrease from 514 at the current facility to 414, visitor trips were scaled by a ratio of 0.81 (414/514). Visitors were assumed to stay for 1 hour. From this data, temporal and directional distributions were developed. The modal split and vehicle occupancies for the visitors were determined using the *Hospital for Special Surgery Expansion FEIS* (2008).

Nursing Home Residents. There are two types of patient trips to and from the Project Site: patient admissions/discharges to JHL and off-site appointments, referring to trips made by JHL residents to other medical facilities for a short-term appointment/treatment. Trip generation was developed for these trip types as follows:

- Admissions/Discharges: JHL provided the following characteristics for trips associated with admissions and discharges for the current facility:
  - Eight admissions occur per day typically between 4:00 p.m. and 6:30 p.m.
  - Seven discharges occur per day typically between 11:00 a.m. and 12:00 p.m.
  - Nearly all of these trips are made via ambulance/ambulette.

Temporal distribution was developed by considering that admissions and discharges were evenly distributed throughout the specified time periods and that vehicles were assumed to dwell for 1 hour. Therefore, 1 inbound trip and 1 outbound trip were estimated for each admission and each discharge, with the outbound trip occurring 1 hour after the inbound trip. The trip generation estimates conservatively assumed no reduction in trips related to the decrease in beds at the proposed facility. All trips were assumed to be made by ambulettes or private vehicles.

- Off-Site Appointments: JHL provided off-site appointment activity for the entire month of May 2011 for the current JHL facility. The trip generation estimates considered the 85th percentile number of off-site appointments and conservatively assumed no reduction in trips related to the decrease in beds and the proposed facility. These appointments were assumed to occur uniformly throughout the day.

Each off-site appointment produces 4 vehicle trips. An ambulette would arrive to pick up the patient, depart with the patient, return later to drop off the patient, and then depart. Each ambulette was assumed to dwell for 15 minutes while picking up or dropping off, and each appointment was assumed to last for 3 hours.

Trucks. JHL staff provided a schedule of deliveries for the current JHL facility, including approximate arrival time and duration of delivery. A total of 14 daily truck deliveries are anticipated. Nine truck trips would have scheduled arrival times. The remaining 5 truck trips would not follow a specific schedule and were distributed evenly throughout the day.

Parking Elimination. As noted above, users of the existing 88 space surface parking lot would receive substitute nearby parking within the PWV complex (the property owner commenced construction of the relocated surface parking lot in March 2014). Since the parking spaces would remain within the PWV development and would continue to use Park West Drive, the trips associated with the existing surface parking lot would not be reassigned or redistributed as part of the Proposed Project.

Trip Generation Results. The trip generation in passenger car equivalents (“PCEs”) for the Proposed Project would be as follows:

- Weekday a.m. peak hour (7:15 a.m. to 8:15 a.m.): 66 trips
- Weekday midday peak hour (3:15 p.m. to 4:15 p.m.): 69 trips
- Weekday p.m. peak hour (4:30 p.m. to 5:30 p.m.): 50 trips

These peak hour volumes were conservatively applied to the peak hours of background traffic described previously.

The trip generation factors are summarized in Table 7-6. The results of the trip generation estimates for the Proposed Project are summarized in Table 7-7 (vehicles) and Table 7-8 (transit and pedestrians).

Table 7-6. Transportation Demand Factors by Proposed Project Component and by Staff, Visitor, Admissions/Discharges, Off-Site Appointments and Truck Deliveries Trip Types

<table>
<tr><th colspan="2">Project Component</th><th>Staff</th><th>Visitor</th><th>Admissions / Discharges</th><th>Off-site Appointments</th><th>Truck Deliveries</th></tr>
<tr><td colspan="2">Trip Rate</td><td colspan="5">Staff, visitor, admissions / discharges, off-site appointment, and truck trips provided by JHL</td></tr>
<tr><td colspan="2">Scaling Factor</td><td>0.96 (ratio of full-time employees between new and old facilities)</td><td>0.81 (ratio of number of beds between new and old facilities)</td><td>1.0
(same as existing JHL Manhattan)</td><td>1.0
(same as existing JHL Manhattan)</td><td>1.0
(same as existing JHL Manhattan)</td></tr>
<tr><td rowspan="4">Mode Split</td><td></td><td>(1)</td><td>(2)</td><td colspan="2" rowspan="4">Assumed to be all private autos or ambulettes based on information provided by JHL</td><td rowspan="4">n/a</td></tr>
<tr><td>Auto</td><td>28.8%</td><td>32.0%</td></tr>
<tr><td>Taxi</td><td>1.5%</td><td>11.0%</td></tr>
<tr><td>Transit / Walk / Other</td><td>69.7%</td><td>57.0%</td></tr>
<tr><td rowspan="3">Vehicle Occupancy</td><td></td><td>(1,3)</td><td>(2)</td><td colspan="2" rowspan="3">Vehicle occupancies are all 1 patient per vehicle</td><td rowspan="3">n/a</td></tr>
<tr><td>Auto</td><td>1.13</td><td>1.6</td></tr>
<tr><td>Taxi</td><td>1.00</td><td>1.4</td></tr>
<tr><td rowspan="3">Temporal Split</td><td>AM</td><td colspan="4" rowspan="3">Arrival patterns for staff, visitor, admissions / discharges, and off-site appointment trips provided by JHL</td><td rowspan="3">Provided by JHL except where noted in the text.</td></tr>
<tr><td>MD</td></tr>
<tr><td>PM</td></tr>
<tr><td rowspan="3">In/Out Vehicle Percentage</td><td>AM</td><td colspan="4" rowspan="3">Arrival patterns for staff, visitor, admissions / discharges, and off-site appointment trips provided by JHL</td><td rowspan="3">Provided by JHL except where noted in the text.</td></tr>
<tr><td>MD</td></tr>
<tr><td>PM</td></tr>
</table>

Notes

1. Reverse Journey-to-Work data
2. Hospital for Special Surgery Expansion FEIS (2008)
3. Taxis for staff were conservatively assumed to have a vehicle occupancy of one person per vehicle.

Table 7-7. Total Vehicle Trip Generation Estimates by Weekday A.M., Midday and P.M. Peak-Hour Period and by Staff, Visitors, Residents and Trucks

Peak-Hour Period	Staff		Visitor		Residents		Trucks		Total		Total
	In	Out	In	Out	In	Out	In	Out	In	Out	
Weekday a.m.											
Auto / Ambulette	35	13	1	0	1	0	0	0	38	13	51
Taxi	3	3	0	0	0	0	0	0	3	3	6
Truck (PCEs)	0	0	0	0	0	0	6	4	6	4	10
TOTAL	38	16	1	0	1	0	6	4	46	20	66
Weekday Midday											
Auto / Ambulette	15	29	6	5	1	1	0	0	22	36	58
Taxi	3	3	3	3	0	0	0	0	6	6	12
Truck (PCEs)	0	0	0	0	0	0	0	0	0	0	0
TOTAL	18	32	9	9	1	1	0	0	28	42	69
Weekday p.m.											
Auto / Ambulette	1	21	5	6	8	0	0	0	14	27	41
Taxi	1	1	3	3	0	0	0	0	5	5	9
Truck (PCEs)	0	0	0	0	0	0	0	0	0	0	0
TOTAL	2	23	8	9	8	0	0	0	18	32	50

Note: "Residents" includes both admission/discharge activity and off-site appointment activity
"PCEs" refers to Passenger Car Equivalents and was assumed to be 2.0 PCEs per truck as JHL anticipates to continue to use short trucks for deliveries and roll-off trucks only (not longer than 30 feet each)
Numbers may not add up exactly due to rounding.

Table 7-8. Total Walk (Walk Only and Transit) Trip Generation Estimates by Weekday A.M., Midday and P.M. Peak-Hour Period and by Staff, Visitors, and Residents

Peak-Hour Period	Staff		Visitor		Residents		Total		Total
	In	Out	In	Out	In	Out	In	Out	
Weekday a.m.									
Transit	76	28	2	0	0	0	78	28	106
Walk Only	21	8	1	0	0	0	22	8	30
TOTAL	97	36	3	0	0	0	100	36	136
Weekday Midday									
Transit	32	63	11	10	0	0	43	73	116
Walk Only	9	18	6	5	0	0	15	23	38
TOTAL	41	80	17	15	0	0	58	96	153
Weekday p.m.									
Transit	1	46	10	11	0	0	11	57	68
Walk Only	0	13	5	6	0	0	5	19	24
TOTAL	2	59	15	17	0	0	16	76	92

Note: "Residents" includes both admission/discharge activity and off-site appointment activity
Numbers may not add up exactly due to rounding.

Trip Assignment. Trips were assigned to and from the Project Site along the most logical main streets and arterials that provide connections to the regional roadway network. Figure 7-7 shows the project-generated trips for all peak hours.

Parking Accumulation. The parking accumulation for the Proposed Project is shown in Table 7-9. The total parking demand would peak at 82 spaces from 2:15 p.m. to 2:30 p.m. The parking demand generated by the proposed development would be accommodated in off-site parking facilities as the Proposed Project would not provide any on-site parking.

Probable Impacts of the Proposed Project

The No-Build Condition analysis forms the future baseline to which projected increments associated with the Proposed Project are added to formulate the Build Condition. The *CEQR Technical Manual* defines how impacts to traffic, transit, pedestrians, safety, and parking are to be determined. If the analysis shows that the Proposed Project would result in significant transportation-related impacts, mitigation measures are recommended to alleviate these impacts.

Traffic Conditions. Figure 7-8 shows the Build Condition traffic volumes for the 3 peak hours. Table 7-10 presents a comparison of No-Build and Build Conditions for the signalized study intersections. Based on the significance criteria described in the *CEQR Technical Manual*, significantly impacted lane groups are denoted with a "+" sign in the table and are detailed below.

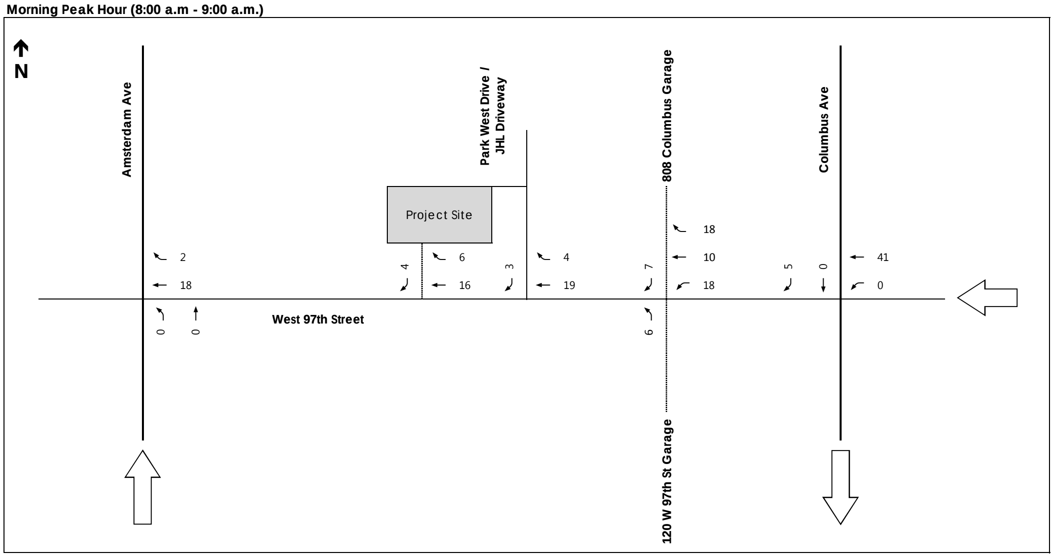
West 97th Street and Amsterdam Avenue

- During the Weekday a.m. peak hour, the westbound through-right-lane group would deteriorate within LOS E from an average delay of 64.0 seconds and a v/c ratio of 0.99 to an average delay of 73.1 seconds and a v/c ratio of 1.03.
- During the Weekday midday peak hour, the westbound through-right-lane group would deteriorate within LOS F from an average delay of 85.7 seconds and v/c ratio of 1.07 to an average delay of 110.7 seconds and a v/c ratio of 1.14.
- During the Weekday p.m. peak hour, the westbound through-right-lane group would deteriorate within LOS F from an average delay of 78.8 seconds and v/c ratio of 1.05 to an average delay of 92.9 seconds and a v/c ratio of 1.10.

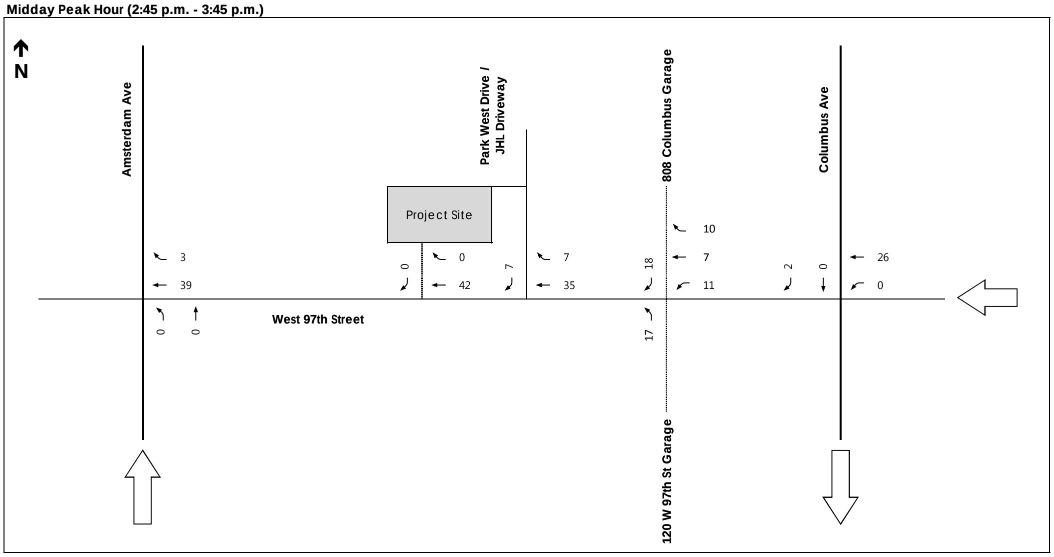
West 97th Street and Columbus Avenue

- During the Weekday a.m. peak hour, the westbound left-turn-lane group would deteriorate within LOS F from an average delay of 81.7 seconds and a v/c ratio of 1.02 to an average delay of 96.6 seconds and a v/c ratio of 1.07. The through-left-lane group would deteriorate from LOS E with an average delay of 73.0 seconds and a v/c ratio of 1.01 to LOS F with an average delay of 92.0 seconds and a v/c ratio of 1.08.

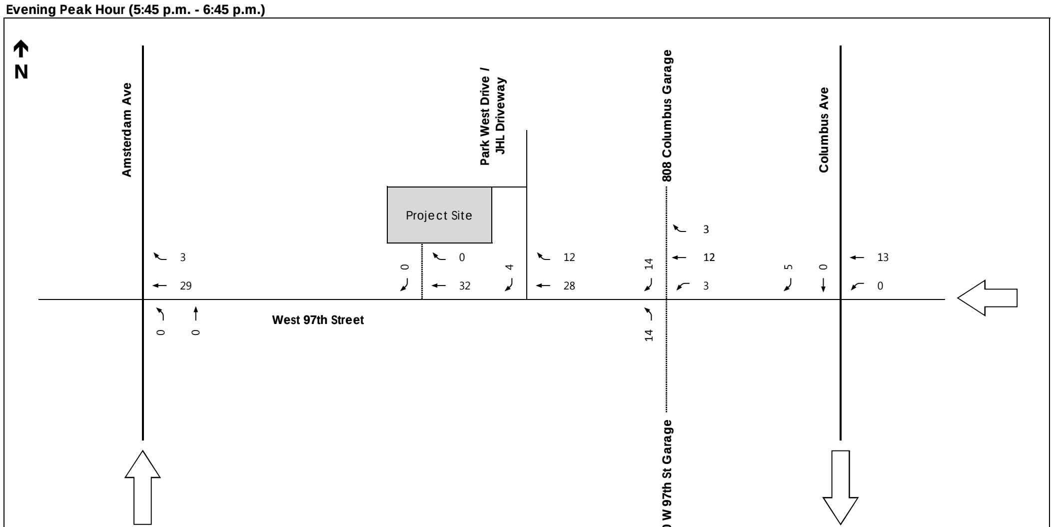
Morning Peak Hour (8:00 a.m - 9:00 a.m.)



Midday Peak Hour (2:45 p.m. - 3:45 p.m.)

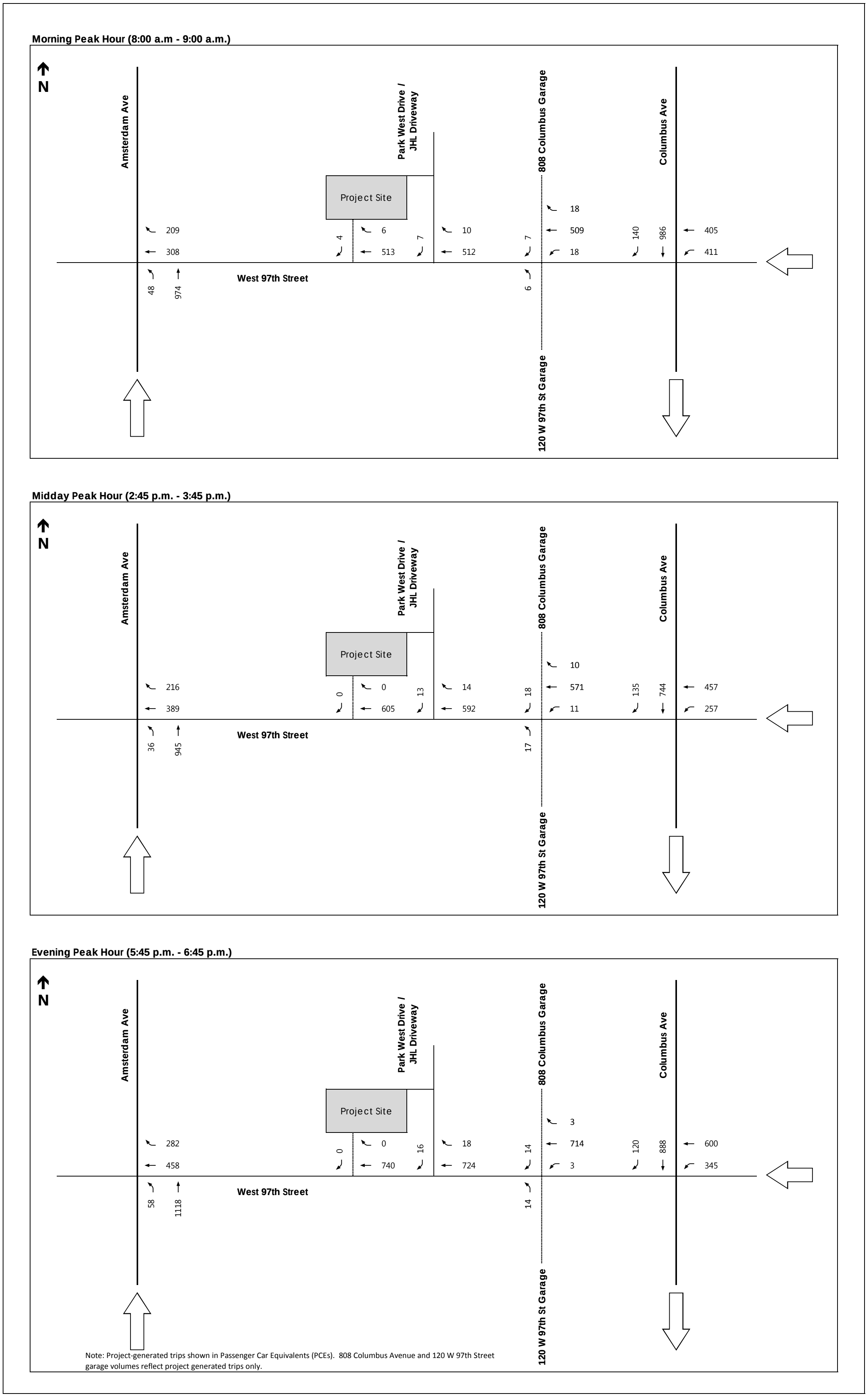


Evening Peak Hour (5:45 p.m. - 6:45 p.m.)



Note: Project-generated trips shown in Passenger Car Equivalents (PCEs)

Project-Generated Trips
Weekday Peak Hours
Figure 7-7



2018 Build Condition Traffic Volumes
Weekday Peak Hours

Figure 7-8

- During the Weekday midday peak hour, the westbound through-left-lane group would deteriorate within LOS F from an average delay of 90.2 seconds and a v/c ratio of 1.07 to an average delay of 112.4 seconds and a v/c ratio of 1.14.
- During the Weekday p.m. peak hour, the westbound through-left-lane group would deteriorate within LOS F from an average delay of 80.2 seconds and a v/c ratio of 1.05 to an average delay of 87.8 seconds and a v/c ratio of 1.07.

The impacts can all be mitigated with the proposed mitigation as described in Chapter 14, “Mitigation Measures.”

Parking Occupancy and Utilization. Based on the project parking accumulation shown in Table 7-9, the parking demand during the Weekday a.m., midday and p.m. peak hours would be for 42, 63, and 39 parking spaces, respectively. A demand for 82 spaces was applied to the midday peak hour to account for the peak demand of the Proposed Project. The Proposed Project parking demand would be accommodated in the parking facilities adjacent the Project Site at 808 Columbus Avenue and 120 West 97th Street.

Table 7-11 shows the Build Condition parking utilization analysis and illustrates that the off-street parking facilities would have sufficient capacity to accommodate the overall parking demand. Therefore, parking would not be significantly impacted by the Proposed Project during any of the 3 peak hours.

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Table 7-9. Proposed Project Parking Accumulation by Time of Day (15-Minute Increments) and by Staff, Visitors, and Residents

	Staff		Visitor		Admissions		Discharges		Total		Accumulation
	15-Min		15-Min		15-Min		15-Min		15-Min		
15-Minute Period	In	Out	In	Out	In	Out	In	Out	Total In	Total Out	8
12:00 a.m. - 12:15 a.m.	0	1	0	0					0	1	8
12:15 a.m. - 12:30 a.m.	0	0	0	0					0	0	8
12:30 a.m. - 12:45 a.m	0	0	0	0					0	0	8
12:45 a.m - 1:00 a.m.	0	0	0	0					0	0	8
1:00 a.m. - 1:15 a.m.	0	0	0	0					0	0	8
1:15 a.m. - 1:30 a.m.	0	0	0	0					0	0	8
1:30 a.m. - 1:45 a.m.	0	0	0	0					0	0	8
1:45 a.m. - 2:00 a.m.	0	0	0	0					0	0	8
2:00 a.m. - 2:15 a.m.	0	0	0	0					0	0	8
2:15 a.m. - 2:30 a.m.	0	0	0	0					0	0	8
2:30 a.m. - 2:45 a.m.	0	0	0	0					0	0	8
2:45 a.m. - 3:00 a.m.	0	0	0	0					0	0	8
3:00 a.m. - 3:15 a.m.	0	0	0	0					0	0	8
3:15 a.m. - 3:30 a.m.	0	0	0	0					0	0	8
3:30 a.m. - 3:45 a.m.	0	0	0	0					0	0	8
3:45 a.m. - 4:00 a.m.	0	0	0	0					0	0	8
4:00 a.m. - 4:15 a.m.	0	0	0	0					0	0	8
4:15 a.m. - 4:30 a.m.	0	0	0	0					0	0	8
4:30 a.m. - 4:45 a.m.	0	0	0	0					0	0	8
4:45 a.m. - 5:00 a.m.	0	0	0	0					0	0	8
5:00 a.m. - 5:15 a.m.	0	0	0	0					0	0	8
5:15 a.m. - 5:30 a.m.	0	0	0	0					0	0	8
5:30 a.m. - 5:45 a.m.	0	0	0	0					0	0	8
5:45 a.m. - 6:00 a.m.	2	0	0	0					2	0	9
6:00 a.m. - 6:15 a.m.	0	0	0	0					0	0	10
6:15 a.m. - 6:30 a.m.	0	0	0	0					0	0	10
6:30 a.m. - 6:45 a.m.	0	0	0	0					0	0	10
6:45 a.m. - 7:00 a.m.	6	0	0	0					6	0	15
7:00 a.m. - 7:15 a.m.	3	0	0	0	0	0	0	0	3	0	18
7:15 a.m. - 7:30 a.m.	12	1	0	0	0	0	0	0	12	1	28
7:30 a.m. - 7:45 a.m.	9	9	1	0	0	0	0	0	10	9	29
7:45 a.m. - 8:00 a.m.	11	2	0	0	0	0	0	0	12	2	39
8:00 a.m. - 8:15 a.m.	3	1	0	0	0	0	0	0	3	1	42
8:15 a.m. - 8:30 a.m.	3	1	0	0	0	0	0	0	3	1	44
8:30 a.m. - 8:45 a.m.	3	0	0	1	0	0	0	0	4	1	47
8:45 a.m. - 9:00 a.m.	8	0	0	0	0	0	0	0	9	0	55
9:00 a.m. - 9:15 a.m.	8	0	1	0	0	0	0	0	9	0	64
9:15 a.m. - 9:30 a.m.	3	0	0	0	0	0	0	0	3	0	67
9:30 a.m. - 9:45 a.m.	2	0	1	0	0	0	0	0	3	0	69
9:45 a.m. - 10:00 a.m.	2	0	1	0	0	0	0	0	3	1	71
10:00 a.m. - 10:15 a.m.	1	0	1	1	0	0	0	0	2	1	72
10:15 a.m. - 10:30 a.m.	0	0	1	0	0	0	0	0	1	0	73
10:30 a.m. - 10:45 a.m.	1	0	1	1	0	0	0	0	2	1	74
10:45 a.m. - 11:00 a.m.	1	0	1	1	0	0	0	0	3	1	76
11:00 a.m. - 11:15 a.m.	1	0	1	1	0	0	1	0	3	1	79
11:15 a.m. - 11:30 a.m.	0	0	1	1	0	0	1	0	3	1	80
11:30 a.m. - 11:45 a.m.	0	0	1	1	0	0	0	0	1	1	81
11:45 a.m. - 12:00 p.m.	1	0	1	1	0	0	0	0	2	1	81
12:00 p.m. - 12:15 p.m.	0	0	1	1	0	0	0	1	2	2	80
12:15 p.m. - 12:30 p.m.	1	0	1	1	0	0	0	1	2	2	80
12:30 p.m. - 12:45 a.m	0	0	1	1	0	0	0	0	1	1	80
12:45 a.m - 1:00 p.m.	0	0	1	1	0	0	0	0	1	1	80
1:00 p.m. - 1:15 p.m.	0	0	2	1	0	0	0	0	2	1	81
1:15 p.m. - 1:30 p.m.	0	0	1	1	0	0	0	0	1	1	80
1:30 p.m. - 1:45 p.m.	0	0	2	1	0	0	0	0	3	1	82
1:45 p.m. - 2:00 p.m.	0	2	2	1	0	0	0	0	2	2	81
2:00 p.m. - 2:15 p.m.	0	0	2	2	0	0	0	0	2	2	81
2:15 p.m. - 2:30 p.m.	0	0	1	1	0	0	0	0	1	1	82
2:30 p.m. - 2:45 p.m.	0	0	2	2	0	0	0	0	2	2	81
2:45 p.m. - 3:00 p.m.	1	4	1	2	0	0	0	0	2	5	78
3:00 p.m. - 3:15 p.m.	1	2	1	2	0	0	0	0	2	4	76
3:15 p.m. - 3:30 p.m.	8	6	1	1	0	0	0	0	9	7	78
3:30 p.m. - 3:45 p.m.	4	11	2	2	0	0	0	0	6	13	72
3:45 p.m. - 4:00 p.m.	1	7	1	1	0	0	0	0	2	8	66
4:00 p.m. - 4:15 p.m.	2	5	1	1	0	0	0	0	4	7	63
4:15 p.m. - 4:30 p.m.	0	2	1	1	0	0	0	0	1	3	61
4:30 p.m. - 4:45 p.m.	0	6	1	2	0	0	0	0	1	8	54
4:45 p.m. - 5:00 p.m.	0	5	1	1	0	0	0	0	2	6	49
5:00 p.m. - 5:15 p.m.	0	7	1	1	0	0	0	0	1	8	43
5:15 p.m. - 5:30 p.m.	0	4	1	1	0	0	0	0	2	5	39
5:30 p.m. - 5:45 p.m.	0	4	1	1	0	0	0	0	1	5	36
5:45 p.m. - 6:00 p.m.	0	2	1	1	0	0	0	0	2	4	34
6:00 p.m. - 6:15 p.m.	0	2	1	1	0	0	0	0	1	4	31
6:15 p.m. - 6:30 p.m.	0	3	1	1	0	0	0	0	1	5	28
6:30 p.m. - 6:45 p.m.	0	1	1	1	0	0	0	0	1	2	27
6:45 p.m. - 7:00 p.m.	1	2	1	1	0	0	0	0	2	3	26
7:00 p.m. - 7:15 p.m.	0	2	0	1	0	0	0	0	1	3	24
7:15 p.m. - 7:30 p.m.	0	1	1	1	0	0	0	0	1	2	22
7:30 p.m. - 7:45 p.m.	0	2	1	1	0	0	0	0	1	3	20
7:45 p.m. - 8:00 p.m.	0	1	0	1	0	0	0	0	0	2	18
8:00 p.m. - 8:15 p.m.	0	3	1	0	0	0	0	0	1	3	16
8:15 p.m. - 8:30 p.m.	0	1	0	1					0	2	14
8:30 p.m. - 8:45 p.m.	0	1	0	1					0	2	13
8:45 p.m. - 9:00 p.m.	0	0	0	0					0	1	13
9:00 p.m. - 9:15 p.m.	0	1	0	1					0	1	12
9:15 p.m. - 9:30 p.m.	0	0	0	0					0	0	12
9:30 p.m. - 9:45 p.m.	0	0	0	0					0	0	12
9:45 p.m. - 10:00 p.m.	0	0	0	0					0	0	11
10:00 p.m. - 10:15 p.m.	0	0	0	0					0	0	11
10:15 p.m. - 10:30 p.m.	0	0	0	0					0	0	11
10:30 p.m. - 10:45 p.m.	0	0	0	0					0	1	11
10:45 p.m. - 11:00 p.m.	0	1	0	0					0	1	9
11:00 p.m. - 11:15 p.m.	1	0	0	0					1	0	10
11:15 p.m. - 11:30 p.m.	8	7	0	0					8	7	10
11:30 p.m. - 11:45 p.m.	3	5	0	0					3	5	8
11:45 p.m. - 12:00 a.m.	1	1	0	0					1	1	8

Note: Parking Accummulation based on operations at the existing JHL facility. Only private auto trips are included to reflect parking demand. Peak hours for analysis are highlighted in green and the peak parking demand for the day is highlighted in red.

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Table 7-10. No-Build and Build Condition Signalized Intersection Level of Service Analysis Comparison by Intersection and Approach and by Weekday A.M., Midday and P.M. Peak Hour

		Weekday a.m. Peak Hour									Weekday Midday Peak Hour									Weekday p.m. Peak Hour								
		No-Build				Build					No-Build				Build					No-Build				Build				
	Intersection & Approach	Lane Group	v/c Ratio	Delay (sec)	LOS	Lane Group	v/c Ratio	Delay (sec)	LOS		Lane Group	v/c Ratio	Delay (sec)	LOS	Lane Group	v/c Ratio	Delay (sec)	LOS		Lane Group	v/c Ratio	Delay (sec)	LOS	Lane Group	v/c Ratio	Delay (sec)	LOS	
1	**Amsterdam Avenue & West 97th Street**																											
	Westbound	TR	0.99	64.0	E	TR	1.03	73.1	E	+	TR	1.07	85.7	F	TR	1.14	110.7	F	+	TR	1.05	78.8	E	TR	1.10	92.9	F	+
	Northbound	LT	0.54	16.4	B	LT	0.54	16.5	B		LT	0.52	16.1	B	LT	0.52	16.1	B		LT	0.52	16.1	B	LT	0.52	16.1	B	
		Intersection		33.0	C	Intersection		36.7	D		Intersection		43.3	D	Intersection		54.8	D		Intersection		40.5	D	Intersection		46.8	D	
2	**Columbus Avenue & West 97th Street**																											
	Westbound	L	1.02	81.7	F	L	1.07	96.6	F	+	L	0.81	44.6	D	L	0.82	45.7	D		L	0.96	63.6	E	L	0.97	65.9	E	
		LT	1.01	73.0	E	LT	1.08	92.0	F	+	LT	1.07	90.2	F	LT	1.14	112.4	F	+	LT	1.05	80.2	F	LT	1.07	87.8	F	+
	Southbound	TR	0.81	21.5	C	TR	0.81	21.8	C		TR	0.61	16.4	B	TR	0.61	16.5	B		TR	0.68	17.5	B	TR	0.68	17.6	B	
		Intersection		44.7	D	Intersection		52.9	D		Intersection		43.9	D	Intersection		52.0	D		Intersection		44.2	D	Intersection		47.0	D	

Notes: L = Left Turn, T= Through, R = Right Turn, DefL = Defacto Left Turn; LOS = Level of Service.

Table 7-11. Build Condition Off-Street Parking Utilization Summary by Garage Operator and by Percentage Occupied and Available Spaces

ID	Garage Operator	Address	License Number	Capacity	Percentage Occupied				Available Spaces			
					a.m.	Midday	p.m.	Overnight	a.m.	Midday	p.m.	Overnight
1	Quik Park	808 Columbus Ave	1345532	324	57%	53%	47%	77%	139	152	173	74
2	Imperial Parking Systems	750 Columbus Ave	1010033	80	100%	91%	51%	96%	0	7	39	3
3	Manhattan Parking Group	120 W 97th St	N/A	250	85%	77%	59%	98%	38	57	103	5
4	Imperial Parking Systems	730 Columbus Ave	1010044	44	81%	81%	81%	Closed	8	8	8	0
5	Icon Parking Systems	50 W 97th St	691393	114	55%	55%	100%	96%	51	51	0	4
6	Chelnik Parking Co	70 W 95th St	1316580	142	79%	79%	58%	58%	29	29	60	60
7	Icon Parking Systems	721 Amsterdam Ave	1184053	185	N/A	51%	N/A	96%	N/A	91	N/A	7
8	Rapid Park	9-11 W 100th St	901540	75	76%	51%	61%	76%	18	37	29	18
9	Quik Park	801 Amsterdam Ave	1387697	40	91%	N/A		91%	4	N/A		4
10	Central Parking System	100 W 93rd St	N/A	285	76%	N/A		76%	69	N/A		69
11	Icon Parking Systems	215 W 95th St	838371	77	51%	51%	N/A	51%	38	38	N/A	38
12	Rapid Park	205 W 101st St	427235	300	61%	N/A		61%	118	N/A		118
13	Quik Park	2561 Broadway	1192927	200	N/A			76%	N/A			48
14	Hertz	214 W 95th St	1231683	250	N/A				N/A			
15	-	95 W 95th St[2]	-	57	77%	77%	81%	81%	13	13	11	11
			Total Available Spaces:	**2,423**	**78%**	**80%**	**82%**	**81%**	**526**	**485**	**424**	**459**

Notes:
1. Operator only provided peak data which will be assumed for all time periods
2. An accessory garage at 95 West 95th Street received a special permit from the City Planning Commission under ULURP No. 070381 ZSM allowing 57 public spaces. The conversion to public use has not yet occurred but is expect to occur prior to the build year of the proposed project.
3. Where noted, data was not available or not provided by the parking operator. Where no data was available, no available spaces were assumed.

Vehicular and Pedestrian Safety Assessment

Safety at Intersections. Crash data for the 2 study area intersections were obtained from NYCDOT for the 3-year period between January 1, 2009 and December 31, 2011, with supplemental data for the intersection of West 97th Street and Columbus Avenue from January 1, 2012 to December 31, 2012. The data obtained quantify the total number of reportable crashes (involving fatality, injury, or more than $1,000 in property damage), fatalities, and injuries during the study period, as well as a yearly breakdown of pedestrian- and bicycle-related crashes at each location. According to the *CEQR Technical Manual*, a high-crash location is one with more than 48 total reportable and nonreportable crashes or 5 or more pedestrian/bicycle injury crashes during any consecutive 12 months of the most recent 3-year period for which data is available.

During the 3-year period from 2009 through 2011, 32 total crashes, including 14 pedestrian-related crashes and 4 bicycle-related crashes occurred at the study area intersections. No fatalities were documented. Based on the crash data, one of the study locations, West 97th Street and Columbus Avenue, would be classified as a high pedestrian/bicycle crash location per the *CEQR Technical Manual* with 8 pedestrian/bicycle-related crashes in 2009 and 5 pedestrian/bicycle-related crashes in 2011. Table 7-12 depicts total crash characteristics by intersection during the study period, as well as a breakdown of pedestrian and bicycle crashes by year and location.

Table 7-12. Crash Data by Intersection and by Total Pedestrian, Bicycle and Combined Pedestrian/Bicycle Crashes by Year

	Crashes by Year															
	Total Crashes				Pedestrian				Bicycle				Combined Ped/Bike			
Intersection	2009	2010	2011	2012	2009	2010	2011	2012	2009	2010	2011	2012	2009	2010	2011	2012
West 97th Street/Columbus Avenue	9	5	8	8	7	2	4	3	1	2	1	0	**8**	4	**5**	3
West 97th Street/Amsterdam Avenue	4	3	3	---	0	1	0	---	0	0	0	---	0	1	0	---

Note: Intersections that are bolded reflect the occurrence of 48 or more total reportable and non-reportable crashes and/or five or more pedestrian/bicyclists injury crashes in a twelve-month period.
Source: NYCDOT crash data. Data was provided from January 1, 2009 to December 31, 2011 with supplemental data for the year of 2012 for the intersection of West 97th and Columbus Avenue.

Under the Build Condition, additional vehicular traffic would be generated at the intersection of West 97th Street and Columbus Avenue. According to the *CEQR Technical Manual*, the addition of vehicular trips to a high-crash location could result in increasingly unsafe conditions.

NYCDOT implemented a range of significant measures at this intersection and along the Columbus Avenue corridor from West 96th Street to Cathedral Parkway (West 110th Street) in September 2013 to improve safety. Improvements included a reduction in the number of travel lanes on Columbus Avenue to extend the protected bicycle lane that exists south of West 96th Street. These geometric modifications provide crosswalk refuges and shorter crossing distances for pedestrians as well as a safer environment for cyclists.

The intersection of West 97th Street and Columbus Avenue is classified as a high-crash location due mainly to the number of pedestrian accidents. The majority of these accidents occurred when pedestrians were crossing with the signal. Accidents that occur when pedestrians are crossing with the signal are likely due to vehicles making a turn off of Columbus Avenue through the western crosswalk or vehicles turning from West 97th Street through the southern crosswalk. Building on the safety improvements implemented by NYCDOT, the following improvements are proposed to address these conflicts:

- Extend the Leading Pedestrian Interval (“LPI”) crossing Columbus Avenue from 7.0 to 9.0 seconds; and

- Install “Turning Vehicles Yield to Pedestrians” signage (R10-15 in the 2009 *Manual of Uniform Traffic Control Devices*) on the southbound approach (at the northwest corner) and the westbound approach (at the southeast corner).

A review of the remaining accident data for this intersection showed that a majority of the known vehicle crashes were rear-end collisions. This suggests that improving the visibility of the traffic signal could reduce this type of accident at this location, particularly for motorists on the West 97th Street approach that arrive at the signal after traversing a long block without a traffic signal. Installation of “Signal Ahead” warning signs (W3-3 in the 2009 *Manual of Uniform Traffic Control Devices*) would warn motorists that there is a signal ahead. It is proposed that these signs be installed ahead of the westbound approach to the intersection on West 97th Street.

NYCDOT is also reviewing an area-wide safety study developed by Community Board 7 with the aim of reducing accidents involving pedestrians and bicyclists. NYCDOT could implement some or all elements of this study to further improve safety at this location.

Conclusions

Traffic Flow and Operating Conditions. The Proposed Project would add vehicle trips to the study area. The Proposed Project would result in significant adverse traffic impacts at the West 97th Street and Amsterdam Avenue and West 97th Street and Columbus Avenue intersections in the 2018 Build Year for the Proposed Project during the Weekday a.m., Weekday midday, and Weekday p.m. peak hours.

Parking Conditions. The Proposed Project would generate demand for no more than 82 parking spaces. The results of the parking analysis show that there is sufficient off-street parking within a one-quarter-mile radius of the Project Site to accommodate the parking demand generated by the Proposed Project. Therefore, no significant parking impacts were identified.

Vehicular and Pedestrian Safety Assessments. Upon review of the two study intersections, the intersection of West 97th Street and Columbus Avenue met the criteria for a high pedestrian/bicycle crash location. The Proposed Project would increase the level of vehicular activity at this intersection. NYCDOT has already implemented a range of significant pedestrian and bicycle safety improvements on Columbus Avenue, including at this intersection. Building on the improvements implemented by NYCDOT, additional safety improvements are proposed for this intersection. These improvements include extending the Leading Pedestrian Interval across Columbus Avenue and installing “Turning Vehicles Yield to Pedestrians” signage on the southbound and westbound approaches and “Signal Ahead” warning signs ahead of the westbound approach.

Chapter 8. Air Quality

Introduction

This analysis examines the potential for air quality impacts associated with the Proposed Project. Air quality impacts can be either direct or indirect. Direct impacts result from emissions generated by stationary sources at a development site, such as emissions from on-site fuel combustion for heating, ventilation, and air conditioning ("HVAC") systems. Indirect impacts are impacts that are caused by emissions from on-road vehicle trips generated by a project or other changes to future traffic conditions due to a project. The Proposed Project is not expected to significantly alter traffic conditions. The maximum hourly incremental traffic from the Proposed Project would not exceed the *CEQR Technical Manual* carbon monoxide ("CO") screening threshold of 170 peak-hour trips at nearby intersections in the study area, nor would it exceed the particulate matter ("PM") emission screening threshold discussed in Chapter 17, Sections 210 and 311 of the *CEQR Technical Manual*. Therefore, a quantified assessment of on-street mobile source emissions is not warranted.

The Proposed Project would include a natural-gas-fired HVAC system; therefore, a stationary source analysis was conducted to evaluate potential future pollutant concentrations with the proposed HVAC system. The primary pollutant of concern is nitrogen dioxide ("NO_2") from natural gas combustion in the HVAC system.

Air Quality Standards

National and State Ambient Air Quality Standards. As required by the *Clean Air Act ("CAA")*, primary and secondary National Ambient Air Quality Standards ("NAAQS") have been established for six major air pollutants: CO, NO_2, ozone ("O_3"), respirable PM (both $PM_{2.5}$ and PM_{10}), sulfur dioxide ("SO_2"), and lead. The primary standards represent levels that are requisite to protect the public health, allowing an adequate margin of safety. The secondary standards are intended to protect the nation's welfare, and account for air pollutant effects on soil, water, visibility, materials, vegetation, and other aspects of the environment. The primary standards are generally either the same as the secondary standards or more restrictive. The NAAQS are presented in Table 8-1. The NAAQS for CO, annual NO_2, and 3-hour SO_2 have also been adopted as the ambient air quality standards for New York State, but are defined on a running 12-month basis rather than for calendar years only. New York State also has standards for total suspended PM, settleable particles, nonmethane hydrocarbons, 24-hour and annual SO_2, and ozone, which correspond to federal standards that have since been revoked or replaced, and for the noncriteria pollutants beryllium ("Be"), fluoride ("F"), and hydrogen sulfide ("H_2S"). New York State ambient air quality standards are presented in Table 8-2.

Table 8-1. National Ambient Air Quality Standards (NAAQS) by Pollutant and by Primary and Secondary Standards

Pollutant	Primary Standards		Secondary Standards	
	Parts per Million (ppm)	**Micrograms per cubic meter (µg/m^3)**	**Parts per Million (ppm)**	**Micrograms per cubic meter (µg/m^3)**
Carbon Monoxide (CO)				
8-Hour Average [1]	9	10,000	None	
1-Hour Average [1]	35	40,000		
Lead (Pb)				
Rolling 3-Month Average [2]	NA	0.15	NA	0.15
Nitrogen Dioxide (NO_2)				
1-Hour Average [3]	0.100	189	None	
Annual Average	0.053	100	0.053	100
Ozone (O_3)				
8-Hour Average [4, 5]	0.075	150	0.075	150
Respirable Particulate Matter (PM_{10})				
24-Hour Average [1]	NA	150	NA	150
Fine Respirable Particulate Matter ($PM_{2.5}$)				
Annual Mean [6]	NA	12	NA	15
24-Hour Average [7]	NA	35	NA	35
Sulfur Dioxide (SO_2) [8]				
1-Hour Average[9]	0.075	196	NA	NA
Maximum 3-Hour Average [1]	NA	NA	0.50	1,300

Notes:
ppm – parts per million (unit of measure for gases only)
µg/m^3 – micrograms per cubic meter (unit of measure for gases and particles, including lead)
NA – not applicable
All annual periods refer to calendar year.
Standards are defined in ppm. Approximately equivalent concentrations in µg/m^3 are presented.
(1) Not to be exceeded more than once a year.
(2) USEPA has lowered the NAAQS down from 1.5 µg/m^3, effective January 12, 2009.
(3) 3-year average of the annual 98th percentile daily maximum 1-hour average concentration. Effective April 12, 2010.
(4) 3-year average of the annual fourth highest daily maximum 8-hour average concentration.
(5) USEPA has proposed lowering the primary standard further to within the range 0.060-0.070 ppm, and adding a secondary standard measured as a cumulative concentration within the range of 7 to 15 ppm-hours aimed mainly at protecting sensitive vegetation. A final decision on this standard has been postponed but is expected to occur in 2013.
(6) 3-year average of annual mean. USEPA has lowered the primary standard from 15 µg/m^3, effective March 2013.
(7) Not to be exceeded by the annual 98th percentile when averaged over 3 years.
(8) USEPA revoked the 24-hour and annual primary standards, replacing them with a 1-hour average standard. Effective August 23, 2010.
(9) 3-year average of the annual 99th percentile daily maximum 1-hour average concentration.
Source: 40 *Code of Federal Regulations ("CFR")* Part 50: National Primary and Secondary Ambient Air Quality Standards.

Table 8-2. New York State Ambient Air Quality Standards by Pollutant and by Standard

Pollutant	Standard		Objective
	Parts per Million (ppm)	Micrograms per cubic meter ($\mu g/m^3$)	
CO, NO_2,[2] and **SO_2** standards are same as NAAQS, but refer to any consecutive 12 months, not only calendar years as defined in the NAAQS. See previous table.			
Ozone (O_3)			
1-Hour Average[1,3]	0.12	240	Health and Welfare
Total Suspended Particles (TSP) [3]			
Annual Geometric Mean (New York City)	NA	75	Health
24-Hour Average [1]	NA	250	
Settleable Particles (Dustfall) [3]			
In Any 12 Consecutive Months, 50 Percent of 30-Day Averages (New York City)	0.60 $mg/cm^2/mo$		Alleviate Nuisance and Economic
In Any 12 Consecutive Months, 84 Percent of 30-Day Averages (New York City)	0.90 $mg/cm^2/mo$		
Fluorides			
12-Hour Average	4.5	3.7	Protect Vegetation
24-Hour Average	3.5	2.85	
1-Week Average	2.0	1.65	
1-Month Average	1.0	0.8	
Total Fluorides in and on Forage for Consumption by Grazing Ruminants			
Growing Season (<6 Consecutive Months)	40	NA	Protect Grazing Ruminants
Any 60-Day Period	60	NA	
Any 30-Day Period	80	NA	
Non-Methane Hydrocarbons (NMHC) [1, 3]			
Averaged from 6:00 a.m. to 9:00 a.m.	0.24	160	Ozone Prevention
Beryllium			
Any Detected	None	0.01	Health
Hydrogen Sulfide (H_2S)			
1-Hour Average	0.01	14	Odor Prevention

Notes: ppm – parts per million
$\mu g/m^3$ – micrograms per cubic meter
NA – not applicable
TSP concentrations are in $\mu g/m^3$ only since ppm is a measure for gas concentrations.
(1) Not to be exceeded more than once a year.
(2) The 0.05 ppm NO_2 standard is based on the 100 $\mu g/m^3$ value given in the federal standard; however, the federal standard approximated this value more accurately as 0.053 ppm.
(3) Based on Federal standard which has since been revoked.
Source: 6 *N.Y.C.R.R.* Part 257: Air Quality Standards.

The United States Environmental Protection Agency ("USEPA") has revised the NAAQS for PM, effective December 18, 2006. The revision included lowering the level of the 24-hour $PM_{2.5}$ standard from 65 µg/m^3 to 35 µg/m^3 and retaining the level of the annual standard at 15 µg/m^3. The PM_{10} 24-hour average standard was retained and the annual average PM_{10} standard was revoked. USEPA recently lowered the primary annual-average standard for PM_{10} from 15 µg/m^3 to 12 µg/m^3, effective March 2013.

USEPA has also revised the 8-hour ozone standard, lowering it from 0.08 to 0.075 parts per million ("ppm"), effective as of May 2008. On January 6, 2010, USEPA proposed to lower the 2008 ozone NAAQS from the current 0.075 ppm level to within the range of 0.060 to 0.070 ppm and instituting a secondary ozone standard, measured as a cumulative concentration within the range of 7 to 15 ppm-hours aimed mainly at protecting sensitive vegetation; a final decision on these standards has been postponed and is currently in review.

USEPA lowered the primary and secondary standards for lead to 0.15 µg/m^3, effective January 12, 2009. USEPA revised the averaging time for this pollutant to a rolling 3-month average and the form of the standard to not-to-exceed across a 3-year span.

USEPA established a 1-hour average NO_2 standard of 0.100 ppm, effective April 12, 2010, in addition to the annual standard of 0.053 ppm. The form of the standard is the year average of the 98th percentile of the daily maximum 1-hour average concentration in a year (the 8th highest daily maximum corresponds approximately to the 98th percentile for a year).

USEPA also established a 1-hour average SO_2 standard of 0.075 ppm, which replaced the 24-hour and annual primary standards, effective August 23, 2010. The form of the standard is the 3-year average of the 99th percentile of the annual distribution of the daily maximum 1-hour concentrations (the 4th highest daily maximum corresponds approximately to 99th percentile for a year).

Federal ambient air quality standards do not exist for noncriteria pollutants; however, as mentioned above, the New York State Department of Environmental Conservation ("NYSDEC") has issued standards for three noncriteria compounds: Be, F, and H_2S, as shown in Table 8-2. NYSDEC has also developed a guidance document DAR-1 (October 2010), which contains a compilation of annual and short-term (1-hour) guideline concentrations for numerous other noncriteria compounds. The NYSDEC guidance thresholds represent ambient levels that are considered safe for public exposure.

NAAQS Attainment Status and State Implementation Plans ("SIPs"). The CAA, as amended in 1990, defines nonattainment areas ("NAAs") as geographic regions that have been designated as not meeting one or more of the NAAQS. When an area is designated as nonattainment by USEPA, the state is required to develop and implement a State Implementation Plan ("SIP"), which delineates how a state plans to achieve air quality that meets the NAAQS under the deadlines established by the CAA, followed by a plan for maintaining attainment status once the area is in attainment.

In 2002 USEPA redesignated New York City as in attainment for CO. Under the resulting maintenance plan, New York City is committed to implementing site-specific control measures throughout the city to reduce CO levels, should unanticipated localized growth result in elevated CO levels during the maintenance period.

Manhattan has been designated as a moderate NAA for PM_{10}. On January 30, 2013, New York State requested that USEPA approve its withdrawal of the 1995 SIP and redesignation request for the 1987 PM_{10} NAAQS, and that USEPA make a clean data finding instead, based on data monitored from 2009-2011 indicating PM_{10} concentrations well below the 1987 NAAQS. Although not yet a redesignation to attainment status, if approved, this determination would remove further requirements for related SIP submissions.

On December 17, 2004, USEPA took final action designating the five New York City counties (Bronx, Kings, New York, Queens and Richmond) and Nassau, Suffolk, Rockland, Westchester, and Orange Counties as a $PM_{2.5}$ NAA under the CAA due to exceedance of the annual average standard. Based on recent monitoring data (2006-2011), annual average concentrations of $PM_{2.5}$ in New York City no longer exceed the annual standard. USEPA has determined that the area has attained the 1997 annual $PM_{2.5}$ NAAQS, effective December 15, 2010. Although not yet a redesignation to attainment status, this determination removes further requirements for related SIP submissions. New York State submitted a redesignation request and maintenance plan to USEPA in February 2013. As stated above, USEPA has recently lowered the annual average primary standard to 12 $\mu g/m^3$. USEPA will make initial attainment designations by December 2014. Based on analysis of 2009-2011 monitoring data, it is possible that the region will be in attainment for the new standard.

As described above, USEPA has revised the 24-hour average $PM_{2.5}$ standard. In November 2009, USEPA designated the New York City Metropolitan Area as nonattainment with the 2006 24-hour $PM_{2.5}$ NAAQS. The NAA includes the same 10-county area originally designated as nonattainment with the 1997 annual $PM_{2.5}$ NAAQS. Based on recent monitoring data (2007-2011), USEPA determined that the area has attained the standard. Although not yet a redesignation to attainment status, this determination removes further requirements for related SIP submissions. New York State submitted a redesignation request and maintenance plan to USEPA in February 2013.

Nassau, Rockland, Suffolk, Westchester, Lower Orange County Metropolitan Area (“LOCMA”), and the five New York City counties (the New York-New Jersey-Long Island Nonattainment Area, New York portion) had been designated as a severe nonattainment area for ozone (1-hour average standard, 0.12 ppm). In November 1998, New York State submitted its Phase II Alternative Attainment Demonstration for Ozone, which was finalized and approved by USEPA effective March 6, 2002, addressing attainment of the 1-hour ozone NAAQS by 2007. The 1-hour standard was revoked in 2004 when it was replaced by the 8-hour ozone standard, but certain further requirements remained (‘anti-backsliding’). On December 7, 2009, USEPA determined that the Poughkeepsie nonattainment area (which includes the counties of Dutchess, Orange, Ulster, and Putnam) had attained the 1-hour standard. On June 18, 2012, USEPA determined that the New York-New Jersey-Long Island NAA had also attained the standard. Although not yet a redesignation to attainment status, this determination removes further requirements under the 1-hour standard.

Effective June 15, 2004, USEPA designated these same counties as moderate nonattainment for the 1997 8-hour average ozone standard (LOCMA was moved to the Poughkeepsie moderate nonattainment area for 8-hour ozone). On February 8, 2008, NYSDEC submitted final SIP revisions to USEPA to address the 1997 8-hour ozone standard. Based on recent monitoring data (2007-2011), USEPA determined that the Poughkeepsie and the NY-NJ-CT areas have attained the 1997 8-hour ozone NAAQS (0.08 ppm). Although not yet a redesignation to attainment status, this determination removes further requirements under the 1997 8-hour standard. In March 2008, USEPA strengthened the 8-hour ozone standards. USEPA designated the counties of Suffolk, Nassau, Bronx, Kings, New York, Queens, Richmond, Rockland, and Westchester (NY portion of the New York-Northern New Jersey-Long Island, NY-NJ-CT NAA) as a marginal nonattainment area for the 2008 ozone NAAQS, effective July 20, 2012. SIPs will be due in 2015.

New York City is currently in attainment of the annual-average NO_2 standard. USEPA has designated the entire state of New York as "unclassifiable/attainment" of the 1-hour NO_2 standard effective February 29, 2012. Since additional monitoring is required for the 1-hour standard, areas will be reclassified once 3 years of monitoring data are available (2016 or 2017).

USEPA has established a 1-hour SO_2 standard, replacing the former 24-hour and annual standards, effective August 23, 2010. USEPA finalized attainment status designations with respect to the 1-hour SO_2 standard; these became effective on October 4, 2013. New York City was determined to be in attainment of the standard.

Methodology for Predicting Pollutant Concentrations

A stationary source screening analysis was conducted to evaluate potential impacts from the proposed HVAC system using the methodology described in the *CEQR Technical Manual*, which determines the threshold of development size below which the proposed project would not have a significant adverse impact. The screening procedures utilize information regarding the type of fuel to be burned, the maximum development size, and the system's exhaust stack height, to evaluate whether or not a significant impact is likely to occur and whether additional analysis would be required.

The primary pollutant of concern when burning natural gas is NO_2. National and/or state standards for other regulated pollutants are either not relevant or would not be exceeded due to the levels of emissions from the proposed HVAC system.

Based on the distance from the Proposed Project to the nearest building of similar or greater height, if the maximum development size is greater than the threshold size in the *CEQR Technical Manual*, there is the potential for significant adverse air quality impacts, and a refined dispersion modeling analysis would be required to assess that potential. If the threshold is not exceeded, no further analysis is required.

Probable Impacts of the Proposed Project

As described above, a stationary source screening analysis was performed that applied the thresholds included in the *CEQR Technical Manual* to evaluate the potential for significant adverse impacts to air quality from operation of the HVAC system at the Proposed Project. The primary pollutant of concern is NO_2 from the combustion of natural gas fuel.

Figure 17-7 of the *CEQR Technical Manual* plots curves for each stack height based upon development size and distance to the nearest building. If the maximum development size and distance to the nearest building information for the project falls below the appropriate curve, no impact would be expected. The maximum development floor area of approximately 376,000 gross square feet and a stack height of approximately 280 feet above grade were used as input for the screening analysis. The nearest distance to a building of similar or greater height was determined to be approximately 210 feet directly east of the Proposed Project at 808 Columbus Avenue.

Using natural gas would not result in any significant stationary source air quality impacts because at this distance, the proposed building would be below the curve for a 165-foot stack shown in Figure 17-7 of the *CEQR Technical Manual*. Therefore, no significant adverse impacts are expected, and no further analysis is required.

The Proposed Project would also include one 1,250-kilowatt ("KW"), diesel, emergency generator located on the roof of the proposed building, south of the HVAC system. As with emergency generators in most buildings in New York City, the proposed generator would be tested at regular intervals to ensure its availability and reliability in the event of an actual emergency. The proposed generator would not be operated continuously and would not constitute a significant long-term source of air pollution.

Conclusions

The stationary source screening analysis determined that the use of natural gas would not result in any significant stationary source air quality impacts because the proposed building and the proposed stack heights would remain within *CEQR Technical Manual* guidelines. Therefore, no significant adverse impacts are expected as a result of the operation of the HVAC system at the Proposed Project, and no further analysis is required. As with emergency generators in most buildings in New York City, the Proposed Project's emergency generator would be tested at regular intervals to ensure its availability and reliability in the event of an actual emergency. The proposed generator would not be operated continuously and would not constitute a significant long-term source of air pollution.

Based on the above information, the Proposed Project would not result in any significant adverse stationary source air quality impacts.

Chapter 9. Greenhouse Gas Emissions

Introduction

This chapter addresses the greenhouse gas ("GHG") emissions that would be generated by the construction and operation of the Proposed Project. In addition to the GHG emissions estimate, measures that would be implemented to limit those emissions are discussed and evaluated.

GHGs are those gaseous constituents of the atmosphere, from both natural and anthropogenic emission sources (i.e., resulting from the influence of human beings), that absorb infrared radiation (heat) emitted from the earth's surface, the atmosphere, and clouds. This property causes the general warming of the earth's atmosphere, or the "greenhouse effect."

As discussed in the *CEQR Technical Manual*, climate change is predicted to have wide-ranging effects on the environment, including rising sea levels, increases in temperature, and changes in precipitation levels. Although this is occurring on a global scale, the environmental effects of climate change are also likely to be felt at the local level. Through PlaNYC, New York City has established sustainability initiatives and goals for greatly reducing GHG emissions and for adapting to climate change in the city.

Per the *CEQR Technical Manual,* the citywide 2030 GHG reduction goal is currently the most appropriate standard by which to analyze a project under *CEQR*. The *CEQR Technical Manual* recommends that a GHG consistency assessment be conducted for any project undergoing an EIS and resulting in 350,000 gross square feet ("gsf") or more of development, and other energy-intensive projects. The Proposed Project would result in 376,000 gsf of developed floor area. Accordingly, a GHG consistency assessment is provided.

Pollutants of Concern

GHGs are those gaseous constituents of the atmosphere, both natural and anthropogenic, which absorb and emit radiation at specific wavelengths within the spectrum of infrared radiation emitted by the earth's surface, the atmosphere, and clouds. This property causes the general warming of the earth's atmosphere, or the "greenhouse effect." Water vapor, carbon dioxide ("CO_2"), nitrous oxide ("N_2O"), methane ("CH_4"), and ozone ("O_3") are the primary greenhouse gases in the earth's atmosphere.

There are also a number of entirely anthropogenic (resulting from human activity) greenhouse gases in the atmosphere, such as the halocarbons and other chlorine- and bromine-containing substances, which also damage the stratospheric ozone layer (contributing to the "ozone hole"). Since these compounds are being replaced and phased out due to the 1987 Montreal Protocol, there is no need to address them in project-related GHG assessments for most projects. Although ozone itself is also a major greenhouse gas, it does not need to be assessed as such at the project level since it is a rapidly reacting chemical and efforts are ongoing to reduce ozone concentrations as a criteria pollutant (see Chapter 8, "Air Quality").

Similarly, water vapor is of great importance to global climate change, but is not directly of concern as an emitted pollutant since the negligible quantities emitted from anthropogenic sources are inconsequential.

CO_2 is the primary pollutant of concern from anthropogenic sources. Although not the GHG with the strongest effect per molecule, CO_2 is by far the most abundant and, therefore, the most influential GHG. CO_2 is emitted from any combustion process (both natural and anthropogenic), from some industrial processes such as the manufacture of cement, mineral production, metal production, and the use of petroleum-based products, from volcanic eruptions, and from the decay of organic matter. CO_2 is removed ("sequestered") from the lower atmosphere by natural processes such as photosynthesis and uptake by the oceans. CO_2 is included in any analysis of GHG emissions.

Methane and nitrous oxide also play an important role since the removal processes for these compounds are limited and they have a relatively high impact on global climate change as compared to an equal quantity of CO_2. Emissions of these compounds, therefore, are included in GHG emissions analyses when the potential for substantial emission of these gases exists.

The *CEQR Technical Manual* lists six GHGs that could potentially be included in the scope of an EIS: CO_2, N_2O, CH_4, hydrofluorocarbons ("HFCs"), perfluorocarbons ("PFCs"), and sulfur hexafluoride ("SF_6"). This analysis focuses mostly on CO_2, N_2O, and CH_4. There are no significant direct or indirect sources of HFCs, PFCs, or SF_6 associated with the Proposed Project.

To present a complete inventory of all GHGs, component emissions are added together and presented as carbon dioxide equivalent ("CO_2e") emissions — a unit representing the quantity of each GHG weighted by its effectiveness using CO_2 as a reference. This is achieved by multiplying the quantity of each GHG emitted by a factor called global warming potential ("GWP"). GWPs account for the lifetime and the radiative forcing of each chemical over a period of 100 years (e.g., CO_2 has a much shorter atmospheric lifetime than SF_6 and, therefore, has a much lower GWP). The GWPs for the main GHGs discussed here are presented in Table 9-1.

Table 9-1. 100-Year Horizon Global Warming Potential (GWP) for Major GHGs by Greenhouse Gas

Greenhouse Gas	100-Year Horizon GWP
Carbon Dioxide (CO_2)	1
Methane (CH_4)	21
Nitrous Oxide (N_2O)	310
Hydrofluorocarbons (HFCs)	140 to 11,700
Perfluorocarbons (PFCs)	6,500 to 9,200
Sulfur Hexafluoride (SF_6)	23,900

Source: *2012 CEQR Technical Manual*
Note: The GWPs presented above are based on the Intergovernmental Panel on Climate Change's ("IPCC") Second Assessment Report ("SAR") to maintain consistency in GHG reporting. The IPCC has since published updated GWP values that reflect new information on atmospheric lifetimes of GHGs and an improved calculation of the radiative forcing of CO_2. In some instances, if combined emission factors were used from updated modeling tools, some slightly different GWP may have been used for this study. Since the emissions of GHGs other than CO_2 represent a very minor component of the emissions, these differences are negligible.

Policy, Regulations, Standards, and Benchmarks for Reducing GHG Emissions

As a result of the growing consensus that human activity resulting in GHG emissions has the potential to profoundly impact the earth's climate, countries around the world have undertaken efforts to reduce emissions by implementing both global and local measures addressing energy consumption and production, land use, and other sectors. Although the U.S. has not ratified the international agreements which set emissions targets for GHGs, in a step toward the development of national climate change regulation, the U.S. has committed to reducing emissions to 17 percent lower than 2005 levels by 2020 and to 83 percent lower than 2005 levels by 2050 via the Copenhagen Accord.[1] Without legislation focused on this goal, the United States Environmental Protection Agency ("USEPA") is required to regulate greenhouse gases under the *Clean Air Act ("CAA")*, and has already begun preparing and implementing regulations pursuant to its authority under the *CAA*. For example, on March 27, 2012, USEPA proposed a Carbon Pollution Standard for New Power Plants that would, for the first time, set national limits on the amount of carbon pollution that power plants can emit. USEPA expects to expand this program in the future to limit emissions from additional stationary source. In coordination with the National Highway Traffic Safety Administration ("NHTSA"), USEPA has also begun to regulate GHG emissions from newly manufactured on-road vehicles. In addition, USEPA regulates transportation fuels via the Renewable Fuel Standard program, which will phase in a requirement for the inclusion of renewable fuels increasing annually up to 36.0 billion gallons in 2022.

There are also regional, state, and local efforts to reduce GHG emissions. In 2009, Governor Paterson issued Executive Order №. 24, establishing a goal of reducing GHG emissions in New York State by 80 percent, compared to 1990 levels, by 2050, and creating a Climate Action Council tasked with preparing a climate action plan outlining the policies required to attain the GHG reduction goal (that effort is currently under way).[2] The 2009 New York State Energy Plan[3] outlines the state's energy goals and provides strategies and recommendations for meeting those goals (a new plan will be published in the spring of 2014). The state's goals include:

- Implementing programs to reduce electricity use by 15 percent below 2015 forecasts;
- Updating the energy code and enacting product efficiency standards;
- Reducing vehicle miles traveled ("VMT") by expanding alternative transportation options; and
- Implementing programs to increase the proportion of electricity generated from renewable resources to 30 percent of electricity demand by 2015.

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[1] Todd Stern, U.S. Special Envoy for Climate Change, letter to Mr. Yvo de Boer, United Nations Framework Convention on Climate Change ("UNFCCC"), January 28, 2010.
[2] http://www.dec.ny.gov/energy/80930.html
[3] New York State, *2009 New York State Energy Plan*, December 2009.

New York State has also developed regulations to cap and reduce CO_2 emissions from power plants to meet its commitment to the Regional Greenhouse Gas Initiative ("RGGI"). Under the RGGI agreement, the governors of nine northeastern and Mid-Atlantic States have committed to regulate the amount of CO_2 that power plants are allowed to emit, gradually reducing emissions to 10 percent below the 2009 levels by 2018. The 10 RGGI states and Pennsylvania have also announced plans to reduce GHG emissions from transportation, through the use of biofuel, alternative fuel, and efficient vehicles.

Many local governments worldwide, including New York City, are participating in the Cities for Climate Protection™ ("CCP") campaign and have committed to adopting policies and implementing quantifiable measures to reduce local GHG emissions, improve air quality, and enhance urban livability and sustainability. New York City's long-term sustainability program, PlaNYC 2030, includes GHG emissions reduction goals, specific initiatives that can result in emission reductions, and initiatives aimed at adapting to future climate change impacts. The goal to reduce citywide GHG emissions to 30 percent below 2005 levels by 2030 was codified by Local Law 22 of 2008, known as the *New York City Climate Protection Act* (the "GHG reduction goal").[4] The city has also announced a longer-term goal of reducing emissions to 80 percent below 2005 levels by 2050, and is currently engaged in the preparation of a plan to achieve that goal. For certain projects subject to *CEQR* (e.g., projects with 350,000 gsf or more of development or other energy-intensive projects), an analysis of the project's contribution of GHG emissions is required to determine its consistency with the city's citywide reduction goal, which is currently the most appropriate standard by which to analyze a project under *CEQR Technical Manual* guidance. Consequently, the GHG emissions analysis is applied in this chapter.

In December 2009 the New York City Council enacted four laws addressing energy efficiency in new and existing buildings, as recommended in PlaNYC. The laws require owners of existing buildings larger than 50,000 gsf to conduct energy efficiency audits every 10 years, to optimize building energy efficiency, and to "benchmark" the building energy and water consumption annually, using an USEPA online tool. By 2025, commercial buildings over 50,000 sf will also require lighting upgrades, including the installation of sensors and controls, more efficient light fixtures, and the installation of submeters, so that tenants can be provided with information on their electricity consumption. The legislation also creates a local *New York City Energy Code*, which along with the *New York State Energy Conservation Code* (as updated in 2010), requires equipment installed during a renovation to meet current efficiency standards.

A number of benchmarks for energy efficiency and green building design have also been developed. For example, the Leadership in Energy and Environmental Design ("LEED") system is a benchmark for the design, construction, and operation of high performance green buildings that includes energy efficiency components. USEPA's Energy Star is a voluntary labeling program designed to identify and promote the construction of new energy efficient buildings, facilities, and homes and the purchase of energy efficient appliances, heating and cooling

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[4] *Administrative Code of the City of New York*, §24-803.

systems, office equipment, lighting, home electronics, and building envelopes. Jewish Home Lifecare, Manhattan ("JHL") is currently evaluating the specific energy-efficiency measures and design elements which would be implemented, and intends to achieve certification under the LEED rating system.

Methodology

Although the contribution of any single project's emissions to climate change is infinitesimal, the combined GHG emissions from all human activity are severely impacting global climate. While the increments of criteria pollutants and toxic air emissions are assessed in the context of health-based standards and local impacts, there are no established thresholds for assessing the significance of a project's contribution to climate change. Nonetheless, prudent planning dictates that all sectors address GHG emissions by identifying GHG sources and practicable means to reduce them. Therefore, this chapter presents the total GHG emissions potentially associated with the Proposed Project and identifies measures that would be implemented and measures that are still under consideration to limit emissions.

The analysis of GHG emissions that would be associated with the Proposed Project is based on the methodology presented in the *CEQR Technical Manual*. Estimates of emissions of GHGs from the Proposed Project have been quantified, including off-site emissions associated with use of electricity, on-site emissions from heat and hot water systems, and emissions from vehicle use associated with the Proposed Project. GHG emissions that would result from construction are discussed as well.

CO_2 is the primary pollutant of concern from anthropogenic emission sources and is accounted for in the analysis of emissions from all development projects. GHG emissions for gases other than CO_2 are included where practicable or in cases where they comprise a substantial portion of overall emissions. The various GHG emissions are added together and presented as metric tons ("mton") of CO_2e emissions per year (see "Pollutants of Concern," above).

Building Operational Emissions. Emissions due to electricity and fuel oil use were developed using preliminary estimates of projected energy consumption developed specifically for the Proposed Project by the project engineers and the emission factors referenced in the 2011 inventory of GHG emissions for New York City.[5] The Proposed Project is estimated to require 8.2 gigawatt-hours per year ("GWh/yr") of electricity and approximately 21.4 million standard cubic feet ("MMscf") of natural gas. Note that these estimates conservatively do not include energy-efficiency measures which are currently being evaluated for the Proposed Project (more detail later in this chapter). GHG emission factors for natural gas and grid supplied electricity were taken from New York City's GHG inventory. The energy consumption and the emission factors used are detailed in the following section.

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[5] The City of New York Mayor's Office of Long-Term Planning and Sustainability, *Inventory of New York City Greenhouse Gas Emissions*, December 2012.

Mobile Source Emissions. The number of annual weekday vehicle trips by mode (cars, taxis, and trucks) that would be generated was calculated using the transportation planning assumptions developed for the analysis and presented in Chapter 7, "Transportation." The assumptions used in the calculation include average daily weekday person trips and delivery trips by proposed use, the percentage of vehicle trips by mode, and the average vehicle occupancy. To calculate annual totals, the number of trips on weekend days were assumed to be the same as on weekdays, because staff trips would be slightly fewer on weekends, visitor trips would be slightly higher, admissions/discharges and off-site appointments would be similar (or maybe slightly lower), and deliveries would be lower. An additional 10 percent was added to the truck deliveries projected for the 7:00 a.m. to 7:00 p.m. total to account for delivery trips occurring before 7:00 a.m. Travel distances shown in Table 18-4 of the *CEQR Technical Manual* were used in the calculations of annual VMT by cars, taxis, and trucks. The average truck trip was assumed to be 38 miles, per the *CEQR Technical Manual*. Table 18-6 of the *CEQR Technical Manual* was used to determine the percentage of VMT by road type and the mobile GHG emissions calculator was used to obtain an estimate of car, taxi, and truck GHG emissions attributable to the projects.

USEPA estimates that the well-to-pump GHG emissions of gasoline and diesel are more than 20 percent of the tailpipe emissions.[6] Although upstream emissions (emissions associated with production, processing, and transportation) of all fuels can be substantial and are important to consider when comparing the emissions associated with the consumption of different fuels, fuel alternatives are not being considered for the Proposed Project, and per the *CEQR Technical Manual* guidance, the well-to-pump emissions are not considered in the analysis. The assessment of tailpipe emissions only is in accordance with the *CEQR Technical Manual* guidance on assessing GHG emissions and the methodology used in developing the New York City GHG inventory, which is the basis of the GHG reduction goal.

The projected annual VMT, forming the basis for the GHG emissions calculations from mobile sources, is 782,354 VMT for cars, 51,655 VMT for taxis and 859,940 VMT for trucks, as detailed in Table 9-2.

Table 9-2. Annual Vehicle Miles Traveled (VMT) per Year by Mode and by Vehicle Type

Mode	Passenger Vehicles	Taxi	Truck
Local	172,118	11,364	189,187
Arterial	375,530	24,794	412,771
Interstate/Expressway	234,706	15,496	257,982
Total	*782,354*	*51,655*	*859,940*
Note: VMT calculations are not limited to any specific geographic area.			

[6] Environmental Protection Agency, *MOVES2004 Energy and Emission Inputs*, Draft Report, EPA420-P-05-003, March 2005.

Construction Emissions. Emissions associated with construction have not been estimated explicitly for the Proposed Project, but analyses of residential projects in New York City have shown that construction emissions (both direct and emissions embedded in the production of materials, including on-site construction equipment, delivery trucks, and upstream emissions from the production of steel, rebar, aluminum, and cement used for construction) are equivalent to the total operational emissions over approximately 5 to 10 years.

Emissions from Solid Waste Management. The Proposed Project would not fundamentally change the city's solid waste management system. Therefore, the GHG emissions from solid waste generation, transportation, treatment, and disposal do not need to be quantified.

Projected GHG Emissions from the Proposed Project

Building Operational Emissions. The fuel consumption, electricity use, emission factors, and resulting GHG emissions from the Proposed Project are presented in detail in Table 9-3. Most of the emissions would be associated with electricity consumption rather than fuel use. This is a result of the carbon intensity of the electricity delivered in New York City, the selection of the relatively low-carbon natural gas, and the differences in consumption of the two energy sources. Note that these estimates do not include energy efficiency measures which are still being evaluated for the Proposed Project (see below). Based on initial estimates, it is expected that the Proposed Project would be designed to reduce energy expenditure by at least 10 percent (to meet the LEED prerequisite) and may reduce energy expenditure by up to 20 percent as compared to a baseline building designed to meet but not exceed building energy code requirements. The total estimated annual building operational GHG emissions for the 2018 Build Year is 3,617 mtons of CO_2e.

Table 9-3. Estimated 2018 Annual Building Operational Energy Consumption in Million Standard Cubic Feet (MMscf) and Gigawatt Hours per Year (GWh/yr) and Emission Factors in Metric Tons (mtons) per MMscf (mtons/MMscf) and mton/Megawatt Hours (MWh), and GHG Emissions (mtons/CO_2e/Year) by Fuel Type

	Natural Gas	Electricity
Annual Fuel Consumption	21.4 MMscf	8.2 GWh/yr
Emission Factor (mtons/million Btu) *	54.70 mton/MMscf	298.3 mton/MWh
GHG Emissions (mtons CO_2e/year)	*1,171*	*2,446*
Total	***3,617***	
Note: *From PlaNYC inventory (for 2011) *Unit: British Thermal Unit (BTU)*		

Mobile Source Emissions. The detailed mobile source related GHG emissions from the Proposed Project are presented in detail in Table 9-4. The total estimated mobile source emissions for the 2018 Build Year is 2,443 mtons of CO_2e.

Table 9-4. Estimated 2018 Mobile Source Emissions in Metric Tons of Carbon Dioxide Equivalent (mtons CO_2e) by Roadway Type and Vehicle Type

Roadway Type	Mobile Source Emissions (mtons/CO_2e)			
	Passenger Vehicle	Taxi	Truck	Total
Local	174	10	637	**822**
Arterial	232	14	857	**1,102**
Interstate/Expressway	102	6	410	**518**
Total	*508*	*30*	*1,904*	***2,443***

Summary. A summary of GHG emissions by source type is presented in Table 9-5. The total estimated annual GHG emissions for the 2018 Build Year is 6,059 mtons of CO_2e. Note that if a new building were to be constructed elsewhere to accommodate the same uses, the emissions from the use of electricity, energy for heating and hot water, and vehicle use could equal or exceed those estimated for the Proposed Project, depending on the location, access to transit, building type, and energy efficiency measures. As described in the "Methodology" section above, construction emissions were not modeled explicitly, but are estimated to be equivalent to approximately 5 to 10 years of operational emissions, including both direct energy and emissions embedded in materials (extraction, production, and transport). Per the *CEQR Technical Manual* guidance, the Proposed Project would not result in changes to any regulations or other actions that fundamentally change the city's solid waste management system by changing solid waste transport mode, distances, or disposal technologies and, thus, would not fundamentally change the city's solid waste management system. Therefore, the GHG emissions from solid waste generation, transportation, treatment, and disposal do not need to be quantified.

Table 9-5. Summary of Estimated 2018 Annual GHG Emissions in Metric Tons of Carbon Dioxide Equivalent (mtons CO_2e) by Source and Type

Source	Emissions
Building Operations	3,617
Mobile	2,443
Total	6,059

The operational emissions from building energy use include on-site emissions from fuel consumption as well as emissions associated with the production and delivery of the electricity to be used on site. JHL is currently evaluating specific energy-efficiency measures and design elements that would be implemented (see below), and intends to achieve certification under the LEED rating system. To qualify for LEED, the building would be required to exceed the energy requirements of the building code and American Society of Heating, Refrigeration, and Air-Conditioning Engineers ("ASHRAE") 90.1-2007, so as to reduce energy expenditure by at least

10 percent, as compared to a baseline building designed to meet the minimum building code requirements. Based on initial estimates, it is expected that the Proposed Project may reduce energy expenditure by up to 20 percent as compared to a baseline building designed to meet but not exceed building energy code requirements. The energy efficiency measures to achieve those ratings are conservatively not included in the estimate of emissions from building operations presented above; emissions would be lower than those shown.

Elements of the Proposed Project that would Reduce GHG Emissions

The Proposed Project would include a number of sustainable design features which would, among other benefits, result in lower GHG emissions. Many of the measures that may be included in the Proposed Project would result in a smaller carbon footprint. In general, as a prerequisite for LEED certification, the Proposed Project would use considerably less energy than it would if built only to meet the building code. These energy-efficiency assumptions were not included in the GHG emissions calculations presented above. Development within urban areas, with access to transit and existing roadways is consistent with sustainable land use planning and smart growth strategies to reduce the carbon footprint of new development. These features and other measures currently under consideration are discussed in this section, addressing the PlaNYC goals as outlined in the *CEQR Technical Manual*.

Build Efficient Buildings. JHL is currently evaluating many specific energy-efficiency measures and other measures such as green roof areas, building materials with recycled content, and innovative measures such as programed lighting and climate control systems based on usage trends and needs in each building area. While the specific measures to be included in the design have not yet been determined, the design would include measures that would, at a minimum, reduce building energy expenditure by 10 percent as compared to a baseline building meeting the minimum building code energy requirements (ASHRAE 90.1-2007); preliminary review has identified a potential for reduction of up to 20 percent below baseline. These measures would result in substantially-lower energy intensity and GHG emissions than presented in the analysis above.

Use Clean Power. The Proposed Project would use natural gas, a lower carbon fuel, for the normal operation of the heat and hot water systems.

Transit-Oriented Development and Sustainable Transportation. The Proposed Project is located in an area supported by many transit options (bus and existing subway service are all within walking distance of the project). In addition, the Proposed Project is located next to a major protected southbound bike route on Columbus Avenue, (currently beginning at West 96th Street but planned to extend further north), and near the northbound bike route on Central Park West. Bicycle storage, showers, and changing rooms would be provided within the Proposed Project building. JHL would continue to provide its employees with access to tax-free options for commuter expenses. JHL operates a shuttle bus for patient transport and would continue to do so at the new location; JHL is investigating the option of upgrading to hybrid-engine shuttles.

Reduce Construction Operation Emissions. Construction would include an extensive diesel emissions reduction program including diesel particle filters for large construction engines and other measures. These measures would reduce particulate matter emissions; while particulate matter is not included in the list of standard GHGs ("Kyoto gases"), recent studies have shown that black carbon — a constituent of particulate matter — may play an important role in climate change.

Use Building Materials with Low Carbon Intensity. Recycled steel would most likely be used for most structural steel since the steel available in the region is mostly recycled. Some cement replacements such as fly ash and/or slag may also be used. The Proposed Project would use some recycled products and materials produced regionally (goal of 10 percent each).

Construction waste would be diverted from landfills by separating out materials for reuse and recycling (goal of 50 percent reused or recycled).

Conclusions

Without the energy-efficiency measures, which are still being evaluated for the Proposed Project, GHG emissions from the Proposed Project are estimated to be 6,059 mtons per year, including 3,617 mtons from building operations, and 2,443 mtons from mobile sources. Energy measures to be implemented under LEED are expected to reduce energy expenditure by at least 10 percent, and might be as much as 20 percent; this would reduce the total GHG emissions.

The implementation of the various design measures and features described would result in development that is consistent with the city's emissions reduction goal, as demonstrated by the review of the PlaNYC goals of (1) building efficient buildings; (2) using clean power; (3) transit-oriented development and sustainable transportation; (4) reducing construction operation emissions; and (5) using building materials with low carbon intensity, as defined in the *CEQR Technical Manual*.

Chapter 10. Noise

Introduction

Noise pollution in an urban area comes from many sources. Some sources are activities essential to the health, safety, and welfare of a city's inhabitants, such as noise from emergency vehicle sirens, garbage collection operations, and construction and maintenance equipment. Other sources, such as traffic, are essential to the viability of a city as a place to live and do business. Although these and other noise-producing activities are necessary to a city, the noise they produce is undesirable. Urban noise detracts from the quality of the living environment, and there is increasing evidence that excessive noise represents a threat to public health.

The noise analysis presented in this chapter considers noise associated with the operation of the Proposed Project resulting from mobile and stationary sources, as well as the level of window/wall attenuation that would be necessary to ensure that noise levels within the proposed building on the Project Site meet *CEQR Technical Manual* interior noise level requirements. The effects of the construction of the Proposed Project on community noise levels are discussed in Chapter 13, "Construction."

Acoustical Fundamentals

Sound is a fluctuation in air pressure. Sound pressure levels are measured in units called decibels ("dB"). The particular character of the sound that we hear (a whistle compared with a French horn, for example) is determined by the frequency at which the air pressure fluctuates, or "oscillates." Frequency defines the oscillation of sound pressure in terms of cycles per second. One cycle per second is known as 1 Hertz ("Hz"). People can hear over a relatively limited range of sound frequencies, generally between 20 Hz and 20,000 Hz, and the human ear does not perceive all frequencies equally well. High frequencies (e.g., a whistle) are more easily discernible and, therefore, more intrusive, than many of the lower frequencies (e.g., the lower notes on the French horn).

A-Weighted Sound Level ("dBA"). In order to establish a uniform noise measurement that simulates people's perception of loudness and annoyance, the decibel measurement is weighted to account for those frequencies most audible to the human ear. This is known as the A-weighted sound level, or "dBA," and it is the descriptor of noise levels most often used for community noise. As shown in Table 10-1, the threshold of human hearing is defined as 0 dBA; very quiet conditions (as in a library, for example) are approximately 40 dBA; levels between 50 dBA and 70 dBA define the range of noise levels generated by normal daily activity; levels above 70 dBA would be considered noisy, and then loud, intrusive, and deafening as the scale approaches 130 dBA.

Table 10-1. Common Noise Levels by Sound Source and by Decibels (dBA)

Sound Source	Decibels (dBA)
Military jet, air raid siren	130
Amplified rock music	110
Jet takeoff at 500 meters	100
Freight train at 30 meters	95
Train horn at 30 meters	90
Heavy truck at 15 meters	80 – 90
Busy city street, loud shout	80
Busy traffic intersection	70 – 80
Highway traffic at 15 meters, train	70
Predominantly industrial area	60
Light car traffic at 15 meters, city or commercial areas, or residential areas close to industry	50 – 60
Background noise in an office	50
Suburban areas with medium-density transportation	40 – 50
Public library	40
Soft whisper at 5 meters	30
Threshold of hearing	0

Note: A 10-dBA increase in level doubles the perceived loudness, and a 10-dBA decrease halves it.
Sources: Cowan, James P. *Handbook of Environmental Acoustics,* Van Nostrand Reinhold, New York, 1994. Egan, M. David, Architectural Acoustics. McGraw-Hill Book Company, 1988.

In considering these values, it is important to note that the dBA scale is logarithmic, meaning that each increase of 10 dBA describes a doubling of perceived loudness. Thus, the background noise in an office, at 50 dBA, is perceived as twice as loud as that in a library, at 40 dBA. For most people to perceive an increase in noise level, it must increase at least 3 dBA. At 5 dBA, the change will be readily noticeable.

Sound Level Descriptors. Because the sound pressure level applies to just one moment in time, and very few noises are constant, other ways of describing noise that fluctuates over extended periods have been developed. One way is to describe the fluctuating sound heard over a specific time period as if it had been a steady, unchanging sound. For this condition, a descriptor called the “equivalent sound level” (“L_{eq}”) can be computed. L_{eq} is the constant sound level that, in a given situation and time period (e.g., 1 hour, denoted by $L_{eq(1)}$, or 24 hours, denoted by $L_{eq(24)}$), represents the same sound energy as the actual time-varying sound. Statistical sound level descriptors such as L_1, L_{10}, L_{50}, L_{90}, and L_x, are used to indicate noise levels that are exceeded 1, 10, 50, 90, and x percent of the time, respectively.

The relationship between L_{eq} and levels of exceedance is worth noting. Because L_{eq} is defined in energy rather than straight numerical terms, it is not simply related to the levels of exceedance. If the noise fluctuates very little, L_{eq} will approximate L_{50} or the median level. If the noise fluctuates broadly, the L_{eq} will be approximately equal to the L_{10} value. If extreme fluctuations are present, the L_{eq} will exceed L_{90} or the background level by 10 or more decibels. Thus the relationship between L_{eq} and the levels of exceedance will depend on the character of the noise. In community noise measurements, it has been observed that the L_{eq} is generally between L_{10} and L_{50}.

For purposes of the Proposed Project, the L_{10} descriptor has been selected as the noise descriptor to be used in this noise impact evaluation. The 1-hour L_{10} is the noise descriptor used in the *CEQR Technical Manual* noise exposure guidelines for city environmental impact review classification.

Noise Standards and Criteria

New York CEQR Noise Standards. The *CEQR Technical Manual* sets external noise exposure standards; these standards are shown in Table 10-2. Noise exposure is classified into four categories: acceptable, marginally acceptable, marginally unacceptable, and clearly unacceptable. The *CEQR Technical Manual* also defines attenuation requirements for buildings based on exterior noise levels (see Table 10-3). Recommended noise attenuation values for buildings are designed to maintain interior noise levels of 45 dBA or lower for residential uses and 50 dBA or lower for commercial uses, and are determined based on exterior $L_{10(1)}$ noise levels.

Impact Definition. The determination of significant adverse noise impacts in this analysis is informed by the use of both absolute noise level limits and relative impact criteria. The 2012 *CEQR Technical Manual* states that "it is reasonable to consider 65 dBA $L_{eq(1)}$ as an absolute noise level that should not be significantly exceeded." Therefore, the determination of impacts first considers whether a projected noise increase would result in noise levels exceeding 65 dBA $L_{eq(1)}$. Where appropriate, this study also consults the following relative impact criteria to define a significant adverse noise impact, as recommended in the *CEQR Technical Manual*:

- If the noise level in the Future Without the Proposed Project (i.e., the "No-Build" noise level) is less than 60 dBA $L_{eq(1)}$, a 5-dBA-$L_{eq(1)}$ increase or greater would be considered a significant adverse impact if the analysis period is a daytime period (defined by the *CEQR Technical Manual* criteria as being between 7:00 a.m. and 10:00 p.m.).
- If the No-Build noise level is greater than 60 dBA $L_{eq(1)}$ and less than 62 dBA $L_{eq(1)}$, an incremental noise level increase that would result in an overall $L_{eq(1)}$ of 65 dBA or greater would be considered a significant adverse impact if the analysis period is a daytime period (defined by the *CEQR Technical Manual* criteria as being between 7:00 a.m. and 10:00 p.m.).
- If the No-Build noise level is equal to or greater than 62 dBA $L_{eq(1)}$, a 3-dBA-$L_{eq(1)}$ increase or greater would be considered a significant adverse impact if the analysis period is a daytime period (defined by the *CEQR Technical Manual* criteria as being between 7:00 a.m. and 10:00 p.m.).
- For any No-Build noise level, an increase of 3 dBA $L_{eq(1)}$ or more, would be considered a significant adverse impact if the analysis period is a nighttime period

(defined by the *CEQR Technical Manual* criteria as being between 10:00 p.m. and 7:00 a.m.).

Table 10-2. Noise Exposure Guidelines For Use in City Environmental Impact Review[1] by Receptor Type

Receptor Type	Time Period	Acceptable General External Exposure	Airport[3] Exposure	Marginally Acceptable General External Exposure	Airport[3] Exposure	Marginally Unacceptable General External Exposure	Airport[3] Exposure	Clearly Unacceptable General External Exposure	Airport[3] Exposure
Outdoor area requiring serenity and quiet[2]		$L_{10} \le 55$ dBA	---------- Ldn ≤ 60 dBA ----------	NA	A	NA	A	NA	A
Hospital, nursing home		$L_{10} \le 55$ dBA		$55 < L_{10} \le 65$ dBA	---------- 60 < Ldn ≤ 65 dBA ----------	$65 < L_{10} \le 80$ dBA	(i) 65 < Ldn ≤ 70 dBA, (II) 70 ≤ Ldn	$L_{10} > 80$ dBA	---------- Ldn ≤ 75 dBA ----------
Residence, residential hotel, or motel	7 a.m. to 10 p.m.	$L_{10} \le 65$ dBA		$65 < L_{10} \le 70$ dBA		$70 < L_{10} \le 80$ dBA		$L_{10} > 80$ dBA	
	10 p.m. to 7 a.m.	$L_{10} \le 55$ dBA		$55 < L_{10} \le 70$ dBA		$70 < L_{10} \le 80$ dBA		$L_{10} > 80$ dBA	
School, museum, library, court, house of worship, transient hotel or motel, public meeting room, auditorium, outpatient public health facility		Same as Residential Day (7 a.m.-10 p.m.)		Same as Residential Day (7 a.m.-10 p.m.)		Same as Residential Day (7 a.m.-10 p.m.)		Same as Residential Day (7 a.m.-10 p.m.)	
Commercial or office		Same as Residential Day (7 a.m.-10 p.m.)		Same as Residential Day (7 a.m.-10 p.m.)		Same as Residential Day (7 a.m.-10 p.m.)		Same as Residential Day (7 a.m.-10 p.m.)	
Industrial, public areas only[4]	Note 4	Note 4		Note 4		Note 4		Note 4	

Notes:
(i) In addition, any new activity shall not increase the ambient noise level by 3 dBA or more; (ii) *CEQR Technical Manual* noise criteria for train noise are similar to the above aircraft noise standards: the noise category for train noise is found by taking the L_{dn} value for such train noise to be a L^{y}_{dn} (L_{dn} contour) value.

Table Notes:

[1] Measurements and projections of noise exposures are to be made at appropriate heights above site boundaries as given by American National Standards Institute ("ANSI") Standards; all values are for the worst hour in the time period.

[2] Tracts of land where serenity and quiet are extraordinarily important and serve an important public need, and where the preservation of these qualities is essential for the area to serve its intended purpose. Such areas could include amphitheaters, particular parks or portions of parks, or open spaces dedicated or recognized by appropriate local officials for activities requiring special qualities of serenity and quiet. Examples are grounds for ambulatory hospital patients and patients and residents of sanitariums and nursing homes.

[3] One may use Federal Aviation Administration ("FAA")-approved L_{dn} contours supplied by The Port Authority of New York and New Jersey, or the noise contours may be computed from the federally-approved Integrated Noise Model ("INM") Computer Model using flight data supplied by the Port Authority.

[4] External Noise Exposure standards for industrial areas of sounds produced by industrial operations other than operating motor vehicles or other transportation facilities are spelled out in the *Zoning Resolution of the City of New York*, Sections 42-20 and 42-21. The referenced standards apply to M1, M2, and M3 manufacturing districts and to adjoining residence districts (performance standards are octave band standards).

Source: New York City Department of Environmental Protection (adopted policy 1983).

Table 10-3. Required Attenuation Values (dBA) to Achieve Acceptable Interior Noise Levels (dBA)

	Marginally Acceptable				**Clearly Unacceptable**
Noise Level With Proposed Project	$70 < L_{10} \leq 73$	$73 < L_{10} \leq 76$	$76 < L_{10} \leq 78$	$78 < L_{10} \leq 80$	$80 < L_{10}$
Attenuation [A]	(I) 28 dBA	(II) 31 dBA	(III) 33 dBA	(IV) 35 dBA	$36 + (L_{10} - 80)^{B}$ dBA

Notes:
[A] The above composite window-wall attenuation values are for residential dwellings. Commercial office spaces and meeting rooms would be 5 dBA less in each category. All the above categories require a closed window situation and hence an alternate means of ventilation.
[B] Required attenuation values increase by 1-dBA increments for L_{10} values greater than 80 dBA.
Source: New York City Department of Environmental Protection

Noise Prediction Methodology

General Methodology. At all of the receptor sites in the study area, the dominant operational noise sources are vehicular traffic on adjacent and nearby streets and roadways. Noise from other sources are limited and do not contribute significantly to local ambient noise levels. An analysis of changes in mobile-source noise levels resulting from the Proposed Project was conducted, as is warranted according to *CEQR Technical Manual* guidelines. To calculate noise from traffic on adjacent and nearby streets and roadways, a proportional modeling technique was used.

Proportional Modeling. Proportional modeling was used to determine locations with the potential for having significant noise impacts. Proportional modeling is one of the techniques recommended in the *CEQR Technical Manual* for mobile source analysis.

Using this technique, the prediction of future noise levels where traffic is the dominant noise source is based on a calculation using measured existing noise levels and predicted changes in traffic volumes to determine noise levels in the Future Without the Proposed Project (the "No-Build Condition") and the Future With the Proposed Project (the "Build Condition"). Vehicular traffic volumes are converted into Noise Passenger Car Equivalent ("Noise PCE") values, for which 1 medium-duty truck (having a gross weight between 9,900 and 26,400 pounds) is assumed to generate the noise equivalent of 13 cars, and 1 heavy-duty truck (having a gross weight of more than 26,400 pounds) is assumed to generate the noise equivalent of 47 cars, and 1 bus (vehicles designed to carry more than 9 passengers) is assumed to generate the noise equivalent of 18 cars.

Future noise levels are calculated using the following equation:

F NL - E NL = 10 * $\log_{10}$ (F PCE / E PCE)

where:

F NL = Future Noise Level

E NL = Existing Noise Level

F PCE = Future Noise PCEs

E PCE = Existing Noise PCEs

Sound levels are measured in decibels and therefore increase logarithmically with sound source strength. In this case, the sound source is traffic volumes measured in Noise PCEs. For example, assume that traffic is the dominant noise source at a particular location. If the existing traffic volume on a street is 100 Noise PCE and if the future traffic volume were increased by 50 Noise PCE to a total of 150 PCE, the noise level would increase by 1.8 dBA. Similarly, if the future traffic were increased by 100 Noise PCE, or doubled to a total of 200 Noise PCE, the noise level would increase by 3.0 dBA. (Traffic data from Chapter 7, "Transportation," were used to calculate Noise PCE values.)

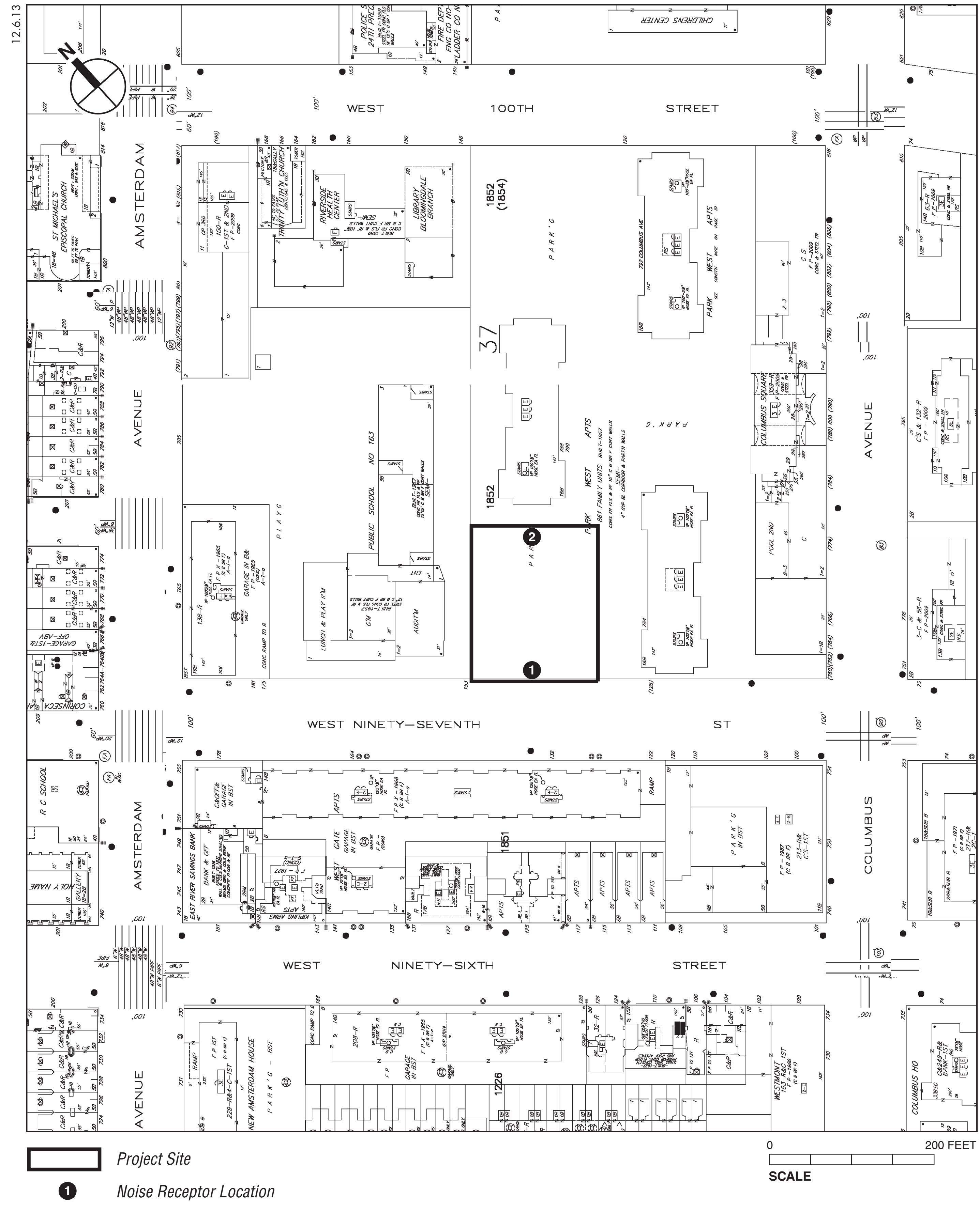
Stationary Sources. The building mechanical systems — i.e., heating, ventilation, and air conditioning ("HVAC") systems — would be designed to meet applicable noise regulations (i.e., Subchapter 5, §24-227 of the *New York City Noise Control Code* and Section MC 926 of the NYCDOB *Building Code*) and to avoid producing levels that would result in any significant increase in ambient noise levels.

Window/Wall Attenuation. Ambient noise levels adjacent to the Project Site were considered in order to address noise abatement requirements for the building. The noise levels adjacent to the building in the Future Build Condition were compared to the *CEQR Technical Manual* Noise Exposure Guidelines and the required attenuation to achieve acceptable interior noise levels were determined as shown in Table 10-3.

Existing Conditions

Existing Noise Levels. Existing noise levels at the Project Site were measured at two locations, as shown in Table 10-4 and Figure 10-1. At Receptor Site 1, existing noise levels were measured for a 24-hour continuous period. At Receptor Site 2, existing noise levels were measured by a 20-minute spot measurement during the p.m. (5:00 p.m. – 6:00 p.m.) peak hour. Existing noise levels at Receptor Site 2 were determined based on the levels measured at Receptor Site 1 for the a.m. (7:00 a.m. – 8:00 a.m.) and midday (12:00 p.m. – 1:00 p.m.) time periods. Measurements were taken on June 5 and June 6, 2013.

Equipment Used During Noise Monitoring. Measurements were performed using Brüel & Kjær Sound Level Meters ("SLMs") Types 2250 and 2260, a Brüel & Kjær ½-inch microphone Type 4189, and a Brüel & Kjær Sound Level Calibrator Type 4231. The SLMs are Type 1 instruments according to American National Standards Institute ("ANSI") Standard S1.4-1983 ("R2006"), and were factory calibrated within the past year of use. The microphone was mounted on a tripod at a height of approximately 5 feet above the ground, and at least 5 feet



Noise Receptor Locations

Figure 10-1

away from any large reflecting surfaces. The SLMs were calibrated before and after readings with the Brüel & Kjær Type 4231 Sound Level Calibrator. The data were digitally recorded by the sound level meter and displayed at the end of the measurement period in units of dBA. The sound level metrics recorded included L_{eq}, L_1, L_{10}, L_{50}, L_{90}, and ⅓ octave band levels. A windscreen was used during all sound measurements. All measurement procedures were based on the guidelines outlined in ANSI Standard S1.13-2005.

The results of the existing noise level measurements are summarized in Table 10-4.

Table 10-4. Existing Noise Levels by Site, Measurement Location and Time (A.M., Midday and P.M. Peak Hour) and by Sound Level Descriptors (L_{eq}, L_1, L_{10}, L_{50} and L_{90} in dBA)

Site	Measurement Location	Time	L_{eq}	L_1	L_{10}	L_{50}	L_{90}
1	South Side of Parking Lot at 125 West 97th Street	a.m.	61.3	68.4	63.9	59.7	56.7
		midday	62.4	72.5	63.3	59.9	57.7
		p.m.	59.9	65.3	61.6	59.1	57.3
2	North Side of Parking Lot at 125 West 97th Street	a.m.[1]	58.5	63.7	60.8	57.3	55.1
		midday[1]	59.6	67.7	60.2	57.5	56.1
		p.m.	57.1	60.5	58.5	56.7	55.7

Note: [1]Existing noise levels at Site 2 during the a.m. and midday peak hours were determined based on measurements at Site 1 and the difference between noise levels at Site 1 and Site 2 from simultaneous measurements during the p.m. peak hour.
Measurements were conducted by the AKRF Acoustics Department on June 5 and June 6, 2013.

At all receptor sites, vehicular traffic was the dominant noise source, and levels were low. In terms of the *CEQR Technical Manual* criteria, the existing noise levels at Receptor Sites 1 and 2 would be in the "acceptable" category.

Future Without the Proposed Project

Based on the assumption of 0.25 percent per year of background growth in traffic, and using the methodology previously described, noise levels were calculated at each of the receptor sites in the No-Build Condition. These No-Build values are shown in Table 10-5.

Table 10-5. No-Build Noise Levels (in dBA) by Site and by Time (A.M., Midday and P.M. Peak Hour)

Site	Time	Existing $L_{eq(1)}$	No-Build $L_{eq(1)}$	Change	No-Build $L_{10(1)}$
1	a.m.	61.3	61.5	0.2	64.0
	midday	62.4	62.5	0.1	63.4
	p.m.	59.9	60.0	0.1	61.7
2	a.m.	58.5	58.7	0.2	60.9
	midday	59.6	59.7	0.1	60.3
	p.m.	57.1	57.2	0.1	58.6

In the No-Build Condition, at all locations and during all time periods, the increase in $L_{eq(1)}$ noise levels would be significantly less than 1.0 dBA as compared to the existing condition and, thus, imperceptible according to *CEQR Technical Manual* guidance criteria.

Probable Impacts of the Proposed Project

Based on the amount of vehicle trips predicted to occur as a result of the Proposed Project, and using the methodology previously described, noise levels were calculated at each of the receptor sites in the Build Condition. These Build values are shown in Table 10-6.

Table 10-6. Build Condition Noise Levels (in dBA) by Site and by Time (A.M., Midday and P.M. Peak Hour)

Site	Time	No-Build $L_{eq(1)}$	Build $L_{eq(1)}$	Change	Build $L_{10(1)}$
	a.m.	61.5	61.9	0.4	64.4
	midday	62.5	62.6	0.1	63.5
1	p.m.	60.0	60.2	0.2	61.9
	a.m.	58.7	59.1	0.4	61.3
	midday	59.7	59.8	0.1	60.4
2	p.m.	57.2	57.4	0.2	58.8

In the Build Condition, at all locations and during all time periods, the increase in $L_{eq(1)}$ noise levels would be less than 1.0 dBA as compared to the No-Build Condition, which would be imperceptible according to *CEQR Technical Manual* guidance criteria.

Noise Attenuation Measures

The proposed building would be constructed using standard construction methods, including acoustically-rated windows and air conditioning as an alternate means of ventilation. The proposed building façade, including these elements, would be expected to provide a composite Outdoor-Indoor Transmission Class[1] ("OITC") such that interior noise levels would be less than 45 dBA or lower for residential uses and 50 dBA or lower for commercial uses. Furthermore, because the exterior $L_{10(1h)}$ noise levels at the Project Site would be less than 70 dBA, the *CEQR Technical Manual* does not provide a specific requirement for the level of window/wall attenuation.

[1] The attenuation of a composite structure is a function of the attenuation provided by each of its component parts, and how much of the area is made up of each part. A building façade generally consists of wall, glazing, and any vents or louvers associated with building mechanical systems. The OITC classification is defined by the American Society of Testing and Materials ("ASTM") E1332-10 and is used in the acoustical design of building façades.

Conclusions

The Proposed Project would not result in a significant increase in noise levels at any nearby noise receptor locations. Additionally, the projected exterior noise levels at the Project Site are less than those for which the *CEQR Technical Manual* specifies a required level of window/wall attenuation. It is expected that standard construction techniques, and the provision for an alternate means of ventilation, would result in acceptable interior noise levels at the Proposed Project.

Based on the information presented above, operation of the Proposed Project would not result in any significant adverse noise impacts.

Chapter 11. Public Health

Introduction

The *CEQR Technical Manual* defines as its goal with respect to public health "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." According to the *CEQR Technical Manual*, a public health analysis is only necessary when a significant unmitigated adverse impact is found in other *CEQR* analysis areas, such as hazardous materials, water quality, air quality, or noise. As discussed in Chapters 5, 6, 8, and 10, accordingly, the Proposed Project would not generate any unmitigated adverse impacts to any environmental analysis areas related to public health. However, given the extent of public concern over lead, in particular the potential for lead exposure to the community during the construction of the Proposed Project, an assessment of public health is presented below. Further discussion of the levels of lead found in site soils can be found in Chapter 5, "Hazardous Materials," and there is a discussion of construction procedures in Chapter 13, "Construction." In addition, this chapter also contains a discussion of the construction-related noise impacts discussed in Chapter 13, "Construction."

Potential Environmental Hazard Exposures

Lead poisoning remains a significant health problem in New York City. Exposing a fetus or young child to lead can result in long-lasting damage, including learning and behavioral difficulties. According to the New York City Department of Health and Mental Hygiene ("NYCDOHMH"), lead-based paint is the most common cause of poisoning. Although atmospheric levels of lead have declined significantly over the years, following the transition to unleaded gasoline lead remains ubiquitous in the urban environment.

During construction projects, excavation can create airborne dust ("particulate matter") that must be appropriately contained to prevent or minimize inhalation or ingestion exposure, since some of the dust contains lead. Particulate matter can also settle in local soils or on and within buildings, and can ultimately be inhaled or ingested. Respirable particulate matter (even without lead as an ingredient) is an issue as well. This air pollutant can be deposited in the lower respiratory tract and can affect those individuals sensitive to respiratory ailments, such as the elderly, asthmatics, and persons suffering from cardio-pulmonary disorders.

As discussed in Chapter 5, "Hazardous Materials," lead levels, measured in 38 samples of the Project Site's soils, averaged 290 parts per million ("ppm") with three of the samples (i.e., 8 percent) above 1,000 ppm with a maximum of 3,850 ppm. Lead levels in urban soils are typically highly variable, but concentrations in fill material typically fit a "lognormal distribution" (see, for example, *www.epa.gov/osp/hstl/tsc/Singh1997.pdf* USEPA EPA/600/R-97/006 December 1997 *The Lognormal Distribution in Environmental Applications*, Ashok K. Singh, Anita Singh, and Max Engelhardt*)* in which levels 10 or more times above the average occur with some frequency. Additionally, the measured average lead level of 290 ppm was consistent with New York State Department of Conservation ("NYSDEC") Technical and Administrative Guidance Memorandum ("TAGM") #4046 which states that "average background lead levels in metropolitan or suburban areas or near highways typically range from 200 to 500 ppm."

During soil disturbance associated with the Proposed Project, as discussed in Chapter 5, "Hazardous Materials," NYSDEC's Division of Environmental Remediation ("DER")-10 requirements for dust control measures (e.g., in Section 5.4 and Appendices 1A and 1B) would include real-time monitoring to ensure that 15-minute average respirable dust levels stay below 150 micrograms per cubic meter ("$\mu g/m^3$"). No reliable technology exists for real-time measurement of airborne lead, but airborne lead levels can be estimated from the known proportion of lead present in the Project Site's soil because any airborne lead would be attached to dust particles in approximately the same proportion as the lead is present in the soil.

The National Ambient Air Quality Standards ("NAAQS") for lead, which provides *"public health protection, including protecting the health of 'sensitive' populations such as asthmatics, children, and the elderly,"* as well as *"public welfare protection, including protection against decreased visibility and damage to animals, crops, vegetation, and buildings"* is 0.15 $\mu g/m^3$ of lead (calculated as a rolling 3-month average).[1] The respirable dust monitoring to ensure total dust levels stay below 150 $\mu g/m^3$ means that 15-minute average airborne lead levels would on average stay below 0.0435 $\mu g/m^3$ (since with a total dust level of 150 $\mu g/m^3$ only a 290/1,000,000 fraction of this total would be lead and (290/1,000,000) x 150 $\mu g/m^3$ equals 0.0435 $\mu g/m^3$). This average lead level of 0.0435 $\mu g/m^3$ would be less than one-third of the (3-month average) 0.15 $\mu g/m^3$ lead NAAQS. In reality, since the 150 $\mu g/m^3$ level is an upper limit and although the actual level of airborne lead would vary over the duration of excavation even when areas of the site with relatively higher levels of lead were being excavated, airborne lead levels would rarely (if ever) be expected to exceed 0.15 $\mu g/m^3$, even on a short-term basis, and would be significantly lower when averaged over the 3-month period associated with the NAAQS.

As discussed in Chapter 10, "Noise," there would be no significant adverse noise impacts due to operation of the Proposed Project. Consequently, operation of the Proposed Project would not have the potential to result in Public Health impacts associated with noise. However, as discussed in Chapter 13, "Construction," the immediately adjacent P.S. 163 would experience elevated noise levels that exceed *CEQR Technical Manual* noise level impact criteria during some limited portions of the construction periods. Construction noise levels would exceed the *CEQR* guidance noise level impact criteria during the excavation and foundation activities, superstructure construction, and when two construction stages overlap. During the excavation/foundation stage of construction lasting approximately 3 months, the maximum increase in hourly noise levels would range from 9.6 dBA to 21.2 dBA, with absolute noise levels up to 79.5 dBA. During superstructure construction lasting approximately 6 months, the maximum increase in hourly noise levels would range from 9.8 dBA to 24.1 dBA, with absolute noise levels up to 81.0 dBA. The higher end of the expected increases in maximum 1-hour noise levels would potentially

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[1] The federal standard for lead has not yet been officially adopted by New York State. Hence, there is no New York State Ambient Air Quality Standard for lead.

occur during the excavation and foundation activities, and the portion of superstructure construction that would take place when the lower floors are being constructed. As the work progresses in height to the upper floors of the Proposed Project, noise levels would decrease with the greater distance to the noise sources. As show in in Table 13-14 of Chapter 13, "Construction," during the two overlap periods of the construction schedule when more than one stage of construction would occur simultaneously, each of which would last only for a limited duration (2 months for exterior façade construction with interior fit-out activities and 3 months for interior fit-out activities with site work), the maximum increase in hourly noise levels would range from 3.7 dBA to 8.6 dBA, with absolute noise levels up to 72.4 dBA. The interior fit-out stage of construction, when it would not overlap with other construction stages, would result in noise levels that do not exceed the *CEQR Technical Manual* noise level impact criteria. This stage of construction would be the longest, and would last 7 months without overlap. During this time, the maximum increase in hourly noise levels would range from 0.1 dBA to 1.6 dBA, which would be considered imperceptible, with absolute noise levels up to 65.9 dBA. The above noise level increments resulting from construction refer to the increases predicted to occur at various locations of the school during the single loudest hour throughout each phase of construction. The peak 1-hour noise level is the metric recommended by the *CEQR Technical Manual* for construction noise analysis, but noise levels typically fluctuate throughout the day and from day to day during each construction phase, and would not be sustained at these maximum values.

The noise analysis considers the peak hourly noise level as is standard practice according to methodology prescribed by the *CEQR Technical Manual*. The peak hourly noise level increment at P.S. 163 during the excavation/foundation stage of construction would be up to 21.2 dBA and maximum absolute noise level would be 79.5 dBA, but during the hours when dominant pieces of equipment such as the hydraulic break ram, crane, and impact pile driver are not operating, the noise levels would be up to approximately 4 dBA lower, resulting in noise level increments up to 17.3 dBA and absolute noise levels up to 75.9 dBA. The peak hourly noise level increment at P.S. 163 during the superstructure construction stage would be up to 24.1 dBA and maximum absolute noise level would be 81.0 dBA, but during the hours when dominant pieces of equipment such as the crane and concrete vibrators are not operating, the noise levels would be up to approximately 3 dBA lower, resulting in noise level increments up to 21.1 dBA and absolute noise levels up to 78.0 dBA. These off-peak hour noise levels still include many pieces of construction equipment operating simultaneously on the site but demonstrate the lower noise levels that would occur in the absence of some intermittently used construction equipment.

Conclusions

In summary, the precautionary measures required by the Remedial Action Plan ("RAP")/Construction Health and Safety Plan ("CHASP") (such as wetting exposed soils to reduce the generation of dust, and covering soil stockpiles and haul trucks) would control and limit the potential for airborne exposure to dust and lead, and the associated respirable dust monitoring would be more than sufficient to ensure that the level of lead would not violate the NAAQS, i.e., with the implementation of the construction procedures described in Chapter 13, "Construction," and with the air monitoring and dust control requirements set out in the May

2010 NYSDEC DER-10 (including Section 5.4 and Appendices 1A and 1B) during soil disturbance. With these measures undertaken, the Proposed Project would not result in any significant adverse impacts from dust or lead on public health.

While there would be periods of the construction when P.S. 163 experiences noise level increments in excess of the *CEQR Technical Manual* impact criteria and that would be intrusive and noisy, the duration of the exceedances and the absolute value of the noise levels at the school were also considered in determining whether or not the construction noise at P.S. 163 would constitute a significant adverse impact.

The construction noise analysis predicts that construction of the Proposed Project would result in noise level increments exceeding the *CEQR Technical Manual* impact criteria for no more than 9 consecutive months (3 months for excavation and foundation plus 6 months for superstructure) and no more than 14 total months (accounting for 3 months for excavation and foundation, 6 months for superstructure, 2 months for exterior façade with interior fit-out, and 3 months for interior fit-out with site work, as described in Chapter 13, “Construction”). This would be less than the *CEQR* threshold of 2 or more years of sustained elevated noise levels. Additionally, absolute noise levels at the school’s exterior facade during the loudest periods of construction would be expected to range from the low 70s dBA to the low 80s dBA. Noise levels of this magnitude are similar to noise levels on busy New York City streets. Currently, the school’s east and south façades include single-paned windows and window air conditioners, which would be expected to provide approximately 15-20 dBA of attenuation of exterior noise sources. However, with this level of attenuation, it is not expected that interior noise levels would be below 45 dBA $L_{10(1)}$ (the *CEQR Technical Manual* acceptable interior noise level criteria for classroom uses) in either the current condition or in the future during the construction period.

Noise levels expected to result from the construction of the Proposed Project would be comparable to those from any typical construction site in New York City involving construction of a new building with concrete slab floors and foundation. Potential disruptions to adjacent residences and schools resulting from elevated noise levels generated by construction would be expected to also be comparable to those that would occur adjacent to any typical New York City construction site during the limited portions of the construction period when the loudest activities would occur. Based on the relatively short duration of the construction noise level increments and absolute noise levels at the school that are comparable to those on heavily trafficked roadways throughout New York City, the noise level increases resulting from construction of the Proposed Project would not constitute a significant adverse impact.

Chapter 12. Neighborhood Character

Introduction

This chapter discusses the principal characteristics of the neighborhood surrounding the Project Site, including the streets within the neighborhood, and assesses the Proposed Project's potential to result in impacts to neighborhood character. Neighborhood character is typically considered to be a combination of various elements that give neighborhoods their distinct "personality," which may include aspects of socioeconomic conditions, land use, urban design and visual resources, noise, or other social or physical characteristics that help to define a community. A neighborhood character assessment considers how these components combine to create the context and feel of a neighborhood and how the Proposed Project would affect that context. According to the *CEQR Technical Manual*, neighborhood character impacts are rare and occur under unusual circumstances. In the absence of an impact on any of the relevant technical areas, a combination of moderate effects to the neighborhood could result in an impact to neighborhood character. Moreover, a significant impact identified in one of the technical areas that contribute to a neighborhood's character is not necessarily equivalent to a significant impact on neighborhood character.

As defined in the *CEQR Technical Manual*, a neighborhood character assessment is generally needed when a proposed project has the potential to result in significant adverse impacts in any technical area presented below, or when the project may have moderate effects on several of the elements that define a neighborhood's character. Therefore, an assessment of neighborhood character is generally appropriate if a proposed project has the potential to result in any significant adverse impacts in the following areas:

- Land Use, Zoning, and Public Policy;
- Socioeconomic Conditions;
- Open Space;
- Historic and Cultural Resources;
- Urban Design and Visual Resources;
- Shadows;
- Transportation; or
- Noise

As described in the relevant chapters of this EIS, consistent with the impact criteria presented in the *CEQR Technical Manual*, the Proposed Project would not result in significant adverse impacts in the areas of land use, zoning, or public policy; socioeconomic conditions; open space; historic and cultural resources; urban design and visual resources; shadows; or noise. As discussed in Chapter 7, "Transportation," the Proposed Project is projected to result in significant adverse traffic impacts. However, as described in Chapter 7, "Transportation," and Chapter 14, Mitigation Measures," these potential impacts could all be mitigated. With implementation of the proposed mitigation measures, there would be no significant adverse impacts and no noticeable change to neighborhood character as it relates to transportation conditions. A preliminary assessment of the Proposed Project's effects on neighborhood character was conducted to determine the need for a detailed analysis. This preliminary assessment describes the defining features of the neighborhood and considers the potential for the Proposed Project to affect these defining features. In addition, in accordance with the guidance of the *CEQR Technical Manual*, this analysis considers the potential for the Proposed Project to affect neighborhood character through a combination of moderate effects on several of the elements that contribute to neighborhood character. As recommended in the *CEQR Technical Manual*, the study area for the neighborhood character analysis is the area within a 400-foot radius of the Project Site, which is consistent with the study areas in the relevant technical areas assessed under the *CEQR* guidance criteria that contribute to the neighborhood's character (see Figure 2-1 for a depiction of a 400-foot radius around the Project Site).

Preliminary Assessment

Defining Features of the Neighborhood. In general, the neighborhood character of the Project Site and the surrounding area is defined by its physical setting in Park West Village ("PWV") and the mix of residential, commercial, community facility, and open space uses that make up PWV and the newer mixed-use developments on the block south of the Project Site and east of the Project Site along Columbus Avenue.

The Project Site superblock and the superblock to the east (Block 1833) contain PWV, a mixed-use development originally created as the Manhattantown (renamed the West Park) Urban Renewal Area ("URA") in 1952. The purpose of the West Park URA was to improve a deteriorating area and to preserve some existing buildings, including the Trinity Lutheran Church of Manhattan. The Redevelopment Plan established use and bulk controls for parcels in the URA, and originally called for 17 residential buildings clustered on portions of the URA as well as sites for commercial and recreational uses. The three PWV buildings on the Project Site superblock were completed in 1959, and the four buildings on the superblock to the east fronting Central Park West were completed in 1961. The three 16-story PWV residential buildings on the Project Site superblock are connected by landscaped open areas, the Project Site parking lot, and another parking lot on the northern end of the block. The southwestern corner of the Project Site superblock is occupied by a 16-story residential building at 181 West 97th Street. The residential uses on the superblock are interspersed with community facility uses, including P.S. 163 Alfred E. Smith School, a pre-kindergarten through fifth grade school; the Bloomingdale Branch of the New York Public Library; and the Trinity Lutheran Church of Manhattan. Happy Warrior Playground, a 1.7-acre park containing basketball and handball courts and play equipment is also located on the Project Site superblock. The original Redevelopment Plan and subsequent modifications included a covenant that the uses specified in the Redevelopment Plan would be in effect for a period of 40 years from the completion of the project. The final residential certificate of occupancy for the URA was issued in 1966 and the Redevelopment Plan expired on July 22, 2006.

Newer residential developments on the Project Site superblock include 801 Amsterdam Avenue and 808 Columbus Avenue, which were both built between 2007 and 2008 as part of the

Columbus Square development. These buildings include ground-floor retail, the Ryan Women and Children's Center, and several entrances to underground parking. Several newer, mixed-use developments are also located on the block south of the Project Site, including the Stonehenge Village residential development located at 120 through 160 West 97th Street, which houses ground-floor medical offices, the Chabad Early Learning Center, and a two-story Associated grocery store on the corner of West 97th Street and Amsterdam Avenue. East of Stonehenge Village, is the Archstone West 96th apartment building, which contains the Mandell School, the William F. Ryan Community Health Center, and retail uses. The north sidewalk, along the Project Site fronting West 97th Street, also hosts a weekly Greenmarket Farmers' Market every Friday (8:00 a.m. – 2:00 p.m.), with approximately 20 vendors.

The urban design of the neighborhood character study area is defined by the typical, rectangular Manhattan street grid interrupted by the Project Site superblock and the varied mix of building forms and street walls in the area. The Project Site superblock is a much larger contiguous block than the block south of West 97th Street. The Project Site superblock contains a mix of freestanding, high-rise residential buildings and low-rise, community-facility buildings interspersed with open space uses, parking, and other open areas, as well as a wide sidewalk along the north side of West 97th Street. As a result, the buildings do not present a consistent street wall — they are more of a "tower-in-the-park" approach to urban design. South of West 97th Street, the building forms generally consist of attached structures that contribute to a largely uninterrupted street wall.

Historic resources within and immediately adjacent to the study area contribute to the overall neighborhood character. As discussed in Chapter 4, "Historic and Cultural Resources," there are three known architectural resources within and immediately adjacent to the study area, and three potential architectural resources in the surrounding area. The three known architectural resources are Trinity Lutheran Church of Manhattan, which is located within the Project Site superblock; the former East River Savings Bank located at the northeast corner of West 96th Street and Amsterdam Avenue; and Saint Michael's Church, located at the northwest corner of West 99th Street and Amsterdam Avenue. The potential resources include the Church of the Holy Name of Jesus at 207 West 96th Street, the former New York City firehouse at 766 Amsterdam Avenue, and the group of 5-story apartment buildings at 768-774 Amsterdam Avenue.

Like many neighborhoods in New York City, a defining characteristic of the study area is its wide range of travel modes, with moderate foot traffic on most of the area's sidewalks and crosswalks, and a mix of auto/taxi/service traffic on the streets. Bus transit services are located along Columbus Avenue, Amsterdam Avenue and West 96th Street, and subway service is located along Broadway and Central Park West. The foot-traffic patterns and timing for pedestrian activity associated with residents, workers, and visitors are consistent with the mix of residential, commercial, community facility, and open space uses in the area. The street system consists primarily of one-way streets that generally carry one lane of moving traffic on the east-west streets and three or four lanes on the north-south streets. West 96th Street is a primary east-west corridor carrying two-way traffic traveling to and from Henry Hudson Parkway/Route 9A to the west, and the 97th Street Transverse through Central Park to the east. The study area generally contains a high level of vehicular traffic, particularly on Columbus Avenue and Amsterdam Avenue and West 96th Street. Vehicular traffic is the dominant noise source in the area immediate around the Project Site. At the Project Site, noise levels are low and are in the "acceptable" category in terms of *CEQR* guidance criteria, as described in Chapter 10, "Noise."

Overall, the study area is characterized by a mix of residential, commercial, community facility, and open space uses within freestanding structures on the Project Site superblock and in attached structures in the surrounding blocks. No one defining feature would be considered dominant in defining the character of the neighborhood. Rather, the various localized neighborhood components contribute to the overall neighborhood character of the Project Site and the study area.

Absent the Proposed Project, no significant changes to neighborhood character in the area are expected to occur. The Project Site would remain and continue to function as an accessory parking lot for the tenants of PWV. The configuration of Park West Drive, the north-south access road within the PWV complex, may be modified as part of the PWV property owner's planning for the complex, but will continue to function as a discontinuous two-way access road for PWV parkers. These potential changes, if implemented, would occur independently of the Proposed Project. No other development projects are currently anticipated to be built within the 400-foot study area by 2018.

Potential to Affect the Defining Features of the Neighborhood. The Proposed Project would replace the existing, approximately 31,804-square-foot ("sf"), 88-space, surface accessory parking lot on the Project Site with a new, 20-story (plus cellar floor), approximately 275-foot-high and 376,000-gross-square-foot ("gsf") building on the Project Site.[1] This building would contain a new nursing-care facility with a total of 414 beds as well as common areas, administrative offices, and service and support areas. The proposed building would have three access areas: a public pedestrian entrance on West 97th Street; a public vehicular entrance on the north side of the building; and loading and service access on West 97th Street. The ground-floor level would include a landscaped area along the Project Site's west side that would be accessible for Jewish Home Lifecare, Manhattan ("JHL") residents, visitors, and employees, as well as PWV residents, who would access it using a keycard.

As described in Chapter 2, "Land Use, Zoning, and Public Policy," the Proposed Project would result in a new land use on the Project Site, but would be in keeping with residential uses in the study area, and would be compatible with existing community facility uses — including the William F. Ryan Community Health Center located at 110 West 97th Street and P.S. 163 Alfred E. Smith School — as well as commercial uses. Upon completion of the Proposed Project, the weekly Greenmarket Farmers' Market could relocate back to its current location in front of the Project Site. The study area would continue to include a mix of residential, commercial, community facility, parking, and open space uses. Therefore, the Proposed Project would not result in any significant adverse impacts to neighborhood character related to land use.

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[1] Users of the existing surface parking lot would receive substitute nearby parking within the PWV complex (the property owner commenced construction of the relocated surface parking lot in March 2014).

As described in other chapters of this EIS, the Proposed Project would not result in any adverse impacts to socioeconomic conditions, open space, historic and cultural resources, shadows, urban design and visual resources, or noise and, thus, would not have the potential to adversely affect those components of neighborhood character. As the Proposed Project would not add any new residential units to the area, and would not introduce enough new workers to diminish the capacity of open space in the area to serve the future population, it would not affect open space resources as a component of neighborhood character. Additionally, the Proposed Project would provide a new landscaped area with seating in an area currently used for parking. This space would function as an open space for JHL residents, patients, visitors, and employees, as well as PWV residents, who would access it using a keycard. The Proposed Project would not displace existing playgrounds within the Project Site superblock. Although the Proposed Project would displace trees and landscaping within the existing parking lot on the Project Site, these trees would be replaced, and the Proposed Project would comply with the street tree planting requirements of the *Zoning Resolution* for the zoning lot.

As described in Chapter 4, “Historic and Cultural Resources,” the Proposed Project would be allowable under existing zoning and would, therefore, not result in significant adverse impacts to urban design and visual resources. The Proposed Project would replace an existing surface parking lot on the Project Site with a new building and landscaped areas, thereby activating an underutilized portion of the West 97th Street streetscape. This change would alter the pedestrian experience along the Project Site, but it would not have the potential to adversely affect neighborhood character. The Proposed Project would result in a new, freestanding structure on the Project Site superblock, which would be compatible with the existing mix of freestanding structures. The proposed building would be of a comparable height, bulk, and footprint to other modern structures in the surrounding area — including the 29-story building at 808 Columbus Avenue and the 15-story building at the northwest corner of the Project Site superblock — as well as the surrounding 16-story PWV structures.

As described in Chapter 4, “Historic and Cultural Resources,” none of the known or potential architectural resources in the study area are located within 90 feet of the Project Site, and the Proposed Project would not isolate any historic resources from or alter their setting or visual relationships with the streetscape; introduce any incompatible visual, audible, or atmospheric elements to a resource’s setting; or eliminate or screen any publicly-accessible views of any resource. Therefore, the Proposed Project would not result in any significant adverse impacts to neighborhood character related to historic and cultural resources.

As described in Chapter 3, “Shadows,” while the Proposed Project would cast new shadows on the Happy Warrior Playground for 2¼ hours in the early spring and fall, and up to approximately 4½ hours on the December 21 analysis day, these new shadows would not reach any areas of the playground containing trees or other vegetation in March 21/September 21, and could not affect the trees in winter when they have no leaves. On the December 21 analysis day, by 11:00 a.m. and onwards into the afternoon much of the playground would be in sunlight. Therefore, the new shadows would not significantly alter the public’s use of the Happy Warrior Playground and the Proposed Project would not cause a significant adverse impact to neighborhood character related to shadows. Furthermore, the patterns of sunlight and shadow on

Happy Warrior Playground are not a defining feature of the neighborhood character study area. The Proposed Project would not result in new shadows on Trinity Lutheran Church of Manhattan, and would only result in 10 minutes of new shadows on Saint Michael's Church, which would be too limited in duration and size to cause an adverse impact.

As discussed in Chapter 7, "Transportation," the Proposed Project is projected to result in significant adverse traffic impacts at the West 97th Street and Amsterdam Avenue and West 97th Street and Columbus Avenue intersections during the Weekday a.m., Weekday Midday, and Weekday p.m. peak hours. However, as described in Chapter 14, "Mitigation Measures," all of these impacts could be mitigated with signal timing and phasing changes. Furthermore, as previously discussed, the neighborhood character of the study area is partly defined by the existing high level of vehicular traffic, particularly on Columbus Avenue and Amsterdam Avenue, and West 96th Street. Therefore the increased traffic resulting from the Proposed Project does not represent a significant alteration of this character-defining feature. With respect to noise levels, the Proposed Project would not result in a significant increase in noise levels at any nearby noise receptor locations.

Conclusions

According to the *CEQR Technical Manual*, even if a project does not have the potential to result in a significant adverse impact to neighborhood character in a certain technical area, additional analysis of neighborhood character may be warranted based on the potential for a project to result in a combination of moderate effects in more than one technical area. A "moderate" effect is generally defined as an effect considered reasonably close to the significant adverse impact threshold for a particular technical analysis area. As discussed above and throughout this EIS, the Proposed Project would not result in moderate effects that would be reasonably close to the impact thresholds in the other technical areas. The physical changes from the Proposed Project would be limited to the Project Site and would be compatible with the land use and urban design characteristics of the surrounding neighborhood. The Proposed Project would result in moderate effects due to new shadows, but the patterns of sunlight and shadow on Happy Warrior Playground are not a defining feature of the neighborhood character study area. Although the Proposed Project would increase activity modestly in the surrounding area, the new population would not result in a combination of moderate effects in the areas of socioeconomic conditions, open space, or transportation that would have the potential to adversely affect neighborhood character. While the Proposed Project would result in significant adverse traffic impacts in the area of transportation, mitigation measures are available to mitigate these impacts. In any event, increases in vehicular and pedestrian traffic would be unlikely to result in significant adverse impacts to the study area's neighborhood character given the existing high level of traffic in the neighborhood. Therefore, the Proposed Project would not have the potential to adversely affect neighborhood character through a combination of moderate effects.

Overall, the Proposed Project would not result in any significant adverse impacts on the neighborhood character of the Project Site and the study area.

Chapter 13. Construction

Introduction

As described in Chapter 1, "Project Description," NYSDOH has received a request from JHL for authorization to construct a replacement nursing facility on an approximately 0.73±-acre (31,804-sf) parcel situated at 125 West 97th Street in Manhattan's Upper West Side neighborhood (the "Project Site"). The Project Site is located on the southern portion of the superblock bounded by West 100th Street to the north, West 97th Street to the south, Columbus Avenue to the east, and Amsterdam Avenue to the west. The Proposed Project would replace the existing surface accessory parking lot on the Project Site with a new, 20-story (plus cellar floor) building approximately 275 feet high. Construction of the Proposed Project is expected to begin in 2014 and would last approximately 30 months.

This chapter summarizes the Proposed Project's construction plans and assesses the potential for significant adverse construction impacts. The city, state, and federal regulations and policies that govern construction are described, followed by the construction schedule and the types of activities likely to occur during construction. The types of construction equipment are also discussed, along with the expected number of workers and truck deliveries. Finally, the potential impacts from construction activity are assessed and the methods that may be employed to avoid significant adverse construction-related impacts are evaluated.

Governmental Coordination and Oversight

Construction oversight involves several city, state, and federal agencies. Table 13-1 lists the primary involved agencies and their areas of responsibility. For projects in New York City, primary construction oversight lies with the New York City Department of Buildings ("NYCDOB"), which oversees compliance with the *New York City Building Code*. In addition, NYCDOB enforces safety regulations to protect workers and the general public during construction. The areas of oversight include installation and operation of equipment such as cranes and lifts, sidewalk bridges, safety netting, and scaffolding. The New York City Department of Environmental Protection ("NYCDEP") enforces the *New York City Noise Code* and regulates water disposal into the sewer system. The New York City Fire Department ("FDNY") has primary oversight of compliance with the *New York City Fire Code* and the installation of tanks containing flammable materials. The New York City Department of Transportation ("NYCDOT") reviews and approves any traffic lane and sidewalk closures. The New York City Department of Parks and Recreation ("NYCDPR") is responsible for the oversight, enforcement, and permitting of the replacement of street trees that are lost due to construction. Section 5-102 et. seq. of the *Laws of the City of New York* requires a permit to remove any street trees and the replacement of the street trees as determined by calculating the size, condition, species, and location rating of the tree proposed for removal.

On the state level and as discussed in Chapter 5, "Hazardous Materials," the NYSDOH reviews and approves any needed Remedial Action Plan ("RAP") and Construction Health and Safety Plan ("CHASP"). The New York State Department of Environmental Conservation

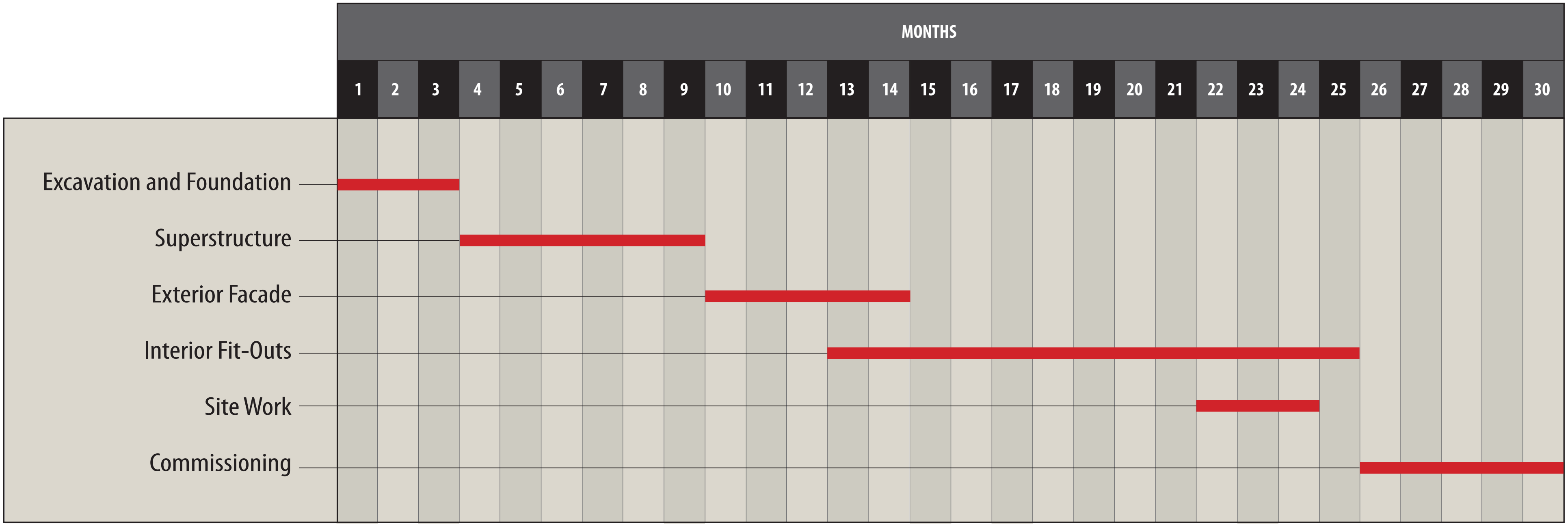
("NYSDEC") regulates disposal of hazardous materials, and construction and operation of bulk petroleum and chemical storage tanks. On the federal level, although the United States Environmental Protection Agency ("USEPA") has wide-ranging authority over environmental matters, including air emissions,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

Table 13-1. Construction Oversight in New York City by Agency and by Areas of Responsibility

Agency	Areas of Responsibility
New York City	
Department of Buildings	Primary oversight for Building Code and site safety
Department of Environmental Protection	Noise and dewatering
Fire Department	Compliance with Fire Code, fuel tank installation
Department of Transportation	Lane and sidewalk closures
Department of Parks and Recreation	Street trees
New York State	
Department of Health	RAPs and CHASPs
Department of Environmental Conservation	Hazardous materials and fuel/chemical storage tanks
United States	
Environmental Protection Agency	Air emissions, noise, hazardous materials, poisons
Occupational Safety and Health Administration	Worker safety

Construction Phasing and Schedule

The illustrative construction schedule shown in Figure 13-1 and Table 13-2 reflects the sequencing of construction events as currently contemplated. Construction of the Proposed Project is expected to begin in 2014 and would last approximately 30 months. It is expected that construction would be completed in a single phase. Construction would proceed in several stages, some of which would overlap: excavation and foundation; superstructure; exterior façade; interior fit out; site work; and commissioning. The existing surface parking area on the Project Site would first be demolished followed by the excavation of the soils, any required remediation, and the construction of the foundations. When the below-grade construction is completed, construction of the superstructure (the building's beams, columns, floor decks, and core) of the new building would begin. Next, the exterior precast façade of the building would be placed and interior fit out would commence. The interior fit out would include the construction of nonstructural building elements such as interior partitions and interior finishes (i.e., flooring, painting, etc.). Once the interior fit-out task is substantially completed, site work would begin. The site work task would include the construction of the landscaped area along the west side of the Project Site and the rooftop garden. Finally, commissioning would occur towards the end of construction and would involve completing all of the punch list items, which are typically small



Anticipated Construction Schedule

Figure 13-1

tasks that were not completely finished. These construction stages are described in greater detail below under "Construction Tasks."

Excavation and foundation activities would begin in 2014 and would take approximately 3 months to complete. Superstructure construction would commence in Month 4 of construction and would be completed by Month 9 of construction. Exterior façade work would begin in Month 10 of construction and would be completed by Month 14 of construction. Interior fit-out work is expected to begin in Month 13 of construction and would take approximately 13 months to complete. Site work would begin in Month 22 of construction and would take approximately 3 months to complete. Finally, commissioning would commence in Month 26 of construction and would be completed by Month 30 of construction.

Table 13-2. Illustrative Construction Schedule by Construction Task, Start Month, Finish Month, and Approximate Duration (Months)

Construction Task	Start Month	Finish Month	Approximate Duration (Months)
Excavation and Foundation	Month 1	Month 3	3
Superstructure	Month 4	Month 9	6
Exterior Façade	Month 10	Month 14	5
Interior Fit Out	Month 13	Month 25	13
Site Work	Month 22	Month 24	3
Commissioning	Month 26	Month 30	5
Source: Tishman Construction Corporation, September 2013.			

Construction Description

Overview. This section describes construction activities for the Proposed Project, including the types of equipment to be used and the estimated number of workers and truck deliveries. The approach and procedures for constructing the Proposed Project would be typical of the methods utilized in other construction projects throughout New York City. Since the Project Site is located in close proximity to an existing residential community and Public School 163 ("P.S. 163"), the Proposed Project is committed to employing a wide variety of measures that exceed code requirements and standard construction practices to minimize the disruption to the community during construction.

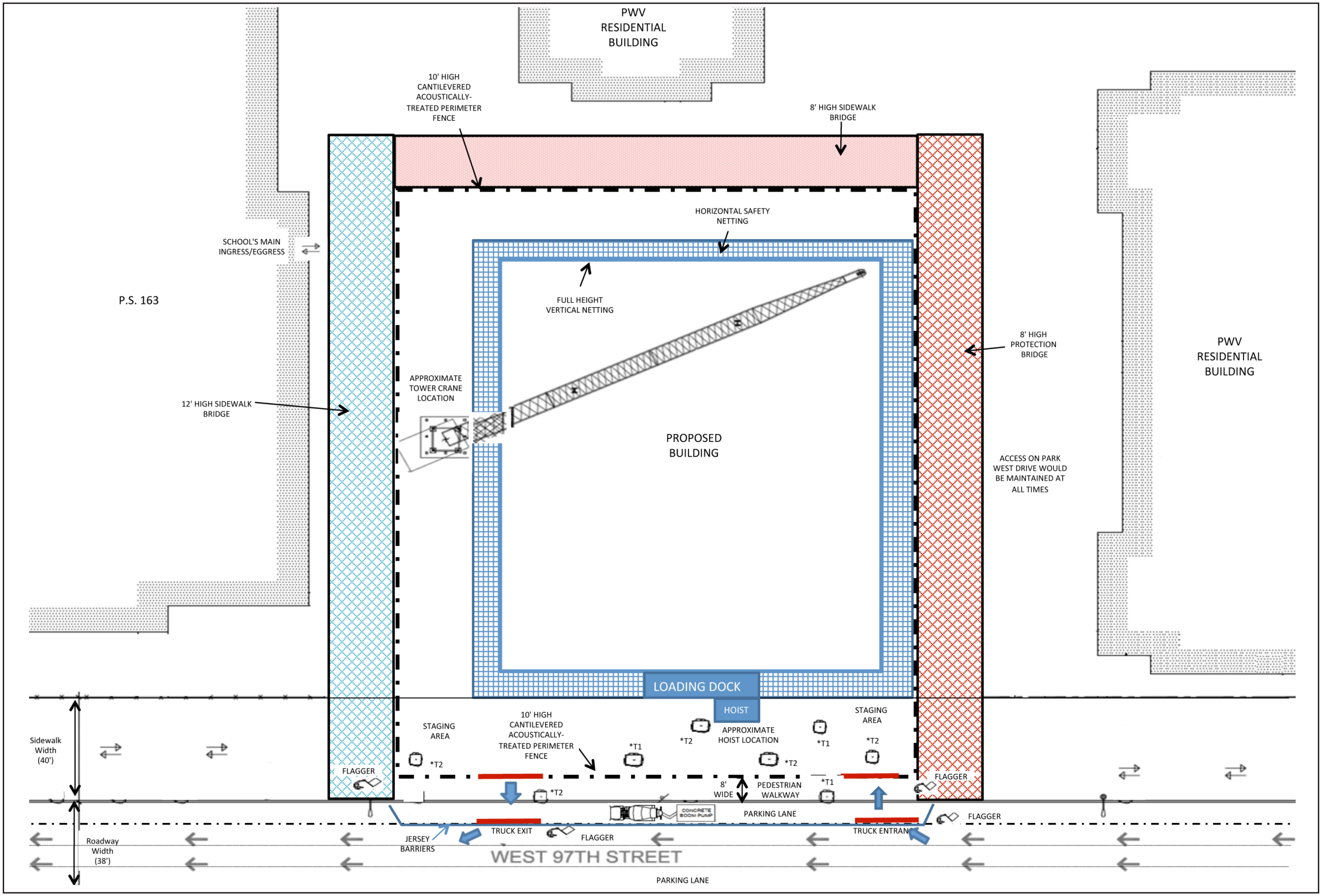
General Construction Practices. A community liaison officer ("CLO") for the Proposed Project would be available throughout the entire construction period. The CLO would serve as the contact person for the community and local leaders, and would be available to address concerns or problems that may arise during the construction period. The CLO would maintain direct communication with the construction project managers and would be able to quickly troubleshoot and respond to construction-related inquiries. The CLO would also participate in a Community Board Construction Task Force to address concerns that may arise during construction. New York City maintains a 24-hour telephone hotline (311) so that concerns can be registered with the city. In addition, JHL would also maintain a hotline for construction-related inquiries.

Hours of Work. Construction for the Proposed Project would be carried out in accordance with New York City laws and regulations, which allow construction activities between 7:00 a.m. and 6:00 p.m. Construction work would begin at 7:00 a.m. on weekdays, with most workers arriving between 6:00 a.m. and 7:00 a.m. Normally, weekday work would end by 3:30 p.m., but it can be expected that, in order to meet the construction schedule or to complete certain critical tasks, the workday may occasionally be extended beyond normal work hours. Any extended workdays would generally last until approximately 6:00 p.m. and would not include all construction workers on site, but only those involved in the specific task requiring additional work time. As discussed below in "Perimeter Safety," efforts would be made to schedule construction deliveries outside of the school commuting traffic peak hours (generally 8:00 a.m. to 9:00 a.m. and 3:00 p.m. to 4:00 p.m.) to the extent practicable while school is in session.

Night or weekend work would not be scheduled regularly, but may occur occasionally to make up for weather delays or other unforeseen circumstances. In such cases, appropriate work permits from NYCDOB would be required and no night or weekend work could be performed until such permits were obtained. Similar to an extended workday, the numbers of workers and pieces of equipment in operation would be limited to those needed to complete the particular task at hand. The duration of a typical weekend workday would be on Saturday from approximately 9:00 a.m. to 5:00 p.m.

Pest Management. Construction contracts would include provisions for a pest management control program for rodents such as rats and mice. Before the start of construction, the contractor would survey and bait the appropriate areas and provide for proper site sanitation. During construction, the contractor would carry out a maintenance program, as necessary. Signage would be posted, and coordination would be conducted with appropriate public agencies. Only USEPA- and NYSDEC-registered rodenticides would be permitted, and the contractor would be required to implement the rodent control program in a manner that is not hazardous to the general public, domestic animals, and nontarget wildlife.

Site Access, Deliveries, and Closures. During construction of the Proposed Project, access to the Project Site would be controlled. As shown in the logistics plan in Figure 13-2, the work areas would be fenced off, and limited access points for workers and trucks would be provided. There would be security presence on the construction site 24 hours a day, 365 days a year, with regular patrol of the construction site after work hours and over the weekends to prevent unauthorized access and ensure public safety. Flaggers would be posted as necessary to control trucks entering and exiting the Project Site and to ensure the safety of pedestrians passing through the area. Trucks delivering materials would enter the south side of the construction site from West 97th Street. The staging and laydown of materials would be done from the associated southern portion of the Project Site along West 97th Street. Additional details on site access and deliveries are discussed below in the "Perimeter Safety" section of this chapter.



Note: T1 = Existing Tree to be Removed and Relocated Offsite; T2 = Existing Tree to Protect

Construction Logistics Plan
Figure 13-2

Similar to many other construction projects in New York City, temporary curb-lane and sidewalk closures may be required adjacent to the Project Site. If a curb-lane closure is required, approximately 10 parking spaces would be temporarily lost. These parking spaces would be restored once construction activities no longer require a curb-lane closure. However, no rerouting of traffic is anticipated and moving lanes of traffic on West 97th Street adjacent to the Project Site are expected to be available at all times. The West 97th Street sidewalk south of the Project Site is 40 feet in width, much wider that the typical 10- to 15-foot sidewalk widths fronting residential blocks. A pedestrian walkway within the existing sidewalk would always be maintained, although it would be narrowed during construction to an 8-foot-wide pathway. This 8-foot-wide pathway would exceed the minimum 5-foot-wide pathway NYCDOT requirement. A Traffic and Protection Maintenance Plan ("MPT") would be developed for any temporary curb-lane closure and sidewalk narrowing as required by NYCDOT. Approval of these plans and implementation of the closures would be coordinated with NYCDOT's Office of Construction Mitigation and Coordination ("OCMC") to ensure that access is maintained to nearby buildings.

Perimeter Safety. The Project Site is located on the southern portion of the superblock bounded by West 100th Street to the north, West 97th Street to the south, Columbus Avenue to the east, and Amsterdam Avenue to the west. P.S. 163 Alfred E. Smith School, a pre-kindergarten through fifth grade school, is located on this block immediately to the west of the Project Site, and two Park West Village ("PWV") residential buildings are located to the immediate north and east of the Project Site respectively. As shown in the logistics plan in Figure 13-2, for pedestrian safety purposes, flaggers would be employed adjacent to the Project Site to provide guidance to pedestrians and to alert or slow down the traffic. This would ensure that pedestrians are provided a safe path to walk to and from P.S. 163 or nearby residences, away from construction vehicles and equipment. In addition, to ensure the safety of the children, teachers, administrative personnel and the public traveling to and from P.S. 163, the construction manager would coordinate construction activities with the NYCDOE and with the P.S. 163 principal on an ongoing basis. Further, as discussed above, a protected 8-foot-wide pedestrian pathway within the width of the existing West 97th Street sidewalk south of the Project Site would always be maintained. Flaggers would also be employed at each of the gates to control trucks entering and exiting the Project Site.

One of the main points of ingress/egress for P.S. 163 is located on the eastern façade of the school facing the Project Site. Although the *New York City Building Code* does not require a sidewalk bridge to be installed on the pedestrian pathway between P.S. 163 and the Project Site, since the proposed building would be located more than 20 feet away from this pathway, a sidewalk bridge would be erected between P.S. 163 and the Project Site when superstructure construction commences to provide overhead protection. To maximize light and air circulation, the P.S. 163 sidewalk bridge would be 12 feet high (instead of the typical 8-foot-high bridge). Sidewalk bridge/construction sheds would also be erected to the immediate north and east of the Project Site when superstructure construction commences to provide overhead protection for pedestrians and vehicles passing through these areas respectively. In addition, 10-foot cantilevered fences with sound absorptive material mounted in the inner surface would be installed around the perimeter of the construction site during construction to provide noise shielding. As is typical of high-rise construction practices, safety netting would be installed on the sides of the proposed building as the superstructure advances upward to prevent inadvertent debris from falling to the ground. Construction supplies and materials would be secured to minimize the potential for objects to fall off from open areas. All NYCDOB safety requirements would be followed and construction activities associated with the Proposed Project would be conducted with the care mandated by the close proximity of sensitive receptor locations (locations such as residences, schools, houses of worship, libraries, parks, and playgrounds) to the Proposed Project.

The typical construction traffic peak hours would occur outside of the school commuting traffic peak hours (generally 8:00 a.m. to 9:00 a.m. and 3:00 p.m. to 4:00 p.m.). However, to avoid temporary traffic disruptions in the surrounding area, efforts would be made to schedule construction deliveries (except for concrete deliveries since concrete operation is very time sensitive — continuous pours are necessary to form one structure without joints) outside of the school commuting traffic peak hours to the extent practicable while school is in session. As described in more details below in “Air Quality” and “Noise,” on-site control measures would be implemented during construction to minimize air quality and noise disruptions to the school population. Noise control measures as required by the *New York City Noise Control Code*, including both path and source controls, as well as additional project-specific source and path control measures would be implemented. Air/dust emissions control measures — including watering of exposed areas and dust covers for trucks — would be implemented to ensure compliance with the *New York City Air Pollution Control Code*, which regulates construction-related dust emissions.

Greenmarket. GrowNYC, a New York City-sponsored green market organization, hosts a weekly Greenmarket Farmers’ Market every Friday (8:00 a.m. to 2:00 p.m.) on the sidewalk along the Project Site fronting West 97th Street. It is currently exploring the possibility of a safe continuation of the market during construction, including the temporary relocation of the market farther west along West 97th Street. JHL has met with GrowNYC and is supportive of GrowNYC’s efforts. Upon completion of the Proposed Project, the weekly Greenmarket Farmers’ Market could relocate back to its current location in front of the Project Site.

Construction Tasks. The 88-space existing surface parking lot would be relocated elsewhere on the PWV campus before construction commences in such manner that would ensure no displacement of existing parking during construction (the property owner commenced construction of the relocated surface parking lot in March 2014). The Project Site would first be prepared for construction and would involve the installation of public safety measures such as fencing, netting, signs, and Jersey barriers. Access points to the Project Site would be established. As part of the Builders Pavement Plan (“BPP”) and Forestry Application, as currently contemplated, approximately 3 existing street trees would be removed and 5 trees would be protected along the West 97th Street frontage of the Project Site. The size and species of the proposed replacement trees would be determined by NYCDPR. Field office trailers for the construction engineers and managers, portable toilets, and dumpsters for trash would be hauled to the site and installed. During site set-up, permanent utility connections may be made, but utility connections may be made almost any time during the construction period. Site set-up activities would be completed within a few weeks.

The construction of the Proposed Project would consist of the following primary construction tasks, which would overlap at certain times: excavation and foundation; superstructure; exterior façade; interior fit out; site work; and commissioning. Each construction stage is described below.

Excavation and Foundation. The existing surface parking area on the Project Site would first be demolished with the use of pavement breakers. Then, a pile driver would be used to drive sheet piles into the earth to form a continuous wall around the construction site to hold back soil around the excavation area. Next, excavators would be used for the task of excavation. The soil would be loaded onto dump trucks for transport to a licensed disposal facility or for reuse on a construction site that needs fill. The dump trucks would be loaded in the excavation itself, and a ramp would be built to the street level. No blasting is anticipated for the construction of the Proposed Project. Next, the concrete footings would be erected and subsequently the cellar floor would be installed. A spread footing foundation system is expected to be used for the project building. In this type of foundation system, concrete column footings would be used to accommodate the concentrated load placed on them and support the structure above. These concrete footings would be reinforced with rebar, consistent with standard operating practices.

As described in greater details below under "Hazardous Materials," to reduce the potential for public exposure to contaminants during excavation and foundation activities, construction activities would be performed in accordance with all applicable regulatory requirements. All construction subsurface soil disturbances would be performed in accordance with a NYSDOH-approved RAP and CHASP. The RAP would provide for the appropriate handling, stockpiling, testing, transportation, and disposal of excavated materials, as well as any unexpectedly encountered underground storage tanks, in accordance with all applicable federal, state, and local regulatory requirements. The CHASP would ensure that all subsurface disturbances are performed in a manner protective of workers, the community, and the environment (such as dust control and monitoring). The excavated area would not be waterproofed until the slab-on-grade foundation is built. In addition, rain and snow could collect in the excavation, and that water would have to be removed. Temporary erosion and sediment controls during construction would be provided, and may include settling ponds and approved filtration systems. If dewatering is required, it would be performed in accordance with NYCDEP sewer use requirements. These requirements require testing to ensure any potentially contaminated groundwater is treated before it can be discharged to the sewer system.

Excavation and foundation work would also involve the use of backhoes, water pumps, bobcats, bulldozers, concrete pumps, and concrete trucks. During this stage, approximately 50 to 70 workers would be on site per day; and approximately 15 trucks would enter and leave the Project Site daily.[1]

Superstructure. The superstructure of the project building would include the building's framework (beams and columns) and floor decks. Construction of the interior structure, or core,

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[1] The number of construction workers on the construction site and trucks entering and leaving by construction task were projected by the construction managers of the Proposed Project (Tishman Construction Corporation). See Appendix D.

of the proposed building would include elevator shafts; vertical risers for mechanical, electrical, and plumbing systems; electrical and mechanical equipment rooms; core stairs; and restroom areas. Superstructure construction would begin after the foundation is completed. The tower crane would first be brought onto the construction site during the superstructure task and would be used to lift structural components, façade elements, and other large materials. The tower crane would be on-site for the superstructure and exterior façade stages of construction (approximately 11 months). Since the proposed building would be located on the eastern portion of the Project Site, and due to other site constraints, the tower crane would have to be located to the west of the proposed building (see Figure 13-2) in order for the boom of the crane to reach the farthest extents of the proposed building. The starting elevation of the tower crane would be approximately 75 feet (taller than the nearby P.S. 163) and would rise as the building progresses upwards. NYCDOB oversees the installation and operation of the tower crane to ensure safe operation of the equipment.

Superstructure activities would also require the use of a water pumps, bobcats, concrete pumps, and variety of trucks. Temporary construction hoists would also be constructed for the delivery of materials and vertical movement of workers during this stage of construction. During this stage, approximately 75 to 100 workers would be on site per day; and approximately 15 to 20 trucks would enter and leave the Project Site daily.

Exterior Façade. During this stage of construction, the exterior façades of the proposed building would be installed. The precast façades would arrive on trucks and be lifted into place for attachment by the tower crane. Approximately 20 to 75 workers would be on site per day during this stage; and approximately 5 trucks would enter and leave the Project Site daily.

Interior Fit Out. This stage would include the construction of interior partitions, installation of lighting fixtures, and interior finishes (flooring, painting, etc.), and mechanical and electrical work.

Equipment used during interior construction would include construction hoists, pneumatic equipment, delivery trucks, and a variety of small hand-held tools. The construction hoist would be used to transport mechanical equipment to the roof of the building. During this stage, approximately 100 to 500 workers would be on site per day; and approximately 20 to 25 trucks would enter and leave the Project Site daily. While the greatest number of construction workers would be on site during this stage of construction, this stage is the quietest because most of the construction activities would occur within the building.

Site Work. The ground-floor level would include an approximately 8,700-gsf, publicly-accessible open space along the west side of the Project Site. The Proposed Project would also include a rooftop garden available to the facility's future residents. Top soil would be imported for installation of the grassy areas and landscaping. Concrete sidewalks would be poured, and street furniture, such as benches and tables, would be installed. Dump trucks would bring the soil to the site for spreading. Trees and shrubs would be planted. A public vehicular entrance on the north side of the building to the same areas via a covered, semicircular driveway for patient drop off and pick up, including ambulette and taxi access, would be installed.

Equipment used during site work would include backhoes, jackhammers, asphalt saws, asphalt pavers, and mini excavators. During this stage, approximately 30 workers would be on site per day; and approximately 5 trucks would enter and leave the Project Site daily.

Commissioning. Commissioning would occur towards the end of construction and would involve completing all of the punch list items, which are typically small tasks that were not completely finished. In addition, final cleanup and touchup of the Project Site and final building system (i.e., electrical system, fire alarm, plumbing etc.), testing, inspections, and approvals from city and state authorities would be part of the commissioning process. During this stage, approximately 40 workers would be on site per day; and approximately 15 trucks would enter and leave the Project Site daily.

Number of Construction Workers and Material Deliveries. Table 13-3 shows the estimated average daily numbers of workers and deliveries to the Project Site by calendar quarter for the duration of the construction period. The average number of workers throughout the entire period would be approximately 177 per day. The peak number of workers would be 483 per day, and would occur in the third quarter of second year of construction. For truck trips, the average number of trucks throughout the entire construction period would be 18 per day, and the peak would occur in the fourth quarter of second year of construction, with 27 truck trips per day.

Table 13-3. Average Number of Daily Workers and Trucks by Year and by Quarter

Year	**Year 1**				**Year 2**				**Year 3**			
Quarter	**1st**	**2nd**	**3rd**	**4th**	**1st**	**2nd**	**3rd**	**4th**	**1st**	**2nd**	**Average**	**Peak**
Workers	60	92	100	33	175	400	**483**	330	60	117	177	483
Trucks	15	18	18	4	25	22	22	**27**	17	15	18	27

Source: Tishman Construction Corporation, September 2013.

Future Without the Proposed Project

As discussed in Chapter 1, "Project Description," in the Future Without the Proposed Project ("No-Build Condition"), the Project Site would remain in its current state and continue to function as a parking area.

Probable Impacts of the Proposed Project

Hazardous Materials. The potential for hazardous materials was evaluated based on a *Phase I Environmental Site Assessment ("ESA")* prepared in accordance with American Society for Testing and Materials ("ASTM") Standard E1527-05 in May 2011 (updated with evaluation of a new regulatory database in January 2014) and a *Subsurface (Phase II) Investigation* in September 2013, conducted in accordance with a work plan approved by NYSDOH. The *Phase I ESA* found no evidence of Recognized Environmental Conditions ("RECs"). The laboratory analytical data of the Phase II investigation indicated that detected levels of soil contaminants in soil (and groundwater) samples were consistent with those typically found in the kinds of fill material encountered in the borings, which included brick and other building materials. Several volatile organic compounds ("VOCs"), semivolatile organic compounds ("SVOCs"), metals, and pesticides were detected in exceedance of conservative NYSDEC Subpart 375 Unrestricted Use Soil Cleanup Objectives ("USCOs"), which assume long-term exposure to unpaved soils. Only certain SVOCs and metals exceeded Subpart 375 Soil Cleanup Objectives for Restricted Residential use ("RRSCOs"), which assume site use as multifamily residences with some potential for soil contact. In particular, lead levels in 3 of the 38 soil samples exceeded 1,000 parts per million ("ppm") with a maximum of 3,850 ppm and an average lead level for all sampling of 290 ppm. The average lead level in the samples from the top 6 inches of tree pits was 304 ppm (maximum 681 ppm). These findings do not indicate a "soil-lead hazard" defined by USEPA to mean: "bare soil on residential real property or on the property of a child-occupied facility that contains total lead equal to or exceeding 400 parts per million in a play area or average of 1,200 parts per million of bare soil in the rest of the yard based on soil samples." See 40 *Code of Federal Regulations ("CFR")* 745.65(c). Additional information on lead and the potential for exposure to lead is in Chapter 11, "Public Health."

The future with the Proposed Project would involve subsurface disturbance for the construction of the proposed new building and outdoor improvements. Soil that would be disturbed by the Proposed Project includes widespread historical fill materials, limited petroleum-contaminated soil (in the southeastern corner of the Project Site) for which Spill №. 1306324 has been reported to NYSDEC, and some soil exceeding the hazardous waste threshold for barium content. The Proposed Project would disturb these materials, potentially increasing pathways for human exposure. However, as described in Chapter 5, "Hazardous Materials," impacts would be avoided by implementing the following measures as a part of the Proposed Project:

- A NYSDOH-approved RAP and associated CHASP would be prepared for implementation during the subsurface disturbance associated with the Proposed Project. The RAP would address requirements for the identified petroleum contamination, barium in soils and historical fill material as well as soil stockpiling, soil disposal and transportation; dust control; quality assurance; and contingency measures, should petroleum storage tanks or additional contamination be encountered. The RAP would include the requirement for a vapor barrier surrounding the new building's cellar slab and sidewalls to prevent vapor intrusion. The RAP would also require a 2-foot cap of clean imported soil in areas not covered by buildings or paving. The CHASP would identify potential hazards that may be encountered during construction and specify appropriate health and safety measures to be undertaken to ensure that subsurface disturbance is performed in a manner protective of workers, the community, and the environment (such as dust control, personal protective equipment for construction workers, dust and VOCs monitoring, and emergency response procedures). The CHASP would include the requirements for implementation of a Community Air Monitoring Plan ("CAMP") and Fugitive Dust and Particulate Monitoring in accordance with the requirements established in the May 2010 NYSDEC Division of Environmental Remediation ("DER")-10 Appendices 1A and 1B during soil disturbance. DER-10 requirements for dust control measures would include real-time monitoring to ensure 15-minute average respirable dust levels stay below 150 μg/m^3. No reliable technology exists for real-time measurement of airborne lead, but airborne lead levels can be estimated from the known proportion of lead present in the Project Site's soil because any airborne lead would be attached to dust particles in approximately the same proportion as the lead is present in the soil. The measures required by the RAP and CHASP would control and limit the potential for airborne exposure to dust and lead and the associated respirable dust monitoring would be more than sufficient to ensure that the level of lead would not violate the National Ambient Air Quality Standards ("NAAQS").[2]

- During subsurface disturbance, excavated soil would be handled and disposed of in accordance with applicable regulatory requirements (e.g., NYSDEC Part 360 regulations for Solid Waste Management Facilities and Parts 370-374 for hazardous wastes and federal requirements 49 *CFR* Parts 170-180 for transporting hazardous materials) and the requirements of the receiving facility, which may well be in another state (e.g., New Jersey, *New Jersey Administrative Code ("N.J.A.C.")* 7:26 Solid Waste Regulations). Spill №. 1306324 would be remediated in accordance with NYSDEC requirements.
- If dewatering is required (due to rainfall in the excavation area or if below-grade activities extend below groundwater levels), it would be performed in accordance with NYCDEP sewer use requirements. These requirements require testing to ensure contaminated groundwater is treated before it can be discharged to the sewer system. Although the data from the Phase II investigation suggests treatment would not be necessary, since dewatering can draw water from off-site areas, additional testing would be required as a part of the NYCDEP approval process. Were treatment to be required (such as settling or carbon filtration), it would be in enclosed containers with any residuals disposed off site in accordance with the same regulatory requirements as the excess soil. Water pumps would be used for task of dewatering.

With the implementation of the measures described above, the Proposed Project would not result in any significant adverse impacts related to hazardous materials during construction. Once excavation and foundation activities are complete, all of the disturbed contaminated soil would be remediated and removed from the Project Site and no further potential for future human exposure would occur.

Transportation. Construction is anticipated to commence in 2014 and would last approximately 30 months. The construction peak in terms of number of workers is projected to be during 2016. The 88-space existing surface parking lot would be relocated to another surface lot within the PWV campus before the first stages of construction in such manner that would

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[2] The NAAQS for lead, which provides "public health protection, including protecting the health of 'sensitive' populations such as asthmatics, children, and the elderly," as well as "public welfare protection, including protection against decreased visibility and damage to animals, crops, vegetation, and buildings" is 0.15 μg/m^3 of lead (calculated as a rolling 3-month average).

ensure no displacement of existing parking during construction. Construction staging would maintain access to the surface parking for the PWV buildings at all times. Construction workers would be expected to use public transportation, walk, or park in off-site parking facilities. This section describes the potential impacts to traffic, parking, transit, and pedestrians during the construction of the Proposed Project.

Traffic. This section details the traffic factors considered in the construction-period impact assessment.

Construction Trip Generation. Average daily construction worker and truck activities by quarter were projected for the entire construction period, as shown in Table 13-3 above (see Appendix D for details). Construction is anticipated to begin in 2014 and would last approximately 30 months. Peak construction traffic is expected to take place in the third quarter of the second year of construction which would occur in 2016. For a reasonable worst-case analysis of potential transportation-related impacts during construction, the daily workforce and truck trip projections during this period were used as the basis for estimating peak-hour construction trips. It is expected that construction activities would generate the highest number of daily trips during this quarter, with an estimated average of 483 workers and 22 truck deliveries per day, as shown above in Table 13-3.

Worker and truck trip projections were multiplied by worker modal splits (a percentage breakdown of the travel modes such as private autos and public transportation which construction workers would use to get to and from the Project Site) and divided by vehicle occupancy, based on the 2000 Census reverse-journey-to-work data for the construction and excavation industry for Project Site census tracts. Approximately 31 percent of the construction workers would be expected to travel to the project area by private autos at an average occupancy of 1.19 persons per vehicle. The remaining 69 percent would use public transportation or walk to the site.

Worker and truck trip projections were also refined to account for arrival and departure distribution and passenger car equivalent ("PCE") factors for construction truck traffic.

Peak-Hour Construction Worker Vehicle and Truck Trips. As detailed above in "Hours of Work," site activities would take place during one construction shift from 7:00 a.m. to 3:30 p.m. Construction truck trips would be made throughout the day (with more trips made during the morning period) and most trucks would remain in the area for only short durations. However, construction workers would typically commute during the hours before and after their work shift. For analysis purposes, each worker vehicle was assumed to arrive in the morning and depart in the afternoon or early evening, whereas each truck delivery was assumed to result in 2 truck trips during the same hour (1 "in" and 1 "out"). Furthermore, in accordance with the *CEQR Technical Manual*, the traffic analysis assumed that each truck has a PCE of 2.0.

The estimated daily vehicle trips were distributed throughout the workday based on projected work shift allocations and conventional arrival/departure patterns of construction workers and trucks. For construction workers, the majority (80 percent) of the arrival and departure trips would take place during the hour before and after each shift. For construction trucks, deliveries would occur throughout the day when the construction site is active. Construction truck deliveries typically peak during the early morning (approximately 25 percent), overlapping with construction worker arrival traffic. As described above in "Perimeter Protection," to avoid temporary traffic disruptions in the surrounding area, efforts would be made to schedule construction deliveries (except for concrete deliveries since concrete operation is very time sensitive) outside of the school commuting traffic peak hours (generally 8:00 a.m. to 9:00 a.m. and 3:00 p.m. to 4:00 p.m.) to the extent practicable. The construction hourly trip projections for each quarter are summarized in Table 13-4.

Table 13-4. Construction Trip Generation by Year and by Vehicle PCE Trips (Automobiles and Trucks)

Vehicle PCE Trips	Year 1				Year 2				Year 3	
(Autos + Trucks)	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q
6 AM - 7 AM	28	37	39	10	61	105	123	96	31	39
7 AM - 8 AM	9	13	13	4	20	30	34	29	11	12
8 AM - 9 AM	0	0	0	0	0	0	0	0	0	0
9 AM - 10 AM	6	8	8	2	11	9	9	12	8	6
10 AM - 11 AM	6	8	8	2	11	9	9	12	8	6
11 AM - 12 PM	6	8	8	2	11	9	9	12	8	6
12 PM - 1 PM	6	8	8	2	11	9	9	12	8	6
1 PM - 2 PM	6	8	8	2	11	9	9	12	8	6
2 PM - 3 PM	7	9	9	2	13	14	15	16	9	8
3 PM - 4 PM	13	19	21	6	36	83	101	69	13	24
4 PM - 5 PM	2	4	4	1	7	16	19	13	2	5
5 PM - 6 PM	0	0	0	0	0	0	0	0	0	0
6 PM - 7 PM	0	0	0	0	0	0	0	0	0	0
Daily Total	**89**	**122**	**126**	**33**	**192**	**293**	**337**	**283**	**106**	**118**

During the peak period of construction activity in 2016 (i.e., third quarter), 123 PCE trips are anticipated between 6:00 and 7:00 a.m. and 101 PCE trips are anticipated between 3:00 and 4:00 p.m. on weekdays. Of these trips, the construction worker auto trips would travel to and from the off-site parking facilities and only the truck-equivalent trips would travel to and from the Project Site. The peak-construction hourly-trip projections are summarized in Table 13-5.

Table 13-5. Peak-Construction Vehicle-Trip Projections (2016) by Hour and by Auto Trips, Truck Trips and Total Trips

Hour	Auto Trips			Truck Trips			Total Trips					
	Vehicles Trips			PCE Trips			Vehicle Trips			PCE Trips		
	In	Out	Total	In	Out	Total	In	Out	Total	In	Out	Total
Weekday (Peak Construction Period 2016)												
6 AM - 7 AM	101	0	101	11	11	22	107	6	112	112	11	123
7 AM - 8 AM	25	0	25	5	5	9	27	2	30	30	5	34
8 AM - 9 AM	0	0	0	0	0	0	0	0	0	0	0	0
9 AM - 10 AM	0	0	0	5	5	9	2	2	5	5	5	9
10 AM - 11 AM	0	0	0	5	5	9	2	2	5	5	5	9
11 AM - 12 PM	0	0	0	5	5	9	2	2	5	5	5	9
12 PM - 1 PM	0	0	0	5	5	9	2	2	5	5	5	9
1 PM - 2 PM	0	0	0	5	5	9	2	2	5	5	5	9
2 PM - 3 PM	0	6	6	5	5	9	2	8	11	5	11	15
3 PM - 4 PM	0	101	101	0	0	0	0	101	101	0	101	101
4 PM - 5 PM	0	19	19	0	0	0	0	19	19	0	19	19
5 PM - 6 PM	0	0	0	0	0	0	0	0	0	0	0	0
Daily Total	126	126	252	43	43	85	147	147	295	169	169	337

Note: Hourly construction worker and truck trips were derived from an estimated monthly average number of construction workers and truck deliveries per day, with each truck delivery resulting in two daily trips (arrival and departure). Trips do not add exactly due to rounding.
Assumed 2 PCE's for each truck trip.

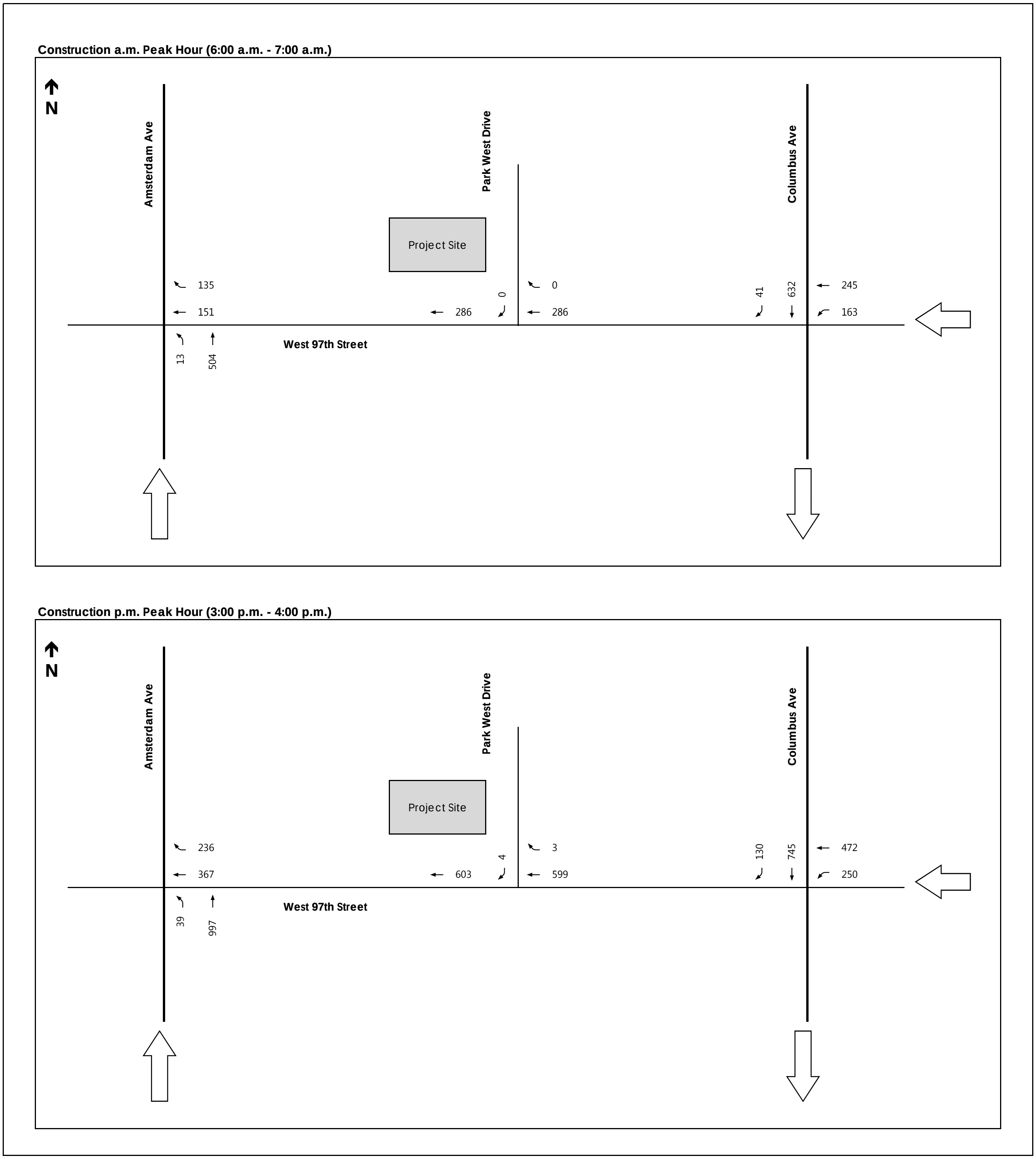
Construction Period Traffic Patterns. Construction traffic patterns for workers within the study area would be based largely on the location of parking facilities, availability, and origins/destinations. Construction traffic patterns for truck trips would be based on truck routes to and from the Project Site.

Construction Period Traffic Analysis. Due to the additional trips generated by construction workers, a detailed traffic analysis was conducted for the construction period. According to the criteria specified in the *CEQR Technical Manual*, the analysis was conducted at intersections where 50 or more new and/or rerouted trips would be generated by the construction of the Proposed Project or at other intersections requested by NYCDOT. This trip threshold was met at only one of the study area intersections. However, to be conservative and consistent with Chapter 7, "Transportation," both study area intersections studied in the transportation analysis were also studied in this construction analysis. As shown in Figure 13-3, the two study area intersections are:

- West 97th Street and Amsterdam Avenue
- West 97th Street and Columbus Avenue

The representative peak hours for the construction analysis were determined to be:

- Weekday a.m.: 6:00 a.m. to 7:00 a.m.; this represents the construction worker arrival peak.
- Weekday p.m.: 3:00 p.m. to 4:00 p.m.; this represents the construction worker departure peak.



2013 Existing Traffic Volumes

Weekday Construction Peak Hours

Figure 13-3

Construction Period Traffic Analysis: Existing Conditions. Existing study area traffic volumes were based on traffic data collected in May and November 2013 including manual traffic counts, vehicle classification counts, and crosswalk counts at study area intersections during the two peak hours while local schools were in session. Traffic volumes were balanced between intersections where appropriate. Automated Traffic Recorders ("ATRs") were placed for a continuous 9-day period in November 2013 and were used to identify daily and temporal traffic variations. An inventory of the study intersections was performed to determine traffic signal timing, phasing, and cycle length; street and curbside signage; pavement markings; and lane dimensions to be used in the calculation of street capacities. In addition, official signal timing data were obtained from NYCDOT to confirm field observations and for incorporation into the capacity analysis. Figure 13-3 shows the existing condition traffic volumes for the two peak hours.

Table 13-6 presents the existing condition capacity analysis results for the signalized intersections included in the study area. The majority of the analyzed intersection approaches and lane groups operate at an acceptable level of mid-LOS D or better (45.0 seconds of delay for signalized intersections) during the two analysis peak hours. The exception is as follows:

West 97th Street and Amsterdam Avenue

- During the construction p.m. peak hour, the westbound through-right-lane group operates at LOS F with an average delay of 80.1 seconds and volume to capacity ("v/c") ratio of 1.05.

West 97th Street and Columbus Avenue

- During the construction p.m. peak hour, the westbound through-left-lane group operates at LOS E with an average delay of 67.9 seconds and v/c ratio of 1.00.

Table 13-6. Existing Conditions Level of Service (LOS) Analysis by Intersection and Approach and by Construction A.M. and P.M. Peak Hour

	Intersection & Approach	Construction a.m. Peak Hour				Construction p.m. Peak Hour			
		Lane Group	v/c Ratio	Delay (sec)	LOS	Lane Group	v/c Ratio	Delay (sec)	LOS
1	**Amsterdam Avenue & West 97th Street**								
	Westbound	TR	0.42	24.8	C	TR	1.05	80.1	F
	Northbound	LT	0.30	13.9	B	LT	0.56	16.7	B
		Intersection		17.8	B	Intersection		40.2	D
2	**Columbus Avenue & West 97th Street**								
	Westbound	L	0.38	24.7	C	L	0.73	36.1	D
		LT	0.53	27.7	C	LT	1.00	67.9	E
	Southbound	TR	0.51	14.9	B	TR	0.62	16.5	B
		Intersection		19.0	B	Intersection		35.6	D
	Notes: L = Left Turn, T= Through, R = Right Turn, DefL = Defacto Left Turn; LOS = Level of Service.								

Construction Period Traffic Analysis: No-Build Conditions. The Future Without the Proposed Project (or "No-Build Condition") builds on the existing conditions analysis by incorporating background growth, other nearby projects expected to be complete, and anticipated changes in the transportation network. The analysis of the No-Build Condition serves as the baseline to which the Build Condition during construction will be compared to identify impacts.

The No-Build development project located at 15-17 West 96th Street, which includes residential and community facility uses as described in Chapter 7, "Transportation," was considered for the construction period No-Build analysis.

Figure 13-4 shows the No-Build traffic volumes for the two peak hours. Table 13-7 presents a comparison of Existing and No-Build conditions for the signalized study intersections. Based on the analysis results, the majority of the approaches/lane groups would operate at the same LOS as in existing conditions. At the following locations, the addition of No-Build traffic would result in changes in LOS beyond mid-LOS D:

West 97th Street and Amsterdam Avenue

- During the construction p.m. peak hour, the westbound through-right-lane group would degrade within LOS F from an average delay of 80.1 seconds and v/c ratio of 1.05 to an average delay of 85.9 seconds and a v/c ratio of 1.07.

West 97th Street and Columbus Avenue

- During the construction p.m. peak hour, the westbound through-left-lane group would degrade within LOS E from an average delay of 67.9 seconds and v/c ratio of 1.00 to an average delay of 73.0 seconds and a v/c ratio of 1.02.

Table 13-7. Existing Condition and No-Build Condition Level of Service (LOS) Analysis by Intersection and Approach and by Construction A.M. and P.M. Peak Hour

#	Intersection & Approach	Construction a.m. Peak Hour								Construction p.m. Peak Hour							
		Existing 2013				No-Build 2016				Existing 2013				No-Build 2016			
		Lane Group	v/c Ratio	Delay (sec)	LOS	Lane Group	v/c Ratio	Delay (sec)	LOS	Lane Group	v/c Ratio	Delay (sec)	LOS	Lane Group	v/c Ratio	Delay (sec)	LOS
1	Amsterdam Avenue & West 97th Street																
	Westbound	TR	0.42	24.8	C	TR	0.43	25.0	C	TR	1.05	80.1	F	TR	1.07	85.9	F
	Northbound	LT	0.30	13.9	B	LT	0.31	14.0	B	LT	0.56	16.7	B	LT	0.57	16.8	B
		Intersection		17.8	B	Intersection		17.9	B	Intersection		40.2	D	Intersection		42.6	D
2	Columbus Avenue & West 97th Street																
	Westbound	L	0.38	24.7	C	L	0.38	24.7	C	L	0.73	36.1	D	L	0.73	36.4	D
		LT	0.53	27.7	C	LT	0.54	28.1	C	LT	1.00	67.9	E	LT	1.02	73.0	E
	Southbound	TR	0.51	14.9	B	TR	0.52	15.0	B	TR	0.62	16.5	B	TR	0.63	16.7	B
		Intersection		19.0	B	Intersection		19.1	B	Intersection		35.6	D	Intersection		37.4	D
	Notes: L = Left Turn, T= Through, R = Right Turn, DefL = Defacto Left Turn; LOS = Level of Service.																

Construction Period Traffic Analysis: Peak-Construction Period Conditions. The No-Build Condition analysis forms the future baseline to which increments associated with construction (construction-related trips generated during 2016) are added. The *CEQR Technical Manual* defines how impacts to transportation are to be determined. If the analysis results show that the Proposed Project would result in significant transportation-related impacts, mitigation measures are recommended to alleviate these impacts.

Figure 13-5 shows the peak-hour traffic generated by construction and Figure 13-6 shows the peak-construction period traffic volumes for the two peak hours. Table 13-8 presents a comparison

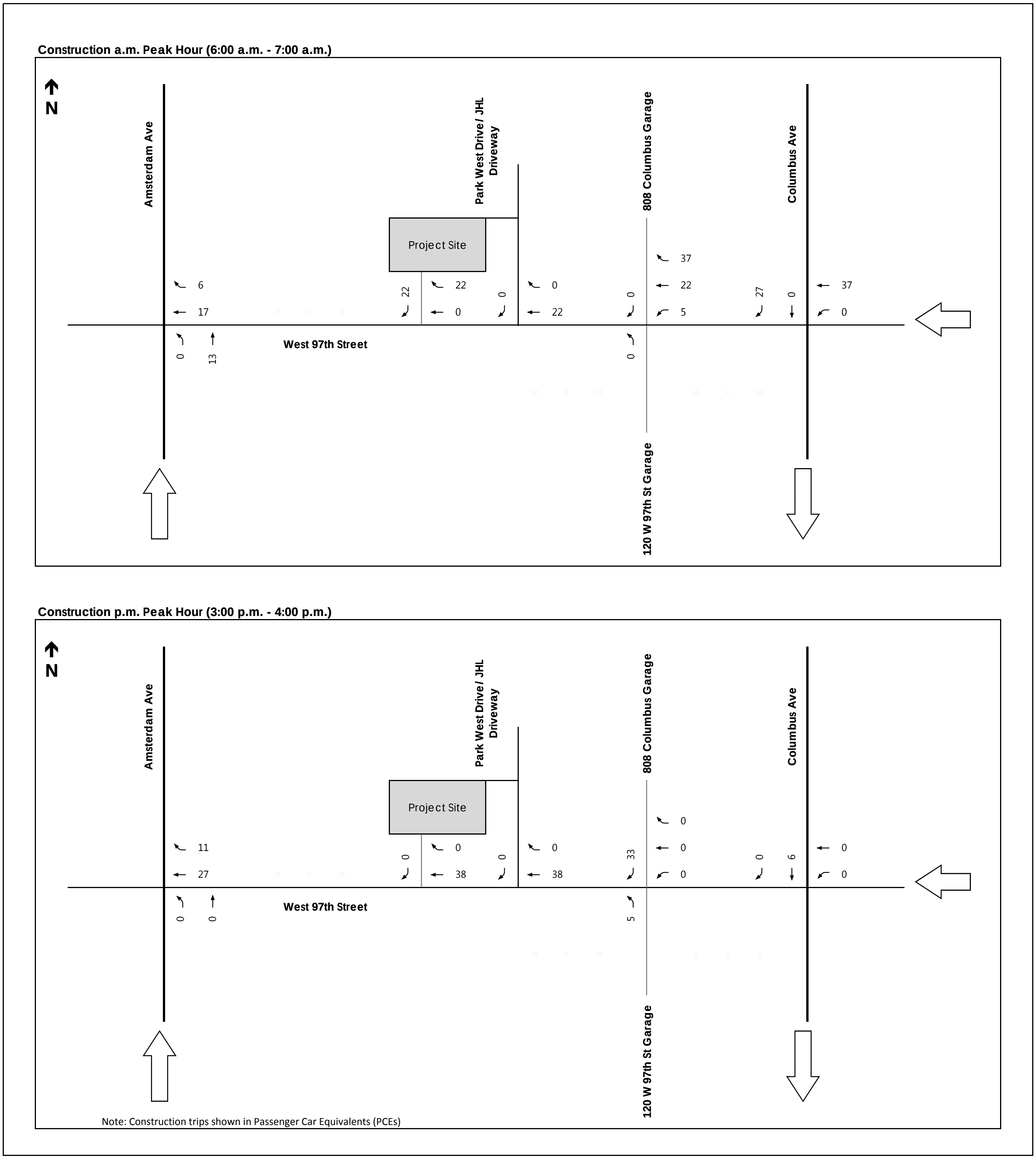
Construction a.m. Peak Hour (6:00 a.m. - 7:00 a.m.)

Construction p.m. Peak Hour (3:00 p.m. - 4:00 p.m.)

2016 No-Build Traffic Volumes

Weekday Construction Peak Hours

Figure 13-4

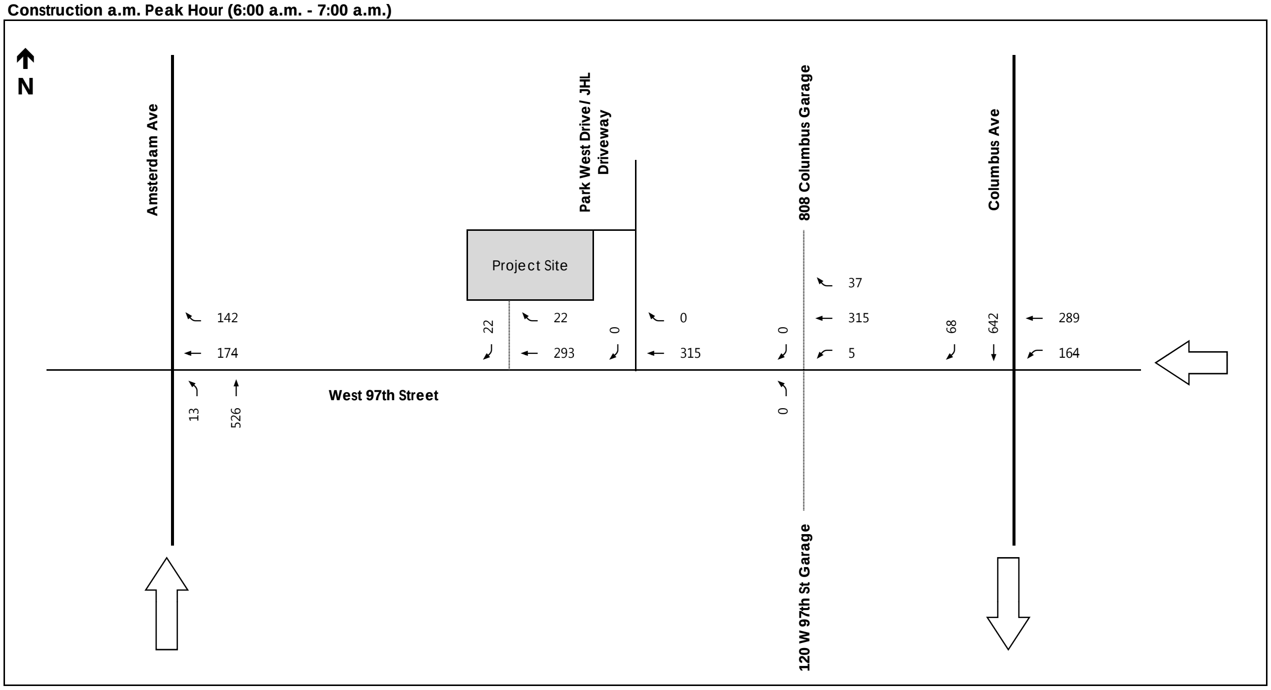


2016 Construction-Generated Volumes

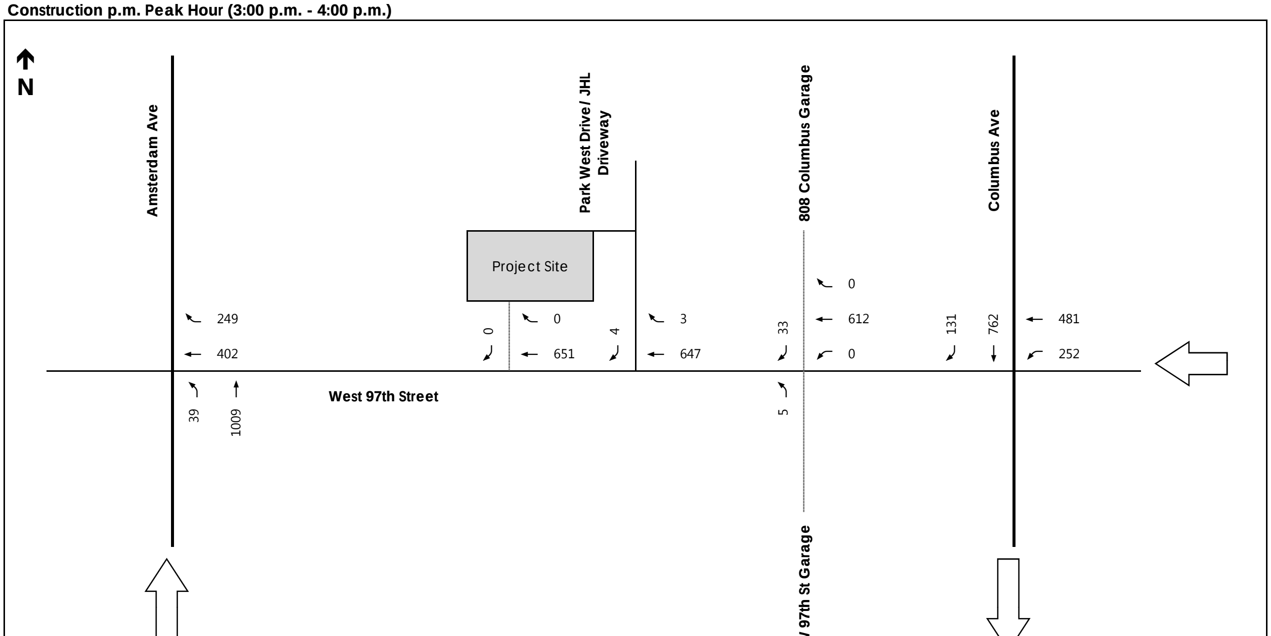
Weekday Construction Peak Hours

Figure 13-5

Construction a.m. Peak Hour (6:00 a.m. - 7:00 a.m.)



Construction p.m. Peak Hour (3:00 p.m. - 4:00 p.m.)



Note: Construction trips shown in Passenger Car Equivalents (PCEs). 808 Columbus Avenue and 120 W 97th Street garage volumes reflect project generated trips only.

2016 Construction Period Traffic Volumes

Weekday Construction Peak Hours

Figure 13-6

of No-Build and peak-construction period Build Conditions for the two study area intersections. Based on the significance criteria described in Chapter 16, Section 410 of the *CEQR Technical Manual*, significantly impacted lane groups are summarized below and are denoted with a "+" sign in the table.

Table 13-8. No-Build and Peak-Construction Period Conditions Level of Service (LOS) Analysis by Intersection and Approach and by Construction A.M. and P.M. Peak Hour

		Construction a.m. Peak Hour								Construction p.m. Peak Hour								
		No-Action				Peak Construction Period				No-Action				Peak Construction Period				
	Intersection & Approach	Lane Group	v/c Ratio	Delay (sec)	LOS	Lane Group	v/c Ratio	Delay (sec)	LOS	Lane Group	v/c Ratio	Delay (sec)	LOS	Lane Group	v/c Ratio	Delay (sec)	LOS	
1	Amsterdam Avenue & West 97th Street																	
	Westbound	TR	0.43	25.0	C	TR	0.47	25.8	C	TR	1.07	85.9	F	TR	1.14	110.8	F	+
	Northbound	LT	0.31	14.0	B	LT	0.31	14.0	B	LT	0.57	16.8	B	LT	0.57	16.8	B	
		Intersection		17.9	B	Intersection		18.3	B	Intersection		42.6	D	Intersection		53.2	D	
2	Columbus Avenue & West 97th Street																	
	Westbound	L	0.38	24.7	C	L	0.39	25.0	C	L	0.73	36.4	D	L	0.76	38.5	D	
		LT	0.54	28.1	C	LT	0.62	30.5	C	LT	1.02	73.0	E	LT	1.02	73.0	E	
	Southbound	TR	0.52	15.0	B	TR	0.55	15.4	B	TR	0.63	16.7	B	TR	0.63	16.8	B	
		Intersection		19.1	B	Intersection		20.1	C	Intersection		37.4	D	Intersection		37.8	D	

Notes: L = Left Turn, T= Through, R = Right Turn, DefL = Defacto Left Turn; LOS = Level of Service.

The analysis results indicate that the majority of the approaches/lane groups in the peak-construction period Build Conditions would operate at about the same LOS as in the No Build Condition, with the exception of the following:

West 97th Street and Amsterdam Avenue

- During the construction p.m. peak hour, the westbound through-right-lane group would deteriorate within LOS F from an average delay of 85.9 seconds and v/c ratio of 1.07 to an average delay of 110.8 seconds and v/c ratio of 1.14. This increase in delay represents a significant adverse impact at this location.

Construction Period: Traffic Mitigation. The West 97th Street and Amsterdam Avenue intersection would experience a significant impact in the westbound through-right-lane group during the Weekday p.m. peak hour under the peak construction period. This impact can be mitigated with the proposed mitigation as described in Chapter 14, "Mitigation Measures." The proposed mitigation is to reallocate 2 seconds of green time to the westbound phase from the northbound phase.

Transit. The Project Site is served by 5 subway lines (1, 2, 3, B, and C) and 4 bus routes (M7, M11, M96, and M106). Approximately 49 percent of construction workers were projected to travel to the Project Site via public transit, including 43 percent by subway/rail and 6 percent by bus. Most of these trips would be made during hours outside of the typical commuter peak periods.

During the peak-construction period, the 49 percent travel-by-transit distribution would represent approximately 237 daily regular shift workers traveling by transit. With 80 percent of these workers arriving during the construction peak hour from 6:00 a.m. to 7:00 a.m. and 80 percent departing during the construction peak hour from 3:00 p.m. to 4:00 p.m., the total estimated numbers of peak-hour transit trips would be approximately 190 trips during the a.m. peak hour (167 subway/rail, 23 bus) and 190 trips during the p.m. peak hour (167 subway/rail, 23 bus).

Since the increase in trips would be fewer than 200 trips on any one subway route and fewer than 50 trips on any one bus route during the peak-construction period, detailed subway and bus line-haul analyses are not required as per *CEQR Technical Manual* guidelines. Therefore, no construction-related transit impacts are expected during the peak construction period.

Pedestrians. Construction workers would arrive or depart during the construction peak hours via various modes of transportation.

- Construction workers traveling by auto would park in one of the off-site parking facilities within one-quarter mile of the Project Site and would result in new pedestrian trips in the one-quarter-mile study area.
- Construction workers traveling by subway, rail, or bus would also walk between transit stops and the Project Site.

Based on pedestrian trip estimate for each mode, fewer than 200 new peak-hour pedestrian trips would be added to any one pedestrian element during the construction period. Therefore, no construction-related pedestrian impacts are expected during the peak construction period.

Parking. Construction workers traveling by private automobile would primarily park at off-site facilities near the construction site. Within a one-quarter-mile radius of the Project Site, there would be a total of 441 available spaces during the peak-construction period at existing off-site parking facilities.

Based on the projected peak-construction trip estimates for 2016, the peak-construction worker parking demand would be 101 spaces. As shown in Table 13-9, the construction worker parking demand can be accommodated within the off-site parking facilities. Therefore, no construction-related parking impacts are expected.

Air Quality. Emissions from on-site construction equipment and on-road construction-related vehicles, as well as dust generating construction activities, have the potential to affect air quality. The analysis of potential air quality impacts of the construction of the Proposed Project includes a quantitative analysis of both on-site and on-road sources of air emissions, including fugitive dust emissions, and the overall combined impact of both sources, where applicable. As described in greater details below, the Proposed Project would be committed to employing a wide variety of measures that exceed standard construction practices to minimize the emissions of air pollutants and fugitive dust and reduce potential off-site air quality impacts.

Table 13-9. Commuter and Peak-Construction Worker Weekday Parking Analysis by Parking Location and by Available Supply (2016)

Parking Location		Available Supply (2016)
Availability in Existing Off-Site Parking Facilities[1]	808 Columbus Avenue	76
	750 Columbus Avenue	2
	120 W 97th Street	9
	50 W 97th Street	4
	70 W 95th Street	58
	721 Amsterdam Avenue	6
	9-11 W 100th Street	17
	801 Amsterdam Avenue	3
	100 W 93rd Street	67
	215 W 95th Street	37
	205 W 101st Street	115
	2561 Broadway	47
	Total Parking Supply (2016)	**441**
	Peak Construction Worker Demand[2]	101
	Total Parking Demand (2016)	**101**

Notes:

1. Availability in the existing off-site parking facilities based on No-Build utilization assuming that no facilities would be filled beyond a maximum occupancy of 98 percent.
2. Peak construction worker demand based on total auto trips arriving to the sites in 2016 (see Table 13-4).

In general, most construction engines are diesel powered, and produce relatively high levels of nitrogen oxides (“NO_x”) and particulate matter (“PM”). Construction activities also emit fugitive dust. Although diesel engines emit much lower levels of carbon monoxide (“CO”) than gasoline engines, the stationary nature of construction emissions and the large quantity of engines could lead to elevated CO concentrations, and impacts on traffic could increase mobile source-related emissions of CO as well. Therefore, the pollutants analyzed for the construction period are nitrogen dioxide (“NO_2”), particles with an aerodynamic diameter of less than or equal to 10 micrometers (“PM_{10}”), particles with an aerodynamic diameter of less than or equal to 2.5 micrometers (“$PM_{2.5}$”), and CO. The Proposed Project would commit to the use of ultra-low-sulfur diesel (“ULSD”) for all diesel engines used in the construction of its building, which would result in negligible emissions of sulfur oxides (“SO_x”).

*Emission Control Measures. C*onstruction activity in general has the potential to adversely affect air quality as a result of diesel emissions. Measures would be taken to reduce pollutant emissions during construction in accordance with all applicable laws, regulations, and building codes. These include dust suppression measures and the idling restriction for on-road vehicles:

- *Dust Control Measures.* To minimize fugitive dust emissions from construction activities, a strict fugitive dust control plan including a robust watering program would be required as part of contract specifications. For example, stabilized truck exit areas would be established for washing off the wheels of all trucks that exit the construction sites; truck routes within the Project Site would be either watered as needed or, in cases where such route would remain in the same place for an extended duration, the routes would be stabilized, covered with gravel, or temporarily paved to avoid the resuspension of dust; all trucks hauling loose material would be equipped with tight-fitting tailgates and their loads securely covered prior to leaving the Project Site; an on-site vehicular speed limit would be imposed to minimize dust emissions; water sprays would be used for all demolition, excavation, and transfer of soils to ensure that materials would be dampened as necessary to avoid the suspension of dust into the air. Loose materials would be watered, stabilized with chemical suppressing agent, or covered. All measures required by the portion of the *New York City Air Pollution Control Code* regulating construction-related dust emissions would be implemented.

- *Idling Restriction.* In addition to adhering to the local law restricting unnecessary idling on roadways, on-site vehicle idle time will also be restricted to 3 minutes for all equipment and vehicles that are not using their engines to operate a loading, unloading, or processing device (e.g., concrete mixing trucks) or otherwise required for the proper operation of the engine.

In addition to the required laws and regulations, the Proposed Project would commit to implementing an emissions reduction program for all construction activities to the extent practicable, consisting of the following components (commitments relating to the items set forth below will be included as part of construction contract specifications):

- *Diesel Equipment Reduction.* Electrically powered equipment would be preferred over diesel-powered and gasoline-powered versions of that equipment to the extent practicable.
- *Clean Fuel.* ULSD would be used exclusively for all diesel engines throughout the construction site.
- *Best Available Tailpipe Reduction Technologies.* Nonroad diesel engines with a power rating of 50 horsepower (“hp”) or greater and controlled truck fleets (i.e., truck fleets under long-term contract with the project) including but not limited to concrete mixing and pumping trucks would utilize the best available tailpipe (“BAT”) technology for reducing diesel particulate matter (“DPM”) emissions. Diesel particulate filters (“DPFs”) have been identified as being the tailpipe technology currently proven to have the highest reduction capability. Construction contracts would specify that all diesel nonroad engines rated at 50 hp or greater would utilize DPFs, either installed by the original equipment manufacturer (“OEM”) or retrofitted. Retrofitted DPFs must be verified by USEPA or the California Air Resources Board (“CARB”). Active DPFs or other technologies proven to achieve an equivalent reduction may also be used.
- *Utilization of Newer Equipment.* USEPA’s Tier 1 through 4 standards for nonroad engines regulate the emission of criteria pollutants from new engines, including PM, CO, NO_x, and hydrocarbons (“HC”). All nonroad construction equipment with a power rating of 50 hp or greater would meet at least the Tier 3 emissions standard to the extent practicable. Tier 3 NO_x emissions range from 40 to 60 percent lower than Tier 1 emissions and considerably lower than

uncontrolled engines. All nonroad engines in the project rated less than 50 hp would meet at least the Tier 2 emissions standard.

Overall, the proposed emission reduction program is expected to significantly reduce pollutant emissions during the construction of the Proposed Project.

Methodology. Chapter 8, "Air Quality", contains a review of the applicable pollutant regulations, standards, and benchmarks. Construction air quality analysis methodology is presented in the following section.

On-Site Construction Activity Assessment. The illustrative construction schedule and durations as shown in Table 13-2 have been developed with experienced New York City construction managers to serve as the basis of the analyses and is representative of the reasonable worst case for potential impacts. The schedule also allows for reasonable projections to be developed regarding the number of workers, types and number of pieces of equipment, and number of construction vehicles anticipated to be operating during each month of the construction period. Based on the construction schedule and equipment list, a worst-case short-term period and a worst-case year were identified for dispersion modeling of annual and short-term (i.e., 24-hour, 8-hour, and 1-hour) averaging periods. The excavation and foundation task (Month 1 to Month 3) and the 12-month period from Month 1 through Month 12 of construction were identified as the worst-case short-term and annual periods, since these periods would involve the use of heavy diesel equipment, such as excavators and loaders and, therefore, would generate the highest project-wide construction emissions. Broader conclusions regarding potential concentrations during other periods, which were not modeled, are presented as well based on the emissions comparison with the worst-case period results.

Engine Exhaust Emissions. The projected engine usage factors (estimates of the fraction of time engines operate), sizes, types, and numbers of construction equipment were estimated based on the construction activity schedule. Emission factors for NO_x, CO, PM_{10}, and $PM_{2.5}$ from on-site construction engines were developed using USEPA's NONROAD2008 Emission Model ("NONROAD"). With respect to trucks, emission rates for NO_X, CO, PM_{10}, and $PM_{2.5}$ for truck engines were developed using the EPA mobile source emissions model, MOVES.[3] A maximum of 3-minute idle time was assumed for truck deliveries.

Based on the previously-mentioned project commitments, emission factors for the construction of the Proposed Project were calculated assuming the exclusive use of ULSD for all construction engines, the use of Tier 3 or newer equipment with DPFs (OEM or the equivalent tailpipe controls to reduce DPM emissions by at least 90 percent compared with normal private construction practices) on all nonroad construction engines with an engine output rating of 50 hp or greater. All nonroad construction equipment with an engine output of 50 hp or less were assumed to meet the Tier 2 emission standard.

Fugitive Emissions. In addition to engine emissions, PM emissions would also be generated by material handling activities (e.g., loading/drop operations for fill materials and excavate) and truck movement on paved and unpaved surfaces. Estimates of air emissions from

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[3] USEPA, Motor Vehicle Emission Simulator ("MOVES"), User Guide for MOVES2010b, June 2012.

these activities were developed based on USEPA procedures delineated in AP-42 Table 13.2.3-1. It was estimated that the planned control of fugitive emissions would reduce PM emissions from such processes by 50 percent.

On-Road Emissions. On-road truck emissions adjacent to the Project Site were included with the on-site dispersion analysis (in addition to on-site truck and nonroad engine activity) in order to address all local project-related emissions cumulatively.

Dispersion Modeling. Projected NO_2, CO, PM_{10}, and $PM_{2.5}$ concentration increments resulting from project construction were predicted using the USEPA/AMS AERMOD dispersion model.[4] AERMOD is a state-of-the-art dispersion model, applicable to rural and urban areas, flat and complex terrain, surface and elevated releases, and multiple sources. AERMOD is a steady-state plume model that incorporates current concepts with respect to flow and dispersion in complex terrain.

For the short-term model scenarios, all stationary sources that idle in a single location while unloading were simulated as point sources. Other engines, which would move around the site on any given day, were simulated as area sources. In the annual analyses, all sources except the tower crane would move around the site throughout the year and were therefore simulated as area sources.

Meteorological Data. The meteorological data set consisted of five consecutive years of meteorological surface data from the nearest national weather station collected at LaGuardia Airport (2008–2012) and concurrent upper air data collected in Brookhaven, New York.

Receptor Locations. Discrete receptors (locations in the model where concentrations are predicted) were placed along the sidewalks closest to the construction site that would remain publicly accessible, at residential locations (i.e., PWV buildings to the north and east of the Project Site) and other sensitive uses (i.e., P.S. 163) at both ground-level and elevated locations (e.g., residential windows), and in open spaces (i.e., Happy Warrior Playground and the landscaped areas serving the PWV buildings).

Background Concentrations. To estimate the maximum expected total pollutant concentrations, the calculated impacts from the construction emission sources must be added to a background value that accounts for existing pollutant concentrations from other sources (see Table 13-10). The background levels are based on concentrations monitored at the nearest NYSDEC ambient air monitoring stations over a recent 5-year period for which data are available (2008-2012), with the exception of PM_{10}, which is based on 3 years of data (2010-2012), consistent with current NYCDEP guidance. Consistent with the NAAQS for each pollutant, for averaging periods shorter than a year, the second highest value is used.

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[4] USEPA, AERMOD: Description of Model Formulation, 454/R-03-004, September 2004; and USEPA, User's Guide for the AMS/USEPA Regulatory Model AERMOD, 454/B-03-001, September 2004 and Addendum December 2006.

Table 13-10. Maximum Background Pollutant Concentrations by Pollutant and by Annual and Short-Term Averaging Periods

Pollutant	Average Period	Location	Concentration ($\mu g/m^3$)	NAAQS ($\mu g/m^3$)
$PM_{2.5}$	24-hour	JHS 45, New York	24.0	35
	Annual	JHS 45, New York	9.9	12
PM_{10}	24-hour	P.S. 19, New York	44.0	150
NO_2	Annual	Botanical Garden, Bronx	43.1	100
CO	1-Hour	CCNY, New York	2.7	35 ppm
CO	8-Hour	CCNY, New York	1.8	9 ppm

Source: New York State Air Quality Report Ambient Air Monitoring System, NYSDEC, 2008–2012.

The 24-hour PM_{10} background concentration (44 $\mu g/m^3$) was based on the second-highest concentration measured over the specified period (2010 to 2012).[5] The annual average NO_2 background value of 43.1 $\mu g/m^3$ is the highest measured average concentrations over 5 years (2008 to 2012). The 1-hour and 8-hour CO background concentrations used in the analysis, which were based on the highest second-highest concentrations over 5 years (2008 to 2012), were 2.7 ppm and 1.8 ppm, respectively.

$PM_{2.5}$ impacts are assessed on an incremental basis and compared with the $PM_{2.5}$ *de minimis* criteria. The $PM_{2.5}$ 24-hour average background concentration of 24 $\mu g/m^3$ (based on the 98th percentile concentrations averaged over 2010 to 2012) was used to establish the *de minimis* value, consistent with the background concentration provided for Junior High School ("JHS") 45 in the *CEQR Technical Manual*. The $PM_{2.5}$ annual background concentration (9.9 $\mu g/m^3$) was based on the measured annual value averaged over 2010 to 2012.

Construction Air Quality Analysis Results. Maximum predicted concentration increments, and overall concentrations including background concentrations, are presented in Table 13-11. For $PM_{2.5}$, monitored concentrations are not added to modeled concentrations from sources, since impacts are determined by comparing the predicted increment from the Proposed Project as compared with the No-Build with the *de minimis* criteria.

As presented in Table 13-11, there were no predicted 24-hour average $PM_{2.5}$ concentration increments greater than the *de minimis* threshold value of 5.5 $\mu g/m^3$. The maximum predicted 24-hour average $PM_{2.5}$ incremental concentration (5.0 $\mu g/m^3$) occurred at a West 97th Street sidewalk receptor location immediately adjacent to the construction. It should be noted that the maximum increments, predicted at sidewalks and covered walkways adjacent to construction, are overstated, since they do not include the effect of the solid fence and sidewalk protection on mixing. In addition, the location of the maximum 24-hour average increments would vary based on the location of the sources, which would move throughout the site over time. Nevertheless, the maximum 24-hour average concentration increment was predicted to be less than the applicable *de minimis* threshold value.

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[5] Consistent with how the NAAQS is defined, for averaging periods (i.e., 1-hour, 8-hour, 24-hour) shorter than a year, the second highest value is used.

Table 13-11. Maximum Predicted Pollutant Concentrations from Construction Site Sources ($\mu g/m^3$) by Pollutant and Receptor Location

Pollutant	Averaging Period	No-Build	Proposed Actions	Increment	*De Minimis* Threshold	NAAQS
P.S. 163						
$PM_{2.5}$	24-hour	—	—	3.3	5.5	35
	Annual Local	—	—	0.06	0.3	12
PM_{10}	24-hour	44.0	13.2	57.2	—	150
NO_2	Annual	43.1	1.4	44.5	—	100
CO	1-hour	2.7 ppm	23.3 ppm	26.0 ppm	—	35 ppm
	8-hour	1.8 ppm	3.7 ppm	5.5 ppm	—	9 ppm
Residences or Open Space						
$PM_{2.5}$	24-hour	—	—	3.5	5.5	35
	Annual Local	—	—	0.14	0.3	12
PM_{10}	24-hour	44.0	15.9	59.9	—	150
NO_2	Annual	43.1	3.4	46.5	—	100
CO	1-hour	2.7 ppm	23.6 ppm	26.3 ppm	—	35 ppm
	8-hour	1.8 ppm	4.2 ppm	6.0 ppm	—	9 ppm
Sidewalks and Covered Walkways Adjacent to Construction						
$PM_{2.5}$	24-hour	—	—	5.0	5.5	35
	Annual Local	—	—	0.26	0.3	12
PM_{10}	24-hour	44.0	16.5	60.5	—	150
NO_2	Annual	43.1	7.5	50.6	—	100
CO	1-hour	2.7 ppm	27.4 ppm	30.1 ppm	—	35 ppm
	8-hour	1.8 ppm	7.0 ppm	8.8 ppm	—	9 ppm

Notes:
-Results for any other time period, or locations other than these sites, would be lower.
-$PM_{2.5}$ concentration increments were compared with threshold values. Total concentrations for PM_{10}, NO_2, and CO were compared with the NAAQS.
-The maximum predicted neighborhood-scale annual average $PM_{2.5}$ concentration would be 0.004 $\mu g/m^3$ — lower than the *de minimis* threshold level of 0.1 $\mu g/m^3$.

The maximum predicted 24-hour average $PM_{2.5}$ incremental concentration (3.5 $\mu g/m^3$) at a sensitive receptor location (e.g., residences, academic building, or open space locations) occurred at the residential building located to the south of the Project Site located at 164 West 97th Street (West Gate Apartments), well below the *de minimis* threshold value of 5.5 $\mu g/m^3$. The maximum 24-hour average $PM_{2.5}$ incremental concentration at the neighboring PWV buildings was predicted to be 3.2 $\mu g/m^3$, while the maximum predicted incremental concentrations at P.S. 163 and the nearby Happy Warrior Playground were 3.3 $\mu g/m^3$ and 0.9 $\mu g/m^3$, respectively, all well below the *de minimis* threshold value of 5.5 $\mu g/m^3$.

As presented in Table 13-11, the maximum predicted local annual average $PM_{2.5}$ incremental concentration would be 0.26 $\mu g/m^3$, which is less than the applicable *de minimis* threshold value of 0.30 $\mu g/m^3$. The maximum predicted neighborhood-scale annual average

$PM_{2.5}$ concentration would be 0.004 $\mu g/m^3$ — lower than the *de minimis* threshold level of 0.1 $\mu g/m^3$. In addition, the maximum predicted total concentrations of PM_{10}, annual-average NO_2, and CO would not exceed the NAAQS.

These maximum increments were computed for the peak-construction period; for other construction time periods with lesser emissions, the potential 24-hour increments would be less.

Conclusions. Measures would be taken to reduce on-site pollutant emissions during construction in accordance with all applicable laws, regulations, and building codes. These include dust suppression measures and the idling restriction for on-road vehicles. In addition to the required laws and regulations, the Proposed Project would commit to a robust emissions reduction program, including diesel equipment reduction, the use of ULSD, best available tailpipe reduction technologies, and utilization of newer equipment. With the implementation of these emission reduction measures, a detailed analysis of construction emissions determined that $PM_{2.5,}$ $PM_{10,}$ annual-average NO_2, and CO concentrations would be below their corresponding *de minimis* thresholds or NAAQS, respectively.

Noise. Impacts on community noise levels during construction would include noise from the operation of construction equipment and noise from construction and delivery vehicles traveling to and from the site. Noise and vibration levels at a given location are dependent on the type and quantity of construction equipment being operated, the acoustical utilization factor of the equipment (i.e., the percentage of time a piece of equipment is operating), the distance from the construction site, and any shielding effects (from structures such as buildings, walls, or barriers). Noise levels caused by construction activities would vary widely, depending on the stage of construction (i.e., structure rehabilitation, interior fit out, etc.) and the location of the construction activities relative to noise-sensitive receptor locations. The most significant construction noise sources are expected to be the operation of pile driver, tower crane, pavement breakers, and concrete pumps, as well as movements of trucks to and from the Project Site.

Construction noise is regulated by the requirements of the *New York City Noise Control Code* (also known as Chapter 24 of the *Administrative Code of the City of New York*, or Local Law 113), the NYCDEP Notice of Adoption of Rules for Citywide Construction Noise Mitigation (also known as Chapter 28), and the USEPA's noise emission standards. These local and federal requirements mandate that specific construction equipment and motor vehicles meet specified noise emission standards; that construction activities be limited to weekdays between the hours of 7:00 a.m. and 6:00 p.m.; and that construction materials be handled and transported in such a manner as not to create unnecessary noise. As described above, for weekend and after hour work, permits would be required to be obtained, as specified in the *New York City Noise Control Code*. As part of the *New York City Noise Control Code*, a site-specific noise mitigation plan would be developed and implemented that may include source controls, path controls, and receiver controls.

Construction Noise Impact Criteria. The *CEQR Technical Manual*, as described on pages 22-1 and 22-2 divides construction duration into "short-term (less than two years) and long-term (two or more years)" and states that impacts resulting from short-term construction generally do not require detailed assessment. This has typically been interpreted to mean that construction noise would generally only have a significant impact on sensitive receptors only when the activity with the potential to create high noise levels (the "intensity") would occur continuously for two or more years (the "duration").[6] However, also as described on page 22-1 of the *CEQR Technical Manual*, there are instances where a potential impact may be of short duration but nonetheless significant, because it raises specific issues of concern.

The *CEQR Technical Manual* states on page 22-13 that the impact criteria for vehicular sources, using the No-Build noise level as the baseline, should be used for assessing construction noise impacts. As recommended in the *CEQR Technical Manual*, this study uses the following criteria to define a significant adverse noise impact from mobile and on-site construction activities:

- If the No-Build noise level is less than 60 dBA $L_{eq(1)}$, a 5 dBA $L_{eq(1)}$ or greater increase would be considered significant.
- If the No-Build noise level is between 60 dBA $L_{eq(1)}$ and 62 dBA $L_{eq(1)}$, a resultant $L_{eq(1)}$ of 65 dBA or greater would be considered a significant increase.
- If the No-Build 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 $L_{eq(1)}$.

Noise Analysis Fundamentals. Construction of the Proposed Project would be expected to last only approximately 25 months (excluding commissioning, which does not have the potential to result in elevated noise levels at adjacent receptors), and the construction stages with the greatest potential to result in noise level increases (i.e., excavation and foundation and superstructure construction) would last only approximately 9 months. The Proposed Project's construction would consequently fall into the short-term duration category according to the *CEQR Technical Manual* definition as described above. However, also as described in the *CEQR Technical Manual*, "a shorter term construction phase may affect a highly-sensitive location (such as schools, hospitals, etc.), warranting further analysis."[7] Because P.S. 163 is located immediately adjacent to the Project Site and would experience construction noise associated with the Proposed Project, a detailed analysis of construction noise was conducted to quantify the magnitude and duration of noise level increases resulting from construction of the Proposed Project.

Construction activities for the Proposed Project would be expected to result in increased noise levels as a result of: (1) the operation of construction equipment on site; and (2) the movement of construction-related vehicles (i.e., worker trips, and material and equipment trips) on the roadways to and from the Project Site. The effect of each of these noise sources was evaluated. The results presented below show the effects of construction activities (i.e., noise due to both on-site construction equipment and construction-related vehicle operation) and the total cumulative impacts due to operational effects (caused by project-generated vehicular trips) and construction effects (as construction proceeds on uncompleted components of the project).

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[6] See page 22-1 of *CEQR Technical Manual* in the definition of "Construction Duration."
[7] *Ibid.*, p. 22-2.

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

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

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

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

Construction Noise Modeling. Noise effects from construction activities were evaluated using the Computer Aided Noise Abatement ("CadnaA") model, a computerized model developed by DataKustik for noise prediction and assessment. The model can be used for the analysis of a wide variety of noise sources, including stationary sources (e.g., construction equipment, industrial equipment, power generation equipment), transportation sources (e.g., roads, highways, railroad lines, busways, airports), and other specialized sources (e.g., sporting facilities). The model takes into account the reference sound pressure levels of the noise sources at 50 feet, attenuation with distance, ground contours, reflections from barriers and structures, attenuation due to shielding, etc. The CadnaA model is based on the acoustic propagation standards promulgated in International Standard ISO 9613-2. This standard is currently under review for adoption by the American National Standards Institute ("ANSI") as an American Standard. The CadnaA model is a state-of-the-art tool for noise analysis and is approved for construction noise level prediction by the *CEQR Technical Manual*.

Geographic input data used with the CadnaA model included CAD drawings that defined site work areas, adjacent building footprints and heights, locations of streets, and locations of sensitive receptors. For each analysis period, the geographic location and operational characteristics — including equipment usage rates (percentage of time operating at full power) for each piece of construction equipment operating at the Project Site, as well as noise control measures — were input to the model. In addition, reflections and shielding by barriers erected on the construction site, and shielding from both adjacent buildings and project buildings as they are constructed, were accounted for in the model. In addition, construction-related vehicles were assigned to the adjacent roadways. The model produced A-weighted $L_{eq(1)}$ noise levels at each receptor location for each analysis period, as well as the contribution from each noise source.

Determination of No-Build and Nonconstruction Noise Levels. Noise generated by construction activities is added to noise generated by nonconstruction traffic on adjacent roadways in order to determine the total noise levels at each receptor location. No-Build levels would be expected to be similar to existing noise levels in the study area, because no substantial increases in traffic are predicted to occur in the No-Build Condition. Consequently, existing noise levels were conservatively used as the baseline noise levels for determining construction-generated noise level increases. Existing noise levels at the analysis receptors were determined by:

- Performing noise measurements at various at-grade locations;
- Calculating noise levels at the receptor sites and measurement locations using the CadnaA model with existing site geometry and existing traffic on adjacent roadways as inputs;
- Determining adjustment factors based on the difference between the measured and calculated existing noise levels at the measurement locations; and
- Applying the adjustment factors to the calculated existing noise levels at the construction noise receptors.

Analysis Periods. As described above, construction activities are expected to take place over a period of about 2 years (i.e., from about 2014 through 2016). Except for unusual circumstances construction activities would occur on weekdays only. Therefore, construction noise analyses were performed only for the weekday periods.

As described above, the illustrative construction schedule and durations have been developed with an experienced New York City construction manager to serve as the basis of the analyses and is representative of the reasonable worst case for potential impacts. The schedule also allowed for reasonable projections to be developed regarding the number of workers, types and number of pieces of equipment, and number of construction vehicles anticipated to be operating during each month of the construction period. Five months during the construction period (i.e., 2014-2016) were selected for analysis based on the construction schedule and equipment list. These months are representative of the range of construction activities expected to occur over the course of construction of the proposed nursing care facility. To be conservative, the noise analysis assumed that both peak on-site construction activities and peak-construction-related traffic conditions occurred simultaneously.

Based on the 5 months selected for analysis, noise levels throughout the construction period were determined, which allowed for the calculation of the magnitude and duration of noise level increments at each receptor location resulting from construction of the proposed nursing care facility.

Noise Reduction Measures. Construction of the Proposed Project would be required to follow the requirements of the *New York City Noise Control Code* for construction noise control measures. Specific noise control measures would be described in a noise mitigation plan required under the *New York City Noise Code*. These measures would include a variety of source and path controls.

The Proposed Project would be committed to taking a proactive approach during construction, which would employ a wide variety of measures that exceed standard construction practices, to minimize construction noise and reduce potential off-site noise impacts. The additional noise control measures, which are described in detail below, are designed to reduce the amount of noise experienced at nearby receptors (including residences, schools, and open spaces) by decreasing the amount of noise produced by on-site equipment and by shielding the receptors from the noise-producing activities and equipment. These additional measures include alternate construction equipment and/or practices as well as additional or improved construction noise barriers.

In terms of source controls (i.e., reducing noise levels at the source or during the most sensitive time periods), the following measures would be implemented:

- Equipment that meets the sound level standards specified in Subchapter 5 of the *New York City Noise Control Code* would be used from the start of construction. Table 13-12 shows the noise levels for typical construction equipment and the mandated noise levels for the equipment that would be used for construction of the Proposed Project.
- As early in the construction period as logistics would allow, diesel- or gas-powered equipment would be replaced with electrical-powered equipment such as welders, water pumps, bench saws, and table saws (i.e., early electrification) to the extent feasible and practicable.
- Where feasible and practical, the construction site would be configured to minimize back-up alarm noise. In addition, all trucks would not be allowed to idle more than 3 minutes at the construction site based upon New York City Local Law.
- Contractors and subcontractors would be required to properly maintain their equipment and mufflers.

In terms of path controls (e.g., placement of equipment, implementation of barriers or enclosures between equipment and sensitive receptors), the following measures for construction would be implemented to the extent feasible and practical:

- Where logistics allow, noisy equipment, such as pile drivers, cranes, concrete pumps, concrete trucks, and delivery trucks, would be located away from sensitive receptor locations.
- 10-foot, cantilevered, acoustically-treated noise barriers constructed from plywood or other materials would be utilized to provide shielding (typically construction sites utilize an 8-foot-high standard barrier) during excavation and foundation activities; during other times of the construction period, 8-foot-high noise barriers constructed from plywood would be utilized on the northern, eastern, and southern sides of the Project Site and a 12-foot sidewalk bridge constructed from plywood

would be utilized on the western side of the Project Site (i.e., facing P.S. 163); and

- Path noise control measures (i.e., portable noise barriers, panels, enclosures, and acoustical tents, where feasible) would be used for certain dominant noise equipment to the extent feasible and practical (i.e., cranes and generators). These barriers are conservatively assumed to offer only a 10-dBA reduction in noise levels for each piece of equipment to which they are applied, as shown in Table 13-12. The details for construction of portable noise barriers, enclosures, tents, etc. are based upon NYCDEP's rules for Citywide Construction Noise Mitigation.

Table 13-12. Typical Construction Equipment Noise Emission Levels (dBA) by Type of Construction Equipment

Type of Construction Equipment	NYCDEP and FTA Typical Noise Level at 50 feet[1]	Noise Level with Path Controls at 50 feet[2]
Backhoe/Loader	80	
Compactors	80	
Compressors	58	
Concrete Pump	82	
Concrete Vibrator	80	
Concrete Saw	90	
Concrete Trucks	85	
Cranes (Tower Cranes)	85	75
Delivery Trucks	84	
Dump Trucks	84	
Excavator	85	
Generators	82	72
Hoe Ram	90	
Hoist	85	
Impact Pile Driver	95	
Jackhammers / Pavement Breakers	71	
Pumps	77	
Rebar Bender	80	
Rivet Buster / Chipping Gun	85	
Welding Machines	73	

Notes:
1 Sources: Citywide Construction Noise Mitigation, Chapter 28, Department of Environmental Protection of New York City, 2007. Transit Noise and Vibration Impact Assessment, FTA, May 2006.
2 Path controls include portable noise barriers, enclosures, acoustical panels, and curtains, whichever feasible and practical.
3 Source: Kessler, Frederick M., "Noise Control for Construction Equipment and Construction Sites," report for Hydro Quebec.

Receptor Sites. Two noise measurement locations (i.e., Site 1 and Site 2) were selected at the Project Site to determine the baseline existing noise levels, and 30 receptor sites (i.e., Sites A1 to F2) close to the project area (including the immediately adjacent P.S. 163) were selected as discrete noise receptor sites for the construction noise analysis. The receptor sites were located adjacent to the Project Site at the location of a residence or other noise-sensitive use. At some buildings, multiple building façades were analyzed. At high-rise buildings, noise receptors were selected at multiple elevations. Figure 10-1 shows the 2 noise measurement locations and Figure

13-7 shows the 30 noise receptor sites, and Table 13-13 lists the associated land use at each location/site. The receptor sites selected for detailed analysis are representative of other noise receptors in the immediate project area and are the locations where maximum project impacts due to construction noise would be expected.

Table 13-13. Noise Receptor Locations by Receptor, and by Location and Associated Land Use

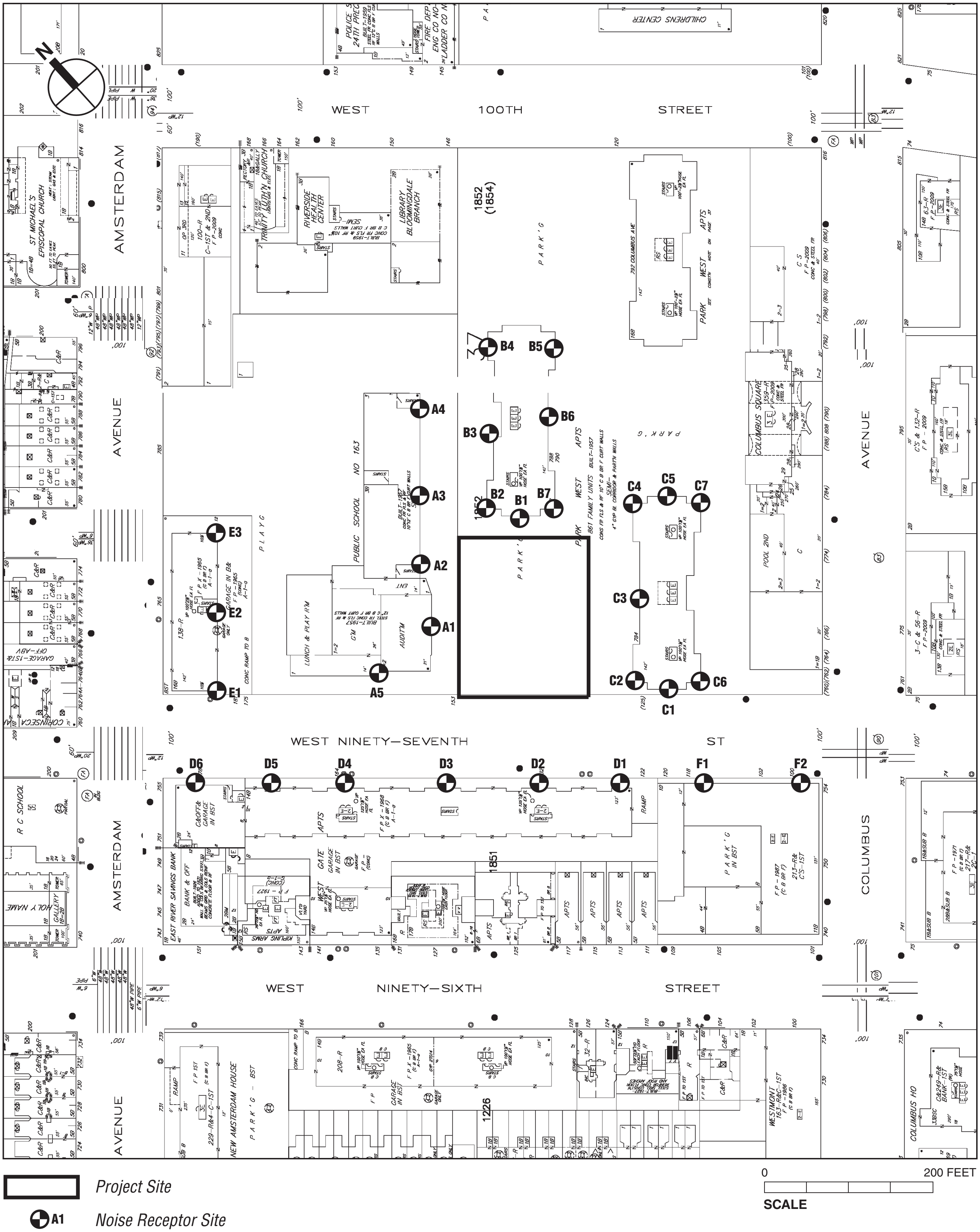
Receptor	Location	Associated Land Use
1	South Side of Parking Lot on West 97th Street	Future Residential
2	North Side of Parking Lot on West 97th Street	Future Residential
A1-A5	163 West 97th Street (P.S. 163)	Institutional
B1-B7	790 Columbus Avenue	Residential
C1-C7	125 West 97th Street	Residential
D1-D6	122 West 97th Street	Residential
E1-E3	181 West 97th Street	Residential
F1-F2	755 Amsterdam Avenue	Residential / Commercial

Construction Noise Analysis Results – Cumulative Analysis. Using the methodology described above, and considering the noise abatement measures from path controls specified above, cumulative noise analyses were performed to determine maximum 1-hour equivalent ($L_{eq(1)}$) noise levels that would be expected to occur during 5 individual months during the construction period, including the month when peak construction activity would be expected and the month when the least construction activity would be expected. This resulted in a predicted range of peak hourly construction noise levels for each year of the construction period.

The noise analysis results in Appendix D show that predicted noise levels due to construction-related activities would result in increases in noise levels that would exceed the *CEQR Technical Manual* impact criteria during one or more months at 28 of the 30 receptor sites (i.e., A1-A5, B1-B7, C1-C4, C6, D1-D6, E1-E3, and F1-F2).

For impact determination purposes, the significance of adverse noise impacts is determined based on whether predicted incremental noise levels at sensitive receptor locations would be greater than the impact criteria suggested in the *CEQR Technical Manual* for 2 consecutive years or more, although, also as described on page 22-1 of the *CEQR Technical Manual*, there are instances where a potential impact may be of short duration but nonetheless significant, because it raises specific issues of concern.. While increases exceeding the *CEQR* impact criteria for less than 2 years may be noisy and intrusive, they are not considered to be significant adverse noise impacts using the *CEQR Technical Manual* methodology.

The noise analysis results show that predicted noise levels would exceed the *CEQR* impact criteria during 2 or more years on one or more floors at 6 of the 30 receptor sites (i.e., C2, D1-D4, and F1). Table 13-14 summarizes analysis results where predicted noise level increases exceed the *CEQR* impact criteria for 2 or more consecutive years (additional details of the construction analysis are presented in Appendix D). Table 13-14 shows the analysis results at groups of floors on each of the buildings predicted to experience exceedances of *CEQR* impact criteria during 2 or more years, including the maximum predicted noise level increase resulting



Noise Receptor Sites

Figure 13-7

from construction during each of the analysis periods, and the duration of the construction stage represented by the analysis period. The results are separated into groups of 5 or fewer floors of each building.

The conceptual schedule on which the noise analysis was based represented a conservative potential timeline for construction that tended to show the most construction activity and the most construction equipment operating simultaneously, the conditions of which would result in the largest increase in noise levels at the nearby receptors.

As outlined above in the "Analysis Periods" section, the construction noise analysis was performed using 5 months of the construction period that are anticipated to result in the respective maximum and minimum peak hourly construction noise levels. The analysis conservatively assumed that the worst-case month would represent construction levels in the subsequent months, until the next analyzed month. During times of less intense construction activity, construction noise levels are anticipated to be less. For instance, pile driving would be expected to last only 2 months, and even shorter durations for each pile location within the Project Site. Consequently, an individual receptor location would experience pile driving noise for only a limited period of time out of the construction period. Additionally, rock excavation using hydraulic break rams at the Project Site would be expected to last only 2 months, and even shorter durations for excavation area within the building site. Consequently, an individual receptor location would experience hydraulic break ram noise for only a limited period of time out of the construction period. Similarly, excavators, concrete saws, and other noise-intensive equipment would also not operate throughout the construction period, but would function in individual locations only for limited periods of time. The construction analysis considers a reasonable worst-case scenario with all mobile equipment in the locations that would tend to generate the most noise at the adjacent receptors (see "Analysis Periods" section above). Such a scenario, and the high noise levels associated with it, as have been examined in this noise analysis, would be likely to occur only during limited times throughout the construction period, and thus represent a conservative analysis.

At exterior façade locations predicted to experience an exceedance of the *CEQR Technical Manual* impact criteria, the exceedances would be due principally to noise generated by on-site construction activities (rather than construction-related traffic). As previously discussed, this noise analysis examined the reasonable worst-case, peak-hourly noise levels that would result from construction in an analyzed month and, consequently, is conservative in predicting significant increase in noise levels. Typically, the loudest hourly noise level during each month of construction would not persist throughout the entire month. Furthermore, this analysis is based on a conceptual site plan and construction schedule. It is possible that the actual construction noise may be of lesser magnitude.

Table 13-14. Locations Where Noise Increases Exceed *CEQR* Guidance Criteria for Two or More Years by Building/Location and by Maximum Increase in dBA

Building /Location	Associated Land Use	Total Stories	Façade	Associated Receptor(s)	Impacted Floor(s)	Maximum Increase in dBA				
						Excavation/ Foundation (3 months)[1]	Super-structure (6 months)[1]	Exterior Façade/ Interior Fit Out (2 months)[1]	Interior Fit Out (7 months)[1]	Interior Fit-Out/Site Work (3 months)[1]
125 West 97th Street (Park West Village Building East of Project Site)	Residential	16	South/West Within 50 feet of Southwest Corner	C2	3-5	14.5	14.2	11.4	3.4	15.2
					6-10	15.8	14.4	11.2	3.4	14.9
					11-15	15.8	14.4	10.6	3.3	14.0
					16	15.9	14.4	10.2	3.2	13.0
122 West 97th Street (Residential Building South of Project Site)	Residential	13	North Except for Western Most Portion	D1, D2, D3, D4	3-5	21.4	18.3	12.3	4.2	15.7
					6-10	21.3	18.8	13.4	6.0	16.9
					11-13	20.5	18.1	13.5	6.3	17.1
110 West 97th Street (Residential Building Southeast of Project Site)	Residential	12	West Half of North Façade	F1	12	14.9	12.4	9.3	3.0	11.4

(1) See "Analysis Periods" section above.

The exterior façade locations predicted to experience exceedances of *CEQR Technical Manual* impact criteria are at the upper floors (meaning the floors above the level of the construction site perimeter fences, typically the third floor of a building and higher) of buildings immediately adjacent to the Project Site. At these locations, noise levels in the No-Build Condition would be particularly low because of their distance from adjacent roadways and the relatively low level of traffic on the roadways. These low noise baseline levels result in higher predicted increases in noise level during construction. However, the total noise levels during most of the construction period would be moderate. Specifically, at the locations shown in Table 13-14, absolute $L_{10(1)}$ noise levels would be in the high 60s to low 70s dBA. This would be comparable to the existing noise levels of at-grade locations along Columbus or Amsterdam Avenues during the day.

Based on the locations outlined above in Table 13-14 where predicted noise level increases exceed the *CEQR Technical Manual* impact criteria for 2 of more consecutive years, a visual survey was performed to identify which locations may not currently have double-glazed windows and/or a means of alternate ventilation, and which locations may have balconies, whose exterior space would have the potential to experience impact. For the visual survey, each façade of each building predicted to experience 2 or more consecutive years of significant noise level increase was inspected. The window types were determined based on the condition, thickness, and material of the window frame, as well as the size of the individual glass panes and the general condition of the glass. The type of alternate means of ventilation was determined by the size, shape, and number of visible air conditioners or louvers on the building facades, as well as any visible cooling towers, air handlers, or other identifiable heating, ventilation and air conditioning ("HVAC") equipment on the building roof that was visible from publicly-accessible locations or aerial photographs.

The buildings listed in Table 13-14 have double-glazed windows and alternate ventilation (i.e., air conditioners). For buildings with double-glazed windows and well-sealed, through-the-wall/sleeve/packaged terminal air conditioners ("PTACs"), interior noise levels would be approximately 25 to 30 dBA less than exterior noise levels. The typical attenuation provided by double-glazed windows and the alternate ventilation outlined above would be expected to result in interior noise levels during most of the time that are below 45 dBA $L_{10(1)}$ (the *CEQR* guidance acceptable interior noise level criteria). However, although these structures have double-glazed windows and alternate ventilation, during some limited time periods construction activities may result in interior noise levels that would be above the 45 dBA $L_{10(1)}$ noise level recommended by *CEQR Technical Manual* for these uses.

Additionally, two buildings (i.e., 125 West 97th Street and 122 West 97th Street) listed in Table 13-14 have outdoor balconies, which would not experience the same attenuation provided by the windows and alternate means of ventilation that exists at the interior of the buildings. During the loudest periods of construction, noise level increases resulting from construction at these balconies would range from 14.5 to 21.4 dBA, with absolute noise levels up to 88.1 dBA. Consequently, balconies on various floors may experience significant noise impacts due to construction for limited portions of the construction period. However, it should be noted that even during the portions of the construction period that would generate the most noise at these balconies, the balconies could still be enjoyed without the effects of construction noise outside of the hours that construction would occur, e.g. during late afternoon, nighttime, and on weekends. At these outdoor balconies, there would be no feasible or practicable mitigation to mitigate the construction noise impacts. Therefore, these balconies would be considered to experience unmitigated significant noise impacts as a result of construction.

As shown in Table 13-14, the noise level increments at these balconies are highest during excavation/foundation activities (3 months), superstructure construction (6 months), and when two construction stages overlap, each of which would last only for a limited duration (2 months for exterior façade construction/interior fit-out activities and 3 months for interior fit-out activities/site work). The interior fit-out stage of construction, when it would not overlap with other construction stages, would result in noise levels that just barely exceed the *CEQR Technical Manual* impact criteria. This stage of construction would be the longest, and would last 7 months without overlap. Due to relatively low levels of traffic volumes on West 97th Street, existing and No-Build noise levels at the sensitive receptor locations near the Project Site are also especially low. The calculation of construction noise associated with the Proposed Project was conservative, tending to produce the highest calculated construction noise level for each stage of construction.

Construction Noise Analysis Results at P.S. 163. With this conservative analysis, the east and south façades of the immediately adjacent P.S. 163 would experience noise levels that exceed *CEQR Technical Manual* noise level impact criteria during some construction activities. Construction noise levels would exceed the *CEQR* guidance noise level impact criteria during the excavation and foundation activities (3 months), superstructure construction (6 months), and when two construction stages overlap, each of which would last only for a limited duration (2 months for exterior façade construction with interior fit-out activities and 3 months for interior fit-out activities with site work). During the excavation/foundation stage of construction, the maximum increase in hourly noise levels would range from 9.6 dBA to 21.2 dBA, with absolute noise levels up to 79.5 dBA. During superstructure construction, the maximum increase in hourly noise levels would range from 9.8 dBA to 24.1 dBA, with absolute noise levels up to 81.0 dBA. The higher end of the expected increases in maximum 1-hour noise levels would potentially occur during the excavation and foundation activities, and the portion of superstructure construction that would take place when the lower floors are being constructed. As the work progresses in height to the upper floors of the Proposed Project, noise levels would decrease with the greater distance to the noise sources. During the overlap periods of the construction schedule when more than one stage of construction would occur simultaneously, the maximum increase in hourly noise levels would range from 3.7 dBA to 8.6 dBA, with absolute noise levels up to 72.4 dBA. The interior fit-out stage of construction, when it would not overlap with other construction stages, would result in noise levels that do not exceed the *CEQR Technical Manual* noise level impact criteria. This stage of construction would be the longest, and would last 7 months without overlap. During this time, the maximum increase in hourly noise levels would range from 0.1 dBA to 1.6 dBA, which would be considered imperceptible, with absolute noise levels up to 65.9 dBA. The above noise level increments resulting from construction refer to the increases predicted to occur at various locations of the school during the single loudest hour throughout each phase of construction. The peak 1-hour noise level is the metric recommended by the *CEQR Technical Manual* for construction noise analysis, but noise levels typically fluctuate throughout the day and from day to day during each construction phase, and would not be sustained at these maximum values.

The noise analysis considers the peak hourly noise level in accordance with the methodology prescribed by the *CEQR Technical Manual*. The peak hourly noise level increment at P.S. 163 during the excavation/foundation stage of construction would be up to 21.2 dBA and maximum absolute noise level would be 79.5 dBA, but during the hours when dominant pieces of equipment such as the hydraulic break ram, crane, and impact pile driver are not operating, the noise levels would be up to approximately 4 dBA lower, resulting in noise level increments up to 17.3 dBA and absolute noise levels up to 75.9 dBA. The peak hourly noise level increment at P.S. 163 during the superstructure construction stage of construction would be up to 24.1 dBA and maximum absolute noise level would be 81.0 dBA, but during the hours when dominant pieces of equipment such as the crane and concrete vibrators are not operating, the noise levels would be up to approximately 3 dBA lower, resulting in noise level increments up to 21.1 dBA and absolute noise levels up to 78.0 dBA. These off-peak hour noise levels still include many pieces of construction equipment operating simultaneously on the site but demonstrate the lower noise levels that would occur in the absence of some intermittently used construction equipment.

While there would be periods of the construction when P.S. 163 experiences noise level increments in excess of the *CEQR Technical Manual* impact criteria and that would be intrusive and noisy, the duration of the exceedances and the absolute value of the noise levels at the school were also considered in determining whether or not the construction noise at P.S. 163 would constitute a significant adverse impact.

The construction noise analysis predicts that construction of the Proposed Project would result in noise level increments exceeding the *CEQR Technical Manual* impact criteria for no more than 9 consecutive months (3 months of excavation and foundation work and 6 months of superstructure) and no more than 14 total months (3 months of excavation and foundation work, 6 months of superstructure, exterior façade construction with interior fit-out activities, and 3 months of interior fit-out activities with site work). This period of time would be less than 24 or more consecutive months. Additionally, absolute noise levels at the school's exterior facade during the loudest periods of construction would be expected to range from the low 70s dBA to the low 80s dBA. Noise levels of this magnitude are similar to noise levels on busy New York City streets. Currently, the school's east and south façades include single-paned windows and window air conditioners, which would be expected to provide approximately 15-20 dBA of attenuation of exterior noise sources. However with this level of attenuation, it is not expected that interior noise levels would be below 45 dBA $L_{10(1)}$ (the *CEQR Technical Manual* acceptable interior noise level criteria for classroom uses) in the existing condition or during the construction period. Additionally, noise levels expected to result from the construction of the Proposed Project would be comparable to those from any typical construction site in New York City involving construction of a new building with concrete slab floors and foundation. Potential disruptions to adjacent residences and schools resulting from elevated noise levels generated by construction would be expected to also be comparable to those that would occur adjacent to a typical New York City construction site during the limited portions of the construction period when the loudest activities would occur. While construction of the Proposed Project would intermittently result in noise level increments exceeding the *CEQR* impact criteria at P.S. 163, these exceedances would occur intermittently for a period less than 24 consecutive months, and would result in absolute noise levels at the school's façade that would be comparable to those on heavily trafficked roads in New York City.

Vibration. Construction activities have the potential to result in vibration levels that may in turn result in structural or architectural damage, and/or annoyance or interference with vibration-sensitive activities. In general, vibratory levels at a receiver are a function of the source strength (which in turn is dependent upon the construction equipment and methods utilized), the distance between the equipment and the receiver, the characteristics of the transmitting medium, and the receiver building construction. Construction equipment operation causes ground vibrations which spread through the ground and decrease in strength with distance. Vehicular traffic, even in locations close to major roadways, typically does not result in perceptible vibration levels unless there are discontinuities in the roadway surface. With the exception of the case of fragile and possibly historically significant structures or buildings, generally construction activities do not reach the levels that can cause architectural or structural damage, but can achieve levels that may be perceptible and annoying in buildings very close to a construction site. An assessment has been prepared to quantify potential vibration impacts of construction activities on structures and residences near the Project Site.

Construction Vibration Criteria. For purposes of assessing potential structural or architectural damage, the determination of a significant impact was based on the vibration impact criterion used by the New York City Landmarks Preservation Commission ("LPC") of a peak-particle velocity ("PPV") of 0.50 inch/second ("in/sec"). For nonfragile buildings, vibration levels below 0.60 in/sec would not be expected to result in any structural or architectural damage.

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

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

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

where: PPV_{equip} is the peak-particle velocity in in/sec of the equipment at the receiver location;
PPV_{ref} is the reference vibration level in in/sec at 25 feet; and
D is the distance from the equipment to the received location in feet.

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

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

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

Table 13-15 shows vibration source levels for typical construction equipment.

Table 13-15. Vibration Source Levels by Type of Construction Equipment

Type of Construction Equipment	PPVref (in/sec)	Approximate Lv (ref) (VdB)
Pile Driver (Impact)*	0.644-1.518	104-112
Vibratory Roller	0.210	94
Hoe Ram	0.089	87
Large bulldozer	0.089	87
Caisson drilling	0.089	87
Loaded trucks	0.076	86
Jackhammer	0.035	79
Small bulldozer	0.003	58

Note: * Sonic rather than impact pile drivers will be utilized.
Source: *Transit Noise and Vibration Impact Assessment*, FTA-VA-90-1003-06, May 2006.

Construction Vibration Analysis Results. The buildings and structures of most concern with regard to the potential for structural or architectural damage due to vibration are the buildings at P.S. 163, 790 Columbus Avenue, 125 West 97th Street, and 122 West 97th Street located adjacent to the Project Site. However, as a result of these structures' distances from the construction site, vibration levels at these buildings and structures would not be expected to exceed 0.50 in/sec PPV. Additional receptors farther away from the Project Site, including St. Michael's Church, Trinity Lutheran Church, and The Holy Name of Jesus Church would experience even less vibration than those listed above, which would not be expected to cause structural or architectural damage.

In terms of potential vibration levels that would be perceptible and annoying, the equipment that would have the most potential for producing levels that exceed the 65 VdB limit is a large bulldozer. It would have the potential to produce perceptible vibration levels (i.e., vibration levels exceeding 65 VdB) at receptor locations within a distance of approximately 140 feet depending on soil conditions. However, the operation would only occur for limited periods of time at a particular location and therefore would not result in any significant adverse impacts. In no case are significant adverse impacts from vibrations expected to occur.

Other Technical Areas

Land Use and Neighborhood Character. Construction activities would affect land use on the Project Site, but would not alter surrounding land uses. As is typical with construction projects, during periods of peak construction activity there would be some disruption, predominantly noise, to the nearby area. There would be construction trucks and construction workers coming to the Project Site. These disruptions would be temporary in nature and would have limited effects on land uses within the study area, particularly as most construction activities would take place within the Project Site or within portions of sidewalks, curbs, and travel lanes of public streets immediately adjacent to the construction sites. Overall, while construction activities at the Project Site would be evident to the local community, the limited duration of construction would not result in any significant or long-term adverse impacts on local land use patterns or the character of the nearby area.

Socioeconomic Conditions. Construction activities associated with the Proposed Project would not result in any significant adverse impacts on socioeconomic conditions. With the exception of the weekly farmers market on the sidewalk in front of the Project Site, construction of the Proposed Project would not block or restrict access to any facilities in the area, affect the operations of any nearby businesses, including the Whole Foods loading dock located to the east of the Project Site, or obstruct major thoroughfares used by customers or businesses. As discussed above in "Greenmarket," GrowNYC, the New York City-sponsored green market organization that hosts the farmers market on the sidewalk in front of the Project Site, is currently exploring the possibility of a safe continuation of the market during construction, including the temporary relocation of the market farther west along West 97th Street. JHL has met with GrowNYC and is supportive of GrowNYC's efforts. Upon completion of the Proposed Project, the weekly Greenmarket Farmers' Market could relocate back to its current location in front of the Project Site. Construction would create direct benefits resulting from expenditures on labor, materials, and services, and indirect benefits created by expenditures by material suppliers, construction workers, and other employees involved in the construction activity. Construction also would contribute to increased tax revenues for the city and state, including those from personal income taxes.

Community Facilities. While construction of the Proposed Project would result in temporary increases in traffic during the construction period, access to and from the adjacent P.S. 163 located directly west of the Project Site and the Bloomingdale Branch of the New York Public Library and Trinity Lutheran Church along West 100th Street would not be blocked during the construction period. As described above in "Closures and Staging," to ensure that safe vehicular and pedestrian access is provided during the hours of operation of school activities, construction activities would be coordinated with P.S. 163 on an ongoing basis. For pedestrian control purposes, flaggers would be employed adjacent to the Project Site to provide guidance to pedestrians and to alert or slow down the traffic. Construction workers would not place any burden on public schools and would have minimal, if any, demands on libraries, child-care facilities and health-care facilities. Construction activities would not materially affect the New York City Police Department ("NYPD"), FDNY, or other emergency services or response times.

Open Space. There are no existing recreational open spaces (i.e., public parks, playgrounds, passive public seating areas) on the Project Site, and no recreational open space resources would be used for staging or other construction activities. There are several recreational open spaces on the Project Site superblock, including Happy Warrior Playground, a 1.7-acre park containing basketball and handball courts, and play equipment, located adjacent to P.S. 163 and northwest of the Project Site, and the landscaped open space areas serving the PWV buildings to the north and east of the Project Site. Access to these open spaces would be maintained during the construction period. Construction activities may generate noise that could impair the enjoyment of these nearby open spaces, but such noise effects would be temporary and of short duration. As discussed above in "Hours of Work," the construction hours would typically be from 7:00 a.m. to 3:30 p.m. on weekdays so these open spaces would not be affected by the construction of the Proposed Project after 3:30 p.m. on weekdays and on most weekends. Construction activities would be conducted with the care mandated by the close proximity of an open space to the Project Site. Construction on the Project Site would include noise control measures as required by the *New York City Noise Control Code*, including both path and source controls, as well as additional project-specific source and path control measures. Air emissions control measures — including watering of exposed areas and dust covers for trucks — would be implemented to ensure compliance with the *New York City Air Pollution Control Code*, which regulates construction-related dust emissions. Therefore, construction of the Proposed Project would not result in any significant adverse impacts on open space.

Historic and Cultural Resources. Historic and cultural resources include both archaeological and architectural resources. A detailed assessment of potential impacts on archaeological and architectural resources is described in Chapter 4, "Historic and Cultural Resources." The section below summarizes the potential for the Proposed Project to result in adverse construction-period impacts on archaeological and/or architectural resources.

In a letter dated December 13, 2013, the New York State Office of Parks, Recreation, and Historic Preservation ("OPRHP") determined that the Proposed Project would not result in an impact upon cultural resources in or eligible for inclusion in the State and/or National Register of Historic Places. Therefore, no additional analysis is required for archaeological resources, and no significant adverse impacts on archaeological resources would occur during the construction of the Proposed Project.

There are no known or potential architectural resources on the Project Site.[8] Therefore, the proposed redevelopment of the Project Site would not have a direct or indirect effect on any on-site architectural resources and no additional analysis is required for archaeological resources. As described in Chapter 4, "Historic and Cultural Resources," there are three known architectural resources within and immediately adjacent to the study area: Trinity Lutheran Church of Manhattan (located on the north side of the project block, at 164 West 100th Street); East River Savings Bank (located at the northeast corner of West 96th Street and Amsterdam Avenue); and St. Michael's Church (located at 225 West 99th Street, at the northwest corner of West 99th Street and Amsterdam Avenue). In addition, three buildings in the surrounding area have been identified as potential architectural resources: the Church of the Holy Name of Jesus (located at 207 West 96th Street, at the northwest corner of West 96th Street and Amsterdam Avenue); the 3-story building at 766 Amsterdam Avenue; and the group of 5-story apartments at 768-774 Amsterdam Avenue). None of the known or potential architectural resources in the study area are located within 90 feet of the Project Site, which as described above is the distance defined as "adjacent construction" in NYCDOB's TPPN #10/88, which outlines procedures for the avoidance of damage to historic structures resulting from adjacent construction. Therefore, no such resources would be physically affected during construction-period activities on the Project Site.

Conclusions

Construction Phasing and Schedule. Construction of the Proposed Project is expected to begin in 2014 and would last approximately 30 months. Excavation and foundation activities would begin in 2014 and would take approximately 3 months to complete. Superstructure construction would commence in Month 4 of construction and would be completed by Month 9 of construction. Exterior façade work would begin in Month 10 of construction and would be completed by Month 14 of construction. Interior fit-out work is expected to begin in Month 13 of construction and would take approximately 13 months to complete. Site work would begin in Month 22 of construction and would take approximately 3 months to complete. Finally, commissioning would commence in Month 26 of construction and would be completed by Month 30 of construction.

Perimeter Safety. The Project Site is located on the southern portion of the superblock bounded by West 100th Street to the north, West 97th Street to the south, Columbus Avenue to the east, and Amsterdam Avenue to the west. P.S. 163 is located on this block immediately to the west of the Project Site, and two PWV residential buildings are located to the immediate north and east of the Project Site respectively. For pedestrian safety purposes, flaggers would be employed adjacent to the Project Site to provide guidance to pedestrians and to alert or slow down the traffic and provide a safe path to walk to and from P.S. 163 or nearby residences for the pedestrians. In addition, to ensure the safety of the children, teachers, administrative personnel and the public traveling to and from P.S. 163, the construction manager would

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[8] In a letter dated December 13, 2013, OPRHP determined that the Proposed Project would not result in an impact upon historic or archaeological resources in or eligible for inclusion in the State and National Register of Historic Places.

coordinate construction activities with NYCDOE and with the P.S. 163 principal on an ongoing basis. A protected, 8-foot-wide pedestrian pathway within the width of the existing West 97th Street sidewalk south of the Project Site would always be maintained. Flaggers would also be employed at each of the gates to control trucks entering and exiting the Project Site.

Although the Building Code does not require a sidewalk bridge to be installed on the pedestrian pathway between P.S. 163 and the Project Site, since the project building would be located more than 20 feet away from this pathway, a sidewalk bridge would be erected between P.S. 163 and the Project Site when superstructure construction commences to provide overhead protection. To maximize light and air circulation, the P.S. 163 sidewalk bridge would be 12 feet high (instead of the typical 8-foot-high bridge). A sidewalk bridge/construction shed would also be erected to the immediate north and east of the Project Site when superstructure construction commences to provide overhead protection for pedestrians and vehicles passing through these areas respectively. In addition, 10-foot cantilevered fences with sound absorptive material mounted in the inner surface would be installed around the perimeter of the construction site during construction to provide noise shielding. Safety nettings would be installed on the sides of the proposed building as the superstructure advances upward to prevent inadvertent debris from falling to the ground. All NYCDOB safety requirements would be followed, and construction activities associated with the Proposed Project would be conducted with the care mandated by the close proximity of sensitive receptor locations to the Proposed Project.

To avoid any temporary traffic disruptions in the surrounding area, construction deliveries would be made outside of the school commuting traffic peak hours to extent practicable while school is in session. As described below in “Air Quality” and “Noise,” control measures would be implemented during construction to minimize air quality and noise disruptions to the school users.

Construction Impacts. Based on the analyses presented in this chapter, construction activities associated with the Proposed Project would result in significant adverse impacts in traffic and noise**;** additional information for key technical areas is summarized below.

Hazardous Materials. Construction activities associated with the Proposed Project would not result in any significant adverse hazardous materials impacts. A NYSDOH-approved RAP and associated CHASP would be prepared for implementation during the subsurface disturbance associated with the Proposed Project. Spill №. 1306324 would be remediated in accordance with NYSDEC requirements. During construction associated with the Proposed Project, regulatory requirements pertaining to excavated soil, petroleum storage tanks, and dewatering would be followed. Once excavation and foundation activities are complete, all of the contaminated soil would be remediated and removed from the Project Site and no further potential for future human exposure would occur.

Transportation – Traffic. The peak period of construction activity is projected to be during 2016. This period of peak of activity would result in 123 PCEs during the Weekday a.m. and 101 PCEs during the Weekday p.m. construction peak hours. Construction workers would be expected to park in off-site parking facilities. A detailed traffic analysis was conducted for the Weekday a.m. (6:00 to 7:00 a.m.) and Weekday p.m. (3:00 to 4:00 p.m.) peak hours.

A significant adverse traffic impact is expected at the intersection of West 97th Street and Amsterdam Avenue in 2016. This impact can be mitigated by implementing the proposed mitigation at this location, as described in Chapter 14, "Mitigation Measures." The proposed mitigation is to reallocate 2 seconds of green time to the westbound phase from the northbound phase.

Transportation – Transit. The Project Site is served by 5 subway lines and 4 bus routes. During the peak construction period, the total estimated number of peak-hour transit trips would be approximately 190 trips during the a.m. peak hour (167 subway/rail, 23 bus) and 190 trips during the p.m. peak hour (167 subway/rail, 23 bus). Since the increase in trips would be fewer than 200 trips on any one subway route and fewer than 50 trips on any one bus route during the peak construction period, detailed subway and bus line-haul analyses are not required. Therefore, no construction-related transit impacts are expected during the peak construction period.

Transportation – Pedestrians. New pedestrian trips generated during the construction period would consist of construction workers who would park in off-site parking facilities, as well as those who take transit or walked to the construction site. Based on pedestrian trip assignment, fewer than 200 new peak-hour pedestrian trips would be added to any one pedestrian element during the construction period. Therefore, no construction-related pedestrian impacts are expected during the peak construction period.

Transportation – Parking. If a curb-lane closure is required, approximately 10 parking spaces would be temporarily lost. These parking spaces would be restored once construction activities no longer require a curb-lane closure. During the peak construction period, a total of 441 parking spaces would be available at existing off-site parking facilities within a one-quarter-mile radius of the Project Site. Based on the projected peak-construction trip estimates for 2016, the peak-construction worker parking demand would be 101 spaces. The construction-worker parking demand would be accommodated within the off-site parking facilities; therefore, no construction-related parking impacts are expected.

Air Quality. Construction activity in general has the potential to adversely affect air quality as a result of diesel emissions. Measures would be taken to reduce pollutant emissions during construction in accordance with all applicable laws, regulations, and building codes. These include dust suppression measures and the idling restriction for on-road vehicles. In addition to the required laws and regulations, the Proposed Project would commit to a robust emissions reduction program, including diesel equipment reduction, the use of ULSD, best available tailpipe reduction technologies, and utilization of newer equipment. With the implementation of these emission reduction measures, a detailed analysis of construction emissions determined that $PM_{2.5,}$ $PM_{10,}$ annual-average NO_2, and CO concentrations would be below their corresponding *de minimis* thresholds or NAAQS, respectively. The maximum predicted 24-hour and annual average $PM_{2.5}$ incremental concentrations would be 5.0 $\mu g/m^3$ and 0.26 $\mu g/m^3$, respectively, below the applicable *de minimis* threshold values of 5.5 $\mu g/m^3$ and 0.30 $\mu g/m^3$. The maximum predicted 24-hour average PM_{10} concentration would be 60.5 $\mu g/m^3$, well below the applicable NAAQS value of 150 $\mu g/m^3$. The maximum predicted annual average NO_2 concentration would be 50.6 $\mu g/m^3$, well below the applicable NAAQS value of 100 $\mu g/m^3$. The maximum predicted 1-hour and 8-hour average CO concentrations would be 30.1 $\mu g/m^3$ and 8.8 $\mu g/m^3$, respectively, below the applicable NAAQS values of 35 ppm and 9 ppm. Therefore, the construction of the Proposed Project would not result in significant adverse air quality impacts due to construction sources.

Noise. Construction of the Proposed Project would result in significant adverse impacts with respect to noise. This conclusion is based on a conservative analysis of the construction procedures, including peak monthly levels, a maximum amount of construction equipment assumed to be operational at locations closest to nearby receptors, and a conceptual construction schedule.

Construction of the Proposed Project would include noise control measures as required by the *New York City Noise Control Code*, including both path and source controls. Even with these measures, the results of detailed construction analyses indicate that elevated noise levels are predicted to occur for 2 or more years at 6 of the 30 receptor sites (i.e., C2, D1, D2, D3, D4 and F1) analyzed. Affected locations include residential areas adjacent to the Proposed Project. However, the affected buildings have double-glazed windows and air-conditioning and, consequently, would be expected to experience interior $L_{10(1)}$ values less than 45 dBA, which would be considered acceptable according to *CEQR Technical Manual* criteria. Two buildings (i.e., 125 West 97th Street and 122 West 97th Street) listed in Table 13-14 have outdoor balconies, which would not experience the same attenuation provided by the windows and alternate means of ventilation that exists at the interior of the buildings. During the loudest periods of construction, noise level increases resulting from construction at these balconies would range from 14.5 to 21.4 dBA, with absolute noise levels up to 88.1 dBA. Consequently, balconies on various floors may experience significant noise impacts due to construction for limited portions of the construction period. However, it should be noted that even during the portions of the construction period that would generate the most noise at these balconies, the balconies could still be enjoyed without the effects of construction noise outside of the hours that construction would occur, e.g. during late afternoon, nighttime, and on weekends. At these outdoor balconies, there would be no feasible or practicable mitigation to mitigate the construction noise impacts. Therefore, these balconies would be considered to experience unmitigated significant noise impacts as a result of construction.

Additional options for source and path controls would be incorporated into the construction methodology to the extent practicable and feasible. Due to low levels of traffic volumes on West 97th Street, existing and No-Build noise levels at the sensitive receptor locations near the Project Site are also especially low. The calculation of construction noise associated with the Proposed Project was conservative, tending to produce the highest calculated construction noise level for each stage of construction.

The east and south façades of the immediately adjacent P.S. 163 would experience noise levels that exceed *CEQR Technical Manual* noise level impact criteria during some construction activities. Construction noise levels would exceed the *CEQR Technical Manual* noise level impact criteria during the excavation and foundation activities (3 months), superstructure construction (6 months), and when two construction stages overlap, each of which would last only for a limited duration (2 months for exterior façade construction with interior fit-out activities and 3 months for interior fit-out activities with site work). During the excavation/foundation stage of construction, the maximum increase in hourly noise levels would range from 9.6 dBA to 21.2 dBA, with absolute noise levels up to 79.5 dBA. During superstructure construction, the maximum increase in hourly noise levels would range from 9.8 dBA to 24.1 dBA, with absolute noise levels up to 81.0 dBA. The higher end of the expected increases in maximum 1-hour noise levels would potentially occur during the excavation and foundation activities, and the portion of superstructure construction that would take place when the lower floors are being constructed. As the work progresses in height to the upper floors of the Proposed Project, noise levels would be expected to decrease with the greater distance to the noise sources. During the overlap periods of the construction schedule when more than one stage of construction would occur simultaneously, the maximum increase in hourly noise levels would range from 3.7 dBA to 8.6 dBA, with absolute noise levels up to 72.4 dBA. The interior fit-out stage of construction, when it would not overlap with other construction stages, would result in noise levels that do not exceed the *CEQR Technical Manual* noise level impact criteria. This stage of construction would be the longest, and would last 7 months without overlap. During this time, the maximum increase in hourly noise levels would range from 0.1 dBA to 1.6 dBA, with absolute noise levels up to 65.9 dBA which would be considered imperceptible. The above noise level increments resulting from construction refer to the increases predicted to occur at various locations of the school during the single loudest hour throughout each phase of construction. The peak 1-hour noise level is the metric recommended by the *CEQR Technical Manual* for construction noise analysis, but noise levels typically fluctuate throughout the day and from day to day during each construction phase, and would not be sustained at these maximum values.

While there would be periods of the construction when P.S. 163 experiences elevated noise levels that would exceed the *CEQR Technical Manual* noise level criteria and would be intrusive and noisy, these exceedances would occur for a period less than 24 consecutive months. Cumulative noise levels at the school during the loudest periods of construction would be expected to range from the low 70s dBA to the low 80s dBA. Noise levels of this magnitude are similar to noise levels on busy New York City streets. Currently, the school's east and south façades include single-paned windows and window air conditioners, which would be expected to provide approximately 15-20 dBA of attenuation of exterior noise sources. With this level of attenuation, it is not expected that interior noise levels would be below 45 dBA $L_{10(1)}$ (the *CEQR Technical Manual* acceptable interior noise level criteria for classroom uses) in the existing condition or during the construction period. Additionally, noise levels expected to result from the construction of the Proposed Project would be comparable to those from any typical construction site in New York City involving construction of a new building with concrete slab floors and foundation. Potential disruptions to adjacent residences and schools resulting from elevated noise levels generated by construction would be expected to also be comparable to those that would occur adjacent to a typical New York City construction site during the limited portions of the construction period when the loudest activities would occur.

Vibration. The Proposed Project is not expected to result in significant adverse construction impacts with respect to vibration. Use of construction equipment that would have the most potential to exceed the 65 VdB criterion within a distance of 230 feet of sensitive receptor locations (e.g., equipment used during pile driving) would be perceptible and annoying. Therefore, for limited time periods, perceptible vibration levels may be experienced by occupants and visitors to all of the buildings and locations on and immediately adjacent to the Project Site. However, the operations which would result in these perceptible vibration levels would only occur for limited periods of time at any particular location and, therefore, the resulting vibration levels, while perceptible, would not result in any significant adverse impacts.

*Open Space***.** There are no existing recreational open spaces within the Project Site, and no recreational open space resources would be used for staging or other construction activities. There are several recreational open spaces on the Project Site superblock, including Happy Warrior Playground, located adjacent to P.S. 163 and northwest of the Project Site, and the landscaped open space areas serving the PWV buildings, located to the north and east of the Project Site. Construction activities may generate noise that could impair the enjoyment of these nearby open spaces, but such noise effects would be temporary and of short duration. The construction hours would typically be from 7:00 a.m. to 3:30 p.m. on weekdays so these open spaces would not be affected by the construction of the Proposed Project after 3:30 p.m. on weekdays and on most weekends. Construction activities would be conducted with the care mandated by the close proximity of an open space to the Project Site. Construction on the Project Site would include noise control measures as required by the *New York City Noise Control Code* and air emissions control measures, including compliance with the *New York City Air Pollution Control Code*, which regulates construction-related dust emissions. In addition, the Proposed Project is committed to employing a wide variety of measures that exceed code requirements and standard construction practices to minimize the disruption to the community during construction. Therefore, construction of the Proposed Project would not result in any significant adverse impacts on open space.

Historic and Cultural Resources. There are no known or potential architectural or archaeological resources on the Project Site. Therefore, the proposed redevelopment of the Project Site would not have a direct or indirect effect on any on-site architectural or archaeological resources. None of the known or potential architectural resources in the study area are located within 90 feet of the Project Site. Therefore, no such resources would be physically affected during construction-period activities on the Project Site.

Chapter 14. Mitigation Measures

Introduction

The preceding chapters of this Environmental Impact Statement ("EIS") discuss the potential for significant adverse impacts to result from the Proposed Project. Where such potential impacts have been identified, in the areas of transportation (traffic, transit) and construction noise, measures are examined to minimize or eliminate the anticipated impacts to the fullest extent practicable. These mitigation measures are discussed below.

Transportation

Overview. This section discusses measures that would mitigate significant adverse traffic impacts identified in the EIS.

As described in Chapter 7, "Transportation," the intersections of West 97th Street with Columbus Avenue and Amsterdam Avenue in the study area would experience significant adverse traffic impacts as a result of the Proposed Project under the reasonable worst-case transportation-development scenario. The discussion below outlines readily implementable mitigation measures (e.g., revised signal timings, lane restriping, etc.) that would fully mitigate the identified impacts. The implementation of these measures would be conducted in coordination with the New York City Department of Transportation ("NYCDOT") as development proceeds.

As detailed in the "Operational Analysis Methodology" section of Chapter 7, the operation of an intersection is defined in terms of control delay per vehicle and the corresponding level of service ("LOS") and volume-to-capacity ("v/c") ratio. The criteria used for defining significant adverse impacts are based on a sliding scale for various LOS and delay measures. A significant adverse impact is considered to be fully mitigated when the projected delay for an intersection lane group or movement under the Build Condition is brought back to within an acceptable range of its No-Build Condition level or to marginally acceptable mid-LOS D (45.0 seconds for signalized intersections). In some cases, viable mitigation measures for a particular movement could result in additional delay or LOS deterioration for other movements. Such increases in delay and deterioration in LOS do not constitute a significant adverse impact as long as the mid-LOS D threshold is not exceeded, or the increase in delay does not exceed the limits of the sliding scale mentioned above.

Traffic Operations. The Proposed Project would result in a new nursing care facility with 414 beds for residents and 625 full-time-equivalent staff.

Vehicular access to the Project Site would be along West 97th Street via an existing curb cut at Park West Drive. A turnaround located at the rear entrance of the building would serve as a pick-up/drop-off zone. Truck access to the loading docks would be provided via West 97th Street. Pedestrian access to the Project Site would be along West 97th Street.

Three peak hours were considered for the transportation analysis: Weekday a.m. (8:00 a.m. to 9:00 a.m.), Weekday midday (2:45 p.m. to 3:45 p.m.), and Weekday p.m. (5:45 p.m. to 6:45 p.m.).

In 2018, the two study locations are forecast to experience significant adverse traffic impacts attributable to the Proposed Project during the analyzed peak periods:

- West 97th Street and Amsterdam Avenue during the Weekday a.m., Weekday midday, and Weekday p.m. peak hours. (Intersection 1 on Figure 7-2)
- West 97th Street and Columbus Avenue during the Weekday a.m., Weekday midday, and Weekday p.m. peak hours. (Intersection 2 on Figure 7-2)

Subject to review and approval by the relevant agencies, including NYCDOT, each of the above significant adverse impacts could be fully mitigated as outlined below. A comparison of the analysis results and a description of the mitigation measures are presented in Tables 14-1 through 14-3 for each of the study periods following the discussions of each intersection (below).

West 97th Street and Amsterdam Avenue. This intersection would experience a significant impact in the westbound through/right-turn-lane group during all three peak hours. To mitigate the potential impact, green time would be reallocated as follows:

- Weekday a.m. peak hour: Shift 1.0 second from the northbound phase to the westbound phase.
- Weekday midday peak hour: Shift 2.0 seconds from the northbound phase to the westbound phase.
- Weekday p.m. peak hour: Shift 1.0 seconds from the northbound phase to the westbound phase.

West 97th Street and Columbus Avenue. This intersection would experience a significant impact in the westbound left-turn-lane group during all three peak hours and the westbound through/left-turn-lane group during the Weekday a.m. peak hour. To mitigate the potential impact, green time would be reallocated as follows:

- Weekday a.m. peak hour: Shift 2.0 seconds from the southbound phase to the westbound phase.
- Weekday midday peak hour: Shift 2.0 seconds from the southbound phase to the westbound phase.
- Weekday p.m. peak hour: Shift 1.0 second from the southbound phase to the westbound phase.

Table 14-1. Level of Service (LOS) Analysis Weekday A.M. Peak Hour by Intersection and by No-Build, Build, and Build with Mitigation Conditions

		No-Build				Build					Build with Mitigation				Notes
	Int.	Ln Grp	v/c	Delay (sec)	LOS	Ln Grp	v/c	Delay (sec)	LOS		Ln Grp	v/c	Delay (sec)	LOS	
1	**Amsterdam Avenue & West 97th Street**														Shift 1 second from NB phase to WB phase.
	WB	TR	0.99	64.0	E	TR	1.03	73.1	E	+	TR	0.99	62.9	E	
	NB	LT	0.54	16.4	B	LT	0.54	16.5	B		LT	0.56	17.4	B	
		Intersection		33.0	C	Intersection		36.7	D		Intersection		33.7	C	
2	**Columbus Avenue & West 97th Street**														Shift 2 seconds from SB phase to WB phase.
	WB	L	1.02	81.7	F	L	1.07	96.6	F	+	L	0.98	69.1	E	
		LT	1.01	73.0	E	LT	1.08	92.0	F	+	LT	1.01	69.8	E	
	SB	TR	0.81	21.5	C	TR	0.81	21.8	C		TR	0.86	25.8	C	
		Intersection		44.7	D	Intersection		52.9	D		Intersection		44.6	D	

Notes: L = Left Turn, T = Through, R = Right Turn, DefL = Defacto Left Turn; LOS = Level of Service.
"+" implies a significant adverse impact

Table 14-2. Level of Service (LOS) Analysis Weekday Midday Peak Hour by Intersection and by No-Build, Build, and Build with Mitigation Conditions

		No-Build				Build					Build with Mitigation				Notes
	Int.	Ln Grp	v/c	Delay (sec)	LOS	Ln Grp	v/c	Delay (sec)	LOS		Ln Grp	v/c	Delay (sec)	LOS	
1	**Amsterdam Avenue & West 97th Street**														Shift 2 seconds from NB phase to WB phase.
	WB	TR	1.07	85.7	F	TR	1.14	110.7	F	+	TR	1.07	82.2	F	
	NB	LT	0.52	16.1	B	LT	0.52	16.1	B		LT	0.54	18.0	B	
		Intersection		43.3	D	Intersection		54.8	D		Intersection		44.3	D	
2	**Columbus Avenue & West 97th Street**														Shift 2 seconds from SB phase to WB phase.
	WB	L	0.81	44.6	D	L	0.82	45.7	D		L	0.76	37.8	D	
		LT	1.07	90.2	F	LT	1.14	112.4	F	+	LT	1.07	86.6	F	
	SB	TR	0.61	16.4	B	TR	0.61	16.5	B		TR	0.64	18.7	B	
		Intersection		43.9	D	Intersection		52.0	D		Intersection		43.6	D	

Notes: L = Left Turn, T = Through, R = Right Turn, DefL = Defacto Left Turn; LOS = Level of Service.
"+" implies a significant adverse impact

Table 14-3. Level of Service (LOS) Analysis Weekday P.M. Peak Hour by Intersection and by No-Build, Build, and Build with Mitigation Conditions

		No-Build				Build					Build with Mitigation				Notes
	Int.	Ln Grp	v/c	Delay (sec)	LOS	Ln Grp	v/c	Delay (sec)	LOS		Ln Grp	v/c	Delay (sec)	LOS	
1	**Amsterdam Avenue & West 97th Street**														Shift 1 second from NB phase to WB phase.
	WB	TR	1.05	78.8	E	TR	1.10	92.9	F	+	TR	1.06	79.5	E	
	NB	LT	0.52	16.1	B	LT	0.52	16.1	B		LT	0.54	17.1	B	
		Intersection		40.5	D	Intersection		46.8	D		Intersection		42.0	D	
2	**Columbus Avenue & West 97th Street**														Shift 1 second from SB phase to WB phase.
	WB	L	0.96	63.6	E	L	0.97	65.9	E		L	0.93	56.1	E	
		LT	1.05	80.2	F	LT	1.07	87.8	F	+	LT	1.04	76.7	E	
	SB	TR	0.68	17.5	B	TR	0.68	17.6	B		TR	0.70	18.8	B	
		Intersection		44.2	D	Intersection		47.0	D		Intersection		42.6	D	

Notes: L = Left Turn, T = Through, R = Right Turn, DefL = Defacto Left Turn; LOS = Level of Service.
"+" implies a significant adverse impact

Construction

Traffic. As detailed in Chapter 13, "Construction," during the peak-construction period in 2016, a significant adverse traffic impact was identified at the West 97th Street and Amsterdam Avenue intersection during the Weekday p.m. peak hour of the peak-construction period condition. Subject to review and approval by the relevant agencies, including NYCDOT, the above significant adverse impact could be fully mitigated as follows:

- Construction Weekday p.m. peak hour: Shift 2.0 seconds from the northbound phase to the westbound phase.

A comparison of the analysis results and a description of the mitigation measure are presented in Table 14-4.

Table 14-4. Level of Service (LOS) Analysis Weekday Construction P.M. Peak Hour by Intersection and by No-Build, Build, and Build with Mitigation Conditions

		No-Action				Peak Construction Period					Mitigated				Notes
	Int.	Ln Grp	v/c	Delay (sec)	LOS	Ln Grp	v/c	Delay (sec)	LOS		Ln Grp	v/c	Delay (sec)	LOS	
1	Amsterdam Avenue & West 97th Street														Shift 2 seconds from NB phase to WB phase.
	WB	TR	1.07	85.9	F	TR	1.14	110.8	F	+	TR	1.07	82.4	F	
	NB	LT	0.57	16.8	B	LT	0.57	16.8	B		LT	0.60	18.9	B	
		Intersection		42.6	D	Intersection		53.2	D		Intersection		43.4	D	

Notes: L = Left Turn, T = Through, R = Right Turn, DefL = Defacto Left Turn; LOS = Level of Service.
"+" implies a significant adverse impact

Noise. The approach and procedures for constructing the Proposed Project would be typical of the methods utilized in other construction projects throughout New York City. Since the Project Site is located close to an existing residential community and P.S. 163, the Proposed Project would be committed to taking a proactive approach during construction, which would employ a wide variety of measures that exceed standard construction practices, to minimize construction noise and reduce potential off-site noise impacts. The additional noise control measures, which are described in detail below and in Chapter 13, "Construction," are designed to reduce the amount of noise experienced at nearby receptors (including residences, schools, and open spaces) by decreasing the amount of noise produced by on-site equipment and by shielding the receptors from the noise-producing activities and equipment. These additional measures would include alternate construction equipment and/or practices as well as additional or improved construction noise barriers.

In terms of source controls (i.e., reducing noise levels at the source or during the most sensitive time periods), the following measures would be implemented:

- Equipment that meets the sound level standards specified in Subchapter 5 of the *New York City Noise Control Code* would be used from the start of construction. Table 14-5 shows the noise levels for typical construction equipment and the mandated noise levels for the equipment that would be used for construction of the Proposed Project.

- As early in the construction period as logistics would allow, diesel- or gas-powered equipment would be replaced with electrical-powered equipment such as welders, water pumps, bench saws, and table saws (i.e., early electrification) to the extent feasible and practicable.
- Where feasible and practical, the construction site would be configured to minimize back-up alarm noise. In addition, all trucks would not be allowed to idle more than 3 minutes at the construction site based upon based upon New York City Local Law.
- Contractors and subcontractors would be required to properly maintain their equipment and mufflers.

In terms of path controls (e.g., placement of equipment, implementation of barriers or enclosures between equipment and sensitive receptors), the following measures for construction would be implemented to the extent feasible and practical:

- Where logistics allow, noisy equipment, such as pile drivers, cranes, concrete pumps, concrete trucks, and delivery trucks, would be located away from sensitive receptor locations;
- 10-foot, cantilevered, acoustically-treated noise barriers constructed from plywood or other materials would be utilized to provide shielding (typically construction sites utilize an 8-foot-high standard barrier) during excavation and foundation activities; during other times of the construction period, 8-foot-high noise barriers constructed from plywood would be utilized on the northern, eastern, and southern sides of the Project Site and a 12-foot sidewalk bridge constructed from plywood would be utilized on the western side of the Project Site (i.e., facing P.S. 163) during superstructure, exterior façade, and interior fit-out activities; and
- Path noise control measures (i.e., portable noise barriers, panels, enclosures, and acoustical tents, where feasible) would be used for certain dominant noise equipment to the extent feasible and practical (i.e., cranes and generators). These barriers are conservatively assumed to offer only a reduction of 10 dBA in noise levels for each piece of equipment to which they are applied, as shown in Table 14-5. The details for construction of portable noise barriers, enclosures, tents, etc., are based upon the NYCDEP rules for Citywide Construction Noise Mitigation.

Table 14-5. Typical Construction Equipment Noise Emission Levels (dBA) by Type of Construction Equipment

Type of Construction Equipment	NYCDEP and FTA Typical Noise Level at 50 feet[1]	Noise Level with Path Controls at 50 feet[2]
Backhoe/Loader	80	
Compactors	80	
Compressors	58	
Concrete Pump	82	
Concrete Vibrator	80	
Concrete Saw	90	
Concrete Trucks	85	
Cranes (Tower Cranes)	85	75
Delivery Trucks	84	
Dump Trucks	84	
Excavator	85	
Generators	82	72
Hoe Ram	90	
Hoist	85	
Impact Pile Driver	95	
Jackhammers / Pavement Breakers	71	
Pumps	77	
Rebar Bender	80	
Rivet Buster / Chipping Gun	85	
Welding Machines	73	

Notes:
1 Sources: Citywide Construction Noise Mitigation, Chapter 28, Department of Environmental Protection of New York City, 2007. Transit Noise and Vibration Impact Assessment, FTA, May 2006; NYCDEP = New York City Department of Environmental Protection; FTA = Federal Transportation Authority
2 Path controls include portable noise barriers, enclosures, acoustical panels, and curtains, whichever feasible and practical.
Source: Kessler, Frederick M., “Noise Control for Construction Equipment and Construction Sites,” report for Hydro Quebec.

As detailed in Chapter 13, “Construction,” even with the implementation of a wide variety of measures that would exceed code requirements and standard construction practices to minimize noise disruption to the community during construction, construction of the Proposed Project would result in significant adverse impacts with respect to noise. This conclusion is based on a conservative analysis of the construction procedures, including peak monthly levels, a maximum amount of construction equipment assumed to be operational at locations closest to nearby receptors, and a conceptual construction schedule.

The results of detailed construction analyses indicate that predicted noise levels due to construction-related activities would result in increases in noise levels that would exceed the *CEQR Technical Manual* impact criteria during 1 or more months at 28 of the 30 receptor sites (i.e., A1-A5, B1-B7, C1-C4, C6, D1-D6, E1-E3, and F1-F2 as shown in Figure 13-7).

For impact determination purposes, the significance of adverse noise impacts is determined based on whether predicted incremental noise levels at sensitive receptor locations would be greater than the impact criteria suggested in the *CEQR Technical Manual* for 2 consecutive years or more. While increases exceeding the *CEQR Technical Manual* impact criteria for less than 2 years may be noisy and intrusive, they are not considered to be significant adverse noise impacts using the *CEQR Technical Manual* methodology, although, as described on page 22-1 of the *CEQR Technical Manual*, there are instances where a potential impact may be of short duration but nonetheless significant, because it raises specific issues of concern.

Construction Noise Impacts at Nearby Residences. The noise analysis results show that predicted noise levels would exceed the *CEQR Technical Manual* impact criteria during 2 or more years on one or more floors at 6 of the 30 receptor sites (i.e., C2, D1-D4, and F1). Table 14-6 summarizes analysis results where predicted noise level increases exceed the *CEQR* impact criteria for 2 or more consecutive years (additional details of the construction analysis are presented in Appendix D). Table 14-6 shows the analysis results at groups of floors on each of the buildings predicted to experience exceedances of *CEQR Technical Manual* impact criteria during 2 or more years, including the maximum predicted noise level increase resulting from construction during each of the analysis periods, and the duration of the construction stage represented by the analysis period. The results are separated into groups of 5 or fewer floors of each building.

Table 14-6. Locations Where Noise Increases Exceed *CEQR* Criteria for Two or More Years by Building/Location and by Maximum Increase in dBA

						Maximum Increase in dBA				
Building /Location	Associated Land Use	Total Stories	Façade	Associated Receptor(s)	Impacted Floor(s)	**Excavation/ Foundation (3 months)**	**Super-structure (6 months)**	**Exterior Façade/ Interior Fit-Out (2 months)**	**Interior Fit-Out (7 months)**	**Interior Fit-Out/ Site Work (3 months)**
125 West 97th Street (Park West Village Building East of Project Site)	Residential	16	South/West Within 50 feet of Southwest Corner	C2	3-5	14.5	14.2	11.4	3.4	15.2
					6-10	15.8	14.4	11.2	3.4	14.9
					11-15	15.8	14.4	10.6	3.3	14.0
					16	15.9	14.4	10.2	3.2	13.0
122 West 97th Street (Residential Building South of Project Site)	Residential	13	North Except for Western Most Portion	D1, D2, D3, D4	3-5	21.4	18.3	12.3	4.2	15.7
					6-10	21.3	18.8	13.4	6.0	16.9
					11-13	20.5	18.1	13.5	6.3	17.1
110 West 97th Street (Residential Building Southeast of Project Site)	Residential	12	West Half of North Façade	F1	12	14.9	12.4	9.3	3.0	11.4

The buildings listed in Table 14-6 have double-glazed windows and alternate ventilation (i.e., air conditioners). For buildings with double-glazed windows and well-sealed, through-the-wall/sleeve/packaged terminal air conditioners, interior noise levels would be approximately 25 to 30 dBA less than exterior noise levels. The typical attenuation provided by double-glazed windows and the alternate ventilation outlined above would be expected to result in interior noise levels that are below 45 dBA $L_{10(1)}$ (the *CEQR Technical Manual* acceptable interior noise level criteria). But although these structures have double-glazed windows and alternate ventilation, during some limited time periods construction activities may result in interior noise levels that would be above the 45 dBA $L_{10(1)}$ noise level recommended by the *CEQR Technical Manual* for these uses.

Additionally, two buildings — 125 West 97th Street and 122 West 97th Street — have outdoor balconies, and would not experience the same attenuation provided by the windows and alternate means of ventilation that exists at the interior of the buildings. During the loudest periods of construction, noise level increases resulting from construction at these balconies would range from 14.5 to 21.4 dBA, with absolute noise levels up to 88.1 dBA. Consequently, balconies on various floors may experience significant noise impacts for limited portions of the construction period due to construction. It should be noted that even during the portions of the construction period that would generate the most noise at these balconies, they could still be enjoyed without the effects of construction noise outside of the hours that construction would occur, i.e., during late afternoon, nighttime, and on weekends. For these outdoor balconies, there would be no feasible or practicable mitigation to mitigate the construction noise impacts. Therefore, these balconies would be considered unmitigated significant noise impacts as a result of construction.

As shown in Table 14-6, the noise level increments at these balconies are highest during excavation/foundation activities (3 months), superstructure construction (6 months), and when two construction stages overlap, each of which would last for a limited duration (2 months for exterior façade construction/interior fit-out activities and 3 months for interior fit-out activities/site work). The interior fit-out stage of construction, when it would not overlap with other construction stages, would result in noise levels that just barely exceed the *CEQR Technical Manual* impact criteria. This stage of construction would be the longest, and would last 7 months without overlap. Due to relatively low levels of traffic volumes on West 97th Street, existing and No-Build noise levels at the sensitive receptor locations near the Project Site are also especially low. The calculation of construction noise associated with the Proposed Project was conservative, tending to produce the highest calculated construction noise level for each stage of construction.

Construction Noise at P.S. 163. Based on this conservative analysis, the east and south façades of the immediately adjacent P.S. 163 are predicted to experience noise levels that exceed *CEQR Technical Manual* noise level impact criteria during some construction activities. Construction noise levels would exceed the *CEQR Technical Manual* noise level impact criteria during the excavation and foundation activities, superstructure construction, and when two construction stages overlap, each of which would last only for a limited duration (2 months for exterior façade construction/interior fit-out activities and 3 months for interior fit-out activities/site work). During the excavation/foundation stage of construction, the maximum increase in hourly noise levels would range from 9.6 dBA to 21.2 dBA, with absolute noise levels up to 79.5 dBA. During superstructure construction, the maximum increase in hourly noise levels would range from 9.8 dBA to 24.1 dBA, with absolute noise levels up to 81.0 dBA. The higher end of the expected increases in maximum 1-hour noise levels would potentially occur during the excavation and foundation activities, and the portion of superstructure construction that would take place when the lower floors are being constructed. As the work progresses in height to the upper floors of the Proposed Project, noise levels would decrease with the greater distance to the noise sources. During the overlap periods of the construction schedule when more than one stage of construction would occur simultaneously, the maximum increase in hourly noise levels would range from 3.7 dBA to

8.6 dBA, with absolute noise levels up to 72.4 dBA. The interior fit-out stage of construction, when it would not overlap with other construction stages, would result in noise levels that do not exceed the *CEQR Technical Manual* noise level impact criteria. This stage of construction would be the longest, and would last 7 months without overlap. During this time, the maximum increase in hourly noise levels would range from 0.1 dBA to 1.6 dBA, which would be considered imperceptible, with absolute noise levels up to 65.9 dBA. The above noise level increments resulting from construction refer to the increases predicted to occur at various locations of the school during the single loudest hour throughout each phase of construction. The peak 1-hour noise level is the metric recommended by the *CEQR Technical Manual* for construction noise analysis, but noise levels typically fluctuate throughout the day and from day to day during each construction phase, and would not be sustained at these maximum values.

Noise levels expected to result from the construction of the Proposed Project would be comparable to those from any typical construction site in New York City involving construction of a new building with concrete slab floors and foundation. Potential disruptions to adjacent residences and schools resulting from construction would be expected to also be comparable to those occurring adjacent to a typical New York City construction site during the portions of the construction period when the loudest activities would occur. While there would be periods of the construction when P.S. 163 experiences elevated noise levels that would be intrusive and noisy, construction would not result in 2 or more years of sustained elevated noise levels and would therefore not be considered a significant adverse noise impact according to *CEQR Technical Manual* construction noise impact criteria. Cumulative noise levels at the school during the loudest periods of construction would be expected to range from the low 70s dBA to the low 80s dBA. Noise levels of this magnitude are similar to noise levels on busy New York City streets. Currently, the school's east and south façades include single-paned windows and window air conditioners, which would be expected to provide approximately 15-20 dBA of attenuation of exterior noise sources. However, with this level of attenuation, it is not expected that interior noise levels would be below 45 dBA $L_{10(1)}$ (the *CEQR Technical Manual* acceptable interior noise level criteria for classroom uses) in the existing condition or during the construction period.

Chapter 15. Alternatives

Introduction

In accordance with the *CEQR Technical Manual*, this chapter presents and analyzes alternatives to the Proposed Project. Alternatives selected for consideration in an EIS are generally those which are feasible and have the potential to reduce, eliminate, or avoid adverse impacts of a proposed action while meeting some or all of the goals and objectives of the action.

In addition to a comparative impact analysis, the alternatives in this chapter are assessed to determine to what extent they would meet the goals and objectives of the Proposed Project, which include replacing an inefficient, outdated nursing home facility with a new, state-of-the-art facility using the innovative "Green House"-living model of long-term care, thus enabling Jewish Home Lifecare, Manhattan ("JHL") to continue serving the needs of the residents in the local community and the borough, as well as accommodating the shift from long-term care to short-stay, post-acute rehabilitation needs. The new facility would be groundbreaking as the first true urban Green House model to be developed in New York City and New York State and one of the first developed nationwide. The Green House design would create a small home environment that allows more enhanced, focused attention and care between residents and staff and allows for greater resident independence.

This chapter considers three alternatives to the as-of-right Proposed Project:

- A No-Build Alternative, which is mandated by *CEQR* and *SEQRA*, and is intended to provide the decision makers with an assessment of the expected environmental impacts of no action on their part. For the Proposed Project, the No-Build Alternative assumes that the Project Site would remain in its current state and continue to function as a parking area. JHL would maintain its existing 514 beds in three distinct buildings on the West 106th Street campus. The existing facility would continue to operate inefficiently, housed in outdated buildings with a physical plant in need of major infrastructure replacement;
- A West 106th Street Redevelopment Alternative, which considers a project that would involve the redevelopment of the West 106th Street site with a new nursing care facility and a new residential building; and
- A No Significant Adverse Impacts Alternative, which considers a project that would avoid the Proposed Project's significant adverse impacts due to operational and construction traffic and construction noise.

No-Build Alternative

Description of the No-Build Alternative. Throughout the earlier chapters of this EIS, the Future Without the Proposed Project, or "No-Build Condition" is considered as the baseline for determining the impacts of the Proposed Project. Under the No-Build Alternative, the proposed discretionary approval would not be required, and the Proposed Project would not be constructed. The Project Site would continue to function as an accessory parking lot. JHL would maintain its existing 514 beds in three distinct buildings on the West 106th Street campus. The existing facility would continue to operate inefficiently, housed in outdated buildings with a physical plant in need of major infrastructure replacement.

No-Build Alternative Compared with the Proposed Project. Conditions resulting from the No-Build Alternative as compared with the Proposed Project are summarized below.

Land Use, Zoning, and Public Policy. In the No-Build Alternative, the Project Site would remain in its current state and continue to function as an accessory parking lot. Like the as-of-right Proposed Project, the No-Build Alternative would not result in any significant adverse impacts to land use, zoning, or public policy. However, under the No-Build Alternative, JHL would not be able to achieve its goal of constructing the first true urban Green House-model nursing facility in New York City and New York State, and would continue to use the existing facilities, which have an institutional design, with long corridors that are not ideal for the wheelchair-bound. The existing facility would continue to operate inefficiently, housed in outdated buildings with a physical plant in need of major infrastructure replacement. These buildings would constrain JHL's ability to implement modernization and improved patient care initiatives. Although the EIS assumes that the Project Site would remain in its current state for purposes of *SEQR* environmental impact assessment, it should be noted that, absent the Proposed Project, the current zoning would allow for other as-of-right redevelopment of the Project Site in the future.

Shadows. Under the No-Build Alternative, the Project Site would remain unchanged and, therefore, there would be no change with respect to shadows. Although the Proposed Project would cast new shadows on Saint Michael's Church and Happy Warrior Playground, the shadows on Saint Michael's Church would be very limited in duration and extent such that they would not result in a significant adverse shadow impact, and the shadows cast on Happy Warrior Playground would not alter the public's ability to utilize that open space resource. Therefore, neither the No-Build Alternative nor the Proposed Project would result in significant adverse shadow impacts.

Historic and Cultural Resources. The No-Build Alternative would not result in any changes to the Project Site. Therefore, like the Proposed Project, the No-Build Alternative would not result in any significant adverse impacts to historic and cultural resources.

Hazardous Materials. Unlike the Proposed Project, there would be no construction on the Project Site in the No-Build Alternative. The subsurface condition on the Project Site includes historical fill materials, limited petroleum-contaminated soil, and some soil exceeding the hazardous waste threshold for barium content. There is an existing open-status petroleum spill (likely related to a historical petroleum tank on the site) on an isolated portion of the Project Site, and a closed-status spill with the same address as the site but actually relating to a Con Edison manhole located off site within the West 97th Street roadway. Unlike the Proposed Project, soil disturbance for the No-Build Alternative would be minimal, i.e., limited to any excavation needed to clean up the petroleum spill to the satisfaction of NYSDEC. However, as discussed in Chapter 5, "Hazardous Materials," the Proposed Project would minimize and avoid the potential for impacts with the implementation of a number of measures, including: (1) implementation of a NYSDOH-approved RAP and associated CHASP, which would describe the protocols for testing, safe handling, protection from exposure, and remediation of on-site contamination; (2) the following of applicable regulations for the handling and appropriate disposal of the excavated and contaminated soil; (3) remediation of the petroleum spill; and (4) precautionary testing and, if necessary, pretreatment of contaminated groundwater from dewatering activities prior to disposal. Neither the Proposed Project nor the No-Build Alternative would result in any significant adverse impacts with respect to hazardous materials. However, unlike the No-Build Alternative, the Proposed Project would result in permanent cleanup and remediation of the subsurface soil condition, precluding future potential for exposure to the contaminated materials.

It should be noted that any as-of-right development that could occur on the Project Site in the future would result in similar soil disturbance as the Proposed Project. In the case of any future as-of-right development on the Project Site, the petroleum spill would be remediated and applicable regulations for the handling and appropriate disposal of excavated and contaminated soil would be followed. However, any future as-of-right development on the Project Site would not require the implementation of a NYSDOH-approved RAP or CHASP, including air monitoring.

Water and Sewer Infrastructure. The No-Build Alternative would not result in increased demand on New York City's water supply and would not result in a change in wastewater and sanitary sewage generation. Neither the No-Build Alternative nor the Proposed Project would result in any significant adverse impacts on the city's water supply, wastewater, or storm water conveyance and treatment infrastructure.

Transportation. Under the No-Build Alternative, the Project Site would remain in its current state. Although the No-Build Alternative would not result in any of the travel demand associated with the Proposed Project (and would therefore not generate any new vehicular trips), traffic volumes in the study area would be expected to increase as a result of background growth and planned development in the study area.

The No-Build Alternative would not result in the significant adverse traffic impacts identified for the Proposed Project at the intersections of West 97th Street and Amsterdam Avenue and West 97th Street and Columbus Avenue. However, as described in Chapter 7, "Transportation," this intersection does not operate at an acceptable level of service in the existing conditions. Under the No-Build Alternative, additional trips added by background growth would result in further degradation of operations on West 97th Street. The Proposed Project's traffic impacts at these intersections could be mitigated with signal timing and phasing changes. Mitigation that would occur under the Proposed Project would not occur under the No-Built Alternative. As noted in Chapter 7, "Transportation," upon review of the two study intersections, the intersection of West 97th Street and Columbus Avenue met the criteria for a high-pedestrian/bicycle crash location. As with the Proposed Project, the No-Build Alternative would increase the level of vehicular activity at this intersection. NYCDOT has already implemented a range of significant pedestrian and bicycle safety improvements on Columbus Avenue, including at this intersection, and independent of the Proposed Project, NYCDOT is reviewing an area wide safety study developed by Community Board 7 with the aim of reducing accidents involving pedestrians and bicyclists. NYCDOT could implement some or all elements of this study to further improve safety at this location. Neither the No-Build Alternative nor the Proposed Project would result in any significant adverse impacts related to subway or bus transit, pedestrians, or parking conditions.

Air Quality. The No-Build Alternative, like the Proposed Project, would not significantly alter traffic conditions and, thus, would not have the potential to result in a significant increase in on-street mobile source emissions. The No-Build Alternative also would not result in incremental emissions from new heating, ventilation, and air conditioning ("HVAC") systems associated with the Proposed Project. However, as discussed in Chapter 8, "Air Quality," the Proposed Project would not cause any significant adverse air quality impacts from HVAC systems. Therefore, neither the No-Build Alternative nor the Proposed Project would result in significant adverse air quality impacts.

Greenhouse Gas ("GHG") Emissions. Unlike the Proposed Project, the No-Build Alternative would not result in an increase in energy use, fuel consumption, or vehicle trips and, hence, would not result in the increase in GHG emissions on the Project Site that would result from the Proposed Project. However, the Proposed Project would be consistent with New York City's long-term sustainability program's ("PlaNYC's") GHG emissions reduction goals.

Noise. The No-Build Alternative would not introduce new traffic-generated or on-site sources of noise. Therefore, like the Proposed Project, the No-Build Alternative would not generate sufficient traffic to have the potential to cause a significant increase in noise levels at nearby sensitive noise receptor locations. Therefore, neither the Proposed Project nor the No-Build Alternative would result in any significant adverse noise impacts.

Public Health. The No-Build Alternative, like the Proposed Project, would not result in any significant adverse public health impacts.

Neighborhood Character. Under the No-Build Alternative, the Project Site would remain unchanged. Therefore, the No-Build Alternative would not adversely affect neighborhood character. Although the Proposed Project would result in the construction of a new building on the Project Site and a modest increase in activity in the surrounding area, the Proposed Project would be compatible with existing land use and urban design features and, thus, would also not result in any significant adverse impacts to neighborhood character. Overall, neither the No-Build Alternative nor the Proposed Project would result in any significant adverse impacts to neighborhood character.

Construction. Under the No-Build Alternative, no construction would occur on the Project Site. The Project Site would remain in its current state.

The No-Build Alternative would not result in the additional vehicle trips or increased parking demand generated by the Proposed Project's construction activities. The No-Build Alternative also would not result in any air pollutant emissions or increased noise levels that would be associated with the construction of the Proposed Project. As such, the No-Build Alternative would not result in the significant adverse impacts to traffic and noise during the construction period. As with the Proposed Project, the No-Build Alternative would not result in potential significant adverse construction impacts with respect to air quality, historic and cultural resources, hazardous materials, open space, socioeconomic conditions, community facilities, and land use and neighborhood character.

West 106th Street Redevelopment Alternative

Description of the West 106th Street Redevelopment Alternative. During public review of the *Draft Scoping Document*, commenters requested that the EIS study the redevelopment of the West 106th Street site as an alternative to the Proposed Project on West 97th Street. The following discussion presents this alternative in response to those public comments.

The West 106th Street Redevelopment Alternative would involve the redevelopment of the existing JHL facility with a new nursing care facility on the western portion of the West 106th Street site and a new residential development on the eastern portion of the site (see Figure 15-1). The West 106th Street site is the subject of a current Uniform Land Use Review Procedure ("ULURP") application to rezone the site from a R7-2 General Residence District to a R8A General Residence District along West 106th Street and a R8B General Residence District along West 105th Street (ULURP №. 130208ZMM and *CEQR* №. 14DCP084M). A *Negative Declaration Notice of Determination of Nonsignificance* was issued by the New York City Planning Commission ("CPC") on December 13, 2013, and the application is currently undergoing ULURP public review.[1] The West 106th Street Rezoning Environmental Assessment Statement ("EAS") considered a program comprising 507,649 gross square feet ("gsf") of residential space (up to 597 residential units), approximately 31,006 gsf of community facility space, and 208 accessory parking spaces. The West 106th Street Redevelopment Alternative assumes redevelopment of the extant site under the proposed R8A and R8B zoning. Under this alternative, a new nursing care facility would be developed on one-third of the site (i.e., the westernmost 270 feet of frontage along 106th Street). The R8A and R8B zoning would restrict the height of the building to a maximum of 120 feet, resulting in a 10-story, approximately 325,000-gsf building. Under the West 106th Street Redevelopment Alternative, the new nursing facility would accommodate a total of 303 beds — 111 fewer beds, or 27 percent less than the 414-bed Proposed Project. Of the 303 beds, 189 would be long-term-care beds and 114 would be post-acute (shot-term rehabilitation) beds.

The remainder of the site to the west of the new nursing care facility would be sold to a developer for construction of a new residential development that would enable the applicant to raise the capital necessary to support the redevelopment of the JHL facility under this alternative. Under the West 106th Street Redevelopment Alternative, a residential building of up to 260,000 zoning square feet ("zsf") (approximately 260 units) with a height of up to 120 feet could be developed. The residential building would be built to the front and side lot lines, and would have a 30-foot rear yard setback and a 60-foot rear yard equivalent along the West 105th Street line. The building could include 104 accessory parking spaces. As described below, the West 106th Street Redevelopment Alternative would have a build year of 2021.

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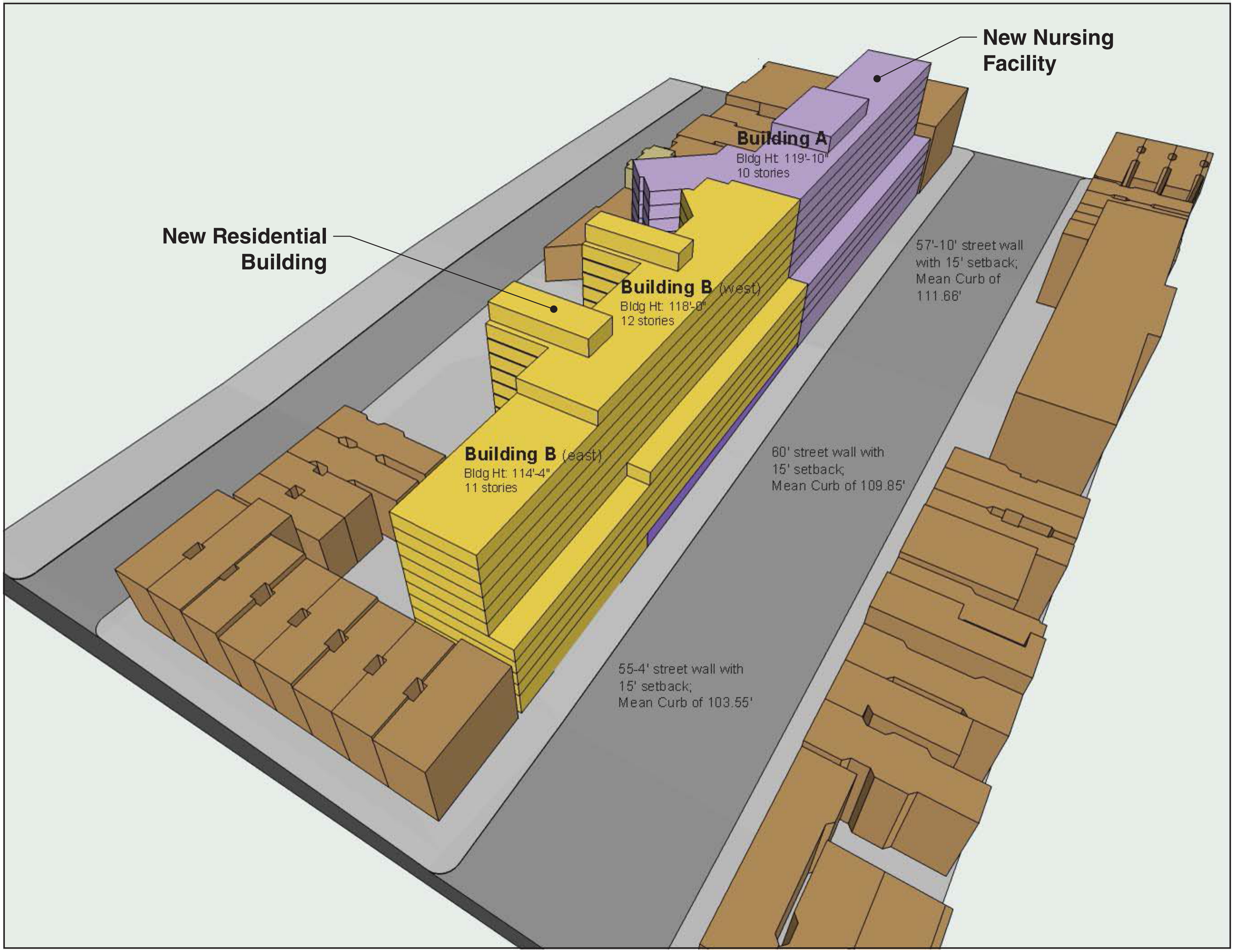
[1] http://www.nyc.gov/html/dcp/pdf/env_review/eas/14dcp084m_negative_declaration.pdf

2.14.14



For illustrative Purposes Only

Illustrative Massing of West 106th Street Redevelopment Alternative
Figure 15-1

West 106th Street Redevelopment Alternative Compared with the Proposed Project. Along West 97th Street, the environmental effects of this alternative would be the same as under the No-Build Alternative because this alternative would not involve any new development on the West 97th Street Project Site. Since this alternative would not involve any new development on the West 97th Street Project Site, unlike the Proposed Project, the West 106th Street Redevelopment Alternative would not result in significant adverse traffic impacts at the intersections of West 97th Street and Amsterdam Avenue and West 97th Street and Columbus Avenue. However, as discussed in Chapter 14, "Mitigation Measures," traffic improvement measures have been identified for the Proposed Project to address these potential significant adverse traffic impacts.

Along West 106th Street, the environmental effects of this alternative would be similar to existing conditions, except that the new residential building would result in a modest increase in activity along the block with uses that are different from those that are currently on the site. The Level 1 transportation screening analysis in the West 106th Street Rezoning EAS concluded that the incremental 217 residential units added by the proposal would not exceed *CEQR* thresholds for new vehicle, transit, and pedestrian trips, and would therefore not result in any significant adverse transportation impacts. Based on the travel demand characteristics presented in the West 106th Street Rezoning EAS, the approximately 260 residential units added by the West 106th Street Redevelopment Alternative would generate 10 to 19 vehicle trip ends during peak hours.[2] These additional trips would not exceed thresholds identified in the *CEQR Technical Manual* for which additional traffic analyses are required. As described above, the residential building under the West 106th Street Alternative would include 104 accessory parking spaces.[3] As indicated in the *CEQR Technical Manual*, since the thresholds for traffic are not surpassed, a parking assessment is generally not needed.

Unlike the Proposed Project, the West 106th Street Redevelopment Alternative would result in a longer construction phasing that would result in prolonged disruption to the JHL residents and adjacent community and greater significant construction impacts. In order to facilitate construction of the new nursing care facility and the new residential development on the West 106th Street site, JHL would need to reduce the number of nursing home residents to 328, so that only a portion of the existing facility would be occupied. Construction of this alternative would then proceed in two phases. First, the unoccupied portion of the existing facility would be demolished and the new nursing facility would be built on that site. This phase would require approximately 6 to 8 months for demolition and approximately 24 to 30 months for construction of the new nursing facility. Upon completion of the new nursing care facility, residents would be relocated to the new facility. In the second phase of construction, the remainder of the existing facility (now unoccupied as residents would have moved into the new nursing facility) would be demolished and a new residential development would be constructed on the remainder of the site. As with the first phase, this phase would require approximately 6 to

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[2] Based on Table 2-7.1, "Travel Demand Characteristics" in the West 106th Street Rezoning EAS (http://www.nyc.gov/html/dcp/pdf/env_review/eas/14dcp084m_eas.pdf)

[3] The new nursing-care facility developed under the West 106th Street Redevelopment Alternative would not require any additional parking spaces.

8 months for demolition and approximately 24 to 30 months for construction of the new residential development. As a result, this alternative would result in significant disruption to the nursing care facility's operations and to the adjacent neighborhood as compared with the Proposed Project. Under this alternative, residents of the nursing care facility would be located immediately adjacent to ongoing construction activities while the new nursing care facility and residential building are completed. In total, this alternative would result in up to approximately 76 months of ongoing construction along West 106th Street, compared with approximately 30 months with the Proposed Project on West 97th Street. With the Proposed Project, nursing facility residents would be relocated from West 106th Street to West 97th Street once the new facility on West 97th Street is completed; thus, there would be no interruption to the care of the nursing home residents and no construction activities would occur adjacent to the nursing care facility while it is occupied. Also, with the Proposed Project, JHL would not lose 111 additional beds. Consequently, the West 106th Street Redevelopment Alternative would neither be consistent with the goals nor the objectives of the Proposed Project. This alternative would not result in an efficient new nursing care facility to the same extent as the Proposed Project. Because of the smaller size of the facility under this alternative, a similar amount of common space and support areas must be provided for a smaller number of beds. This, in turn, makes the facility under this alternative more costly to operate since fewer beds must support the same overhead cost. Moreover, the design of this alternative, with longer corridors than proposed under the Proposed Project, would result in greater inefficiencies for staff providing services to the residents.

Furthermore, this alternative would not be able to adhere to the Green House model of long-term care.[4] For example, due to the narrower floor plates on the West 106th Street site, the building design would include semiprivate long-term-care bedrooms, which are not permitted under the Green House model. In addition, these semiprivate rooms would not be able to provide a window for each resident. In contrast, the Proposed Project would provide private long-term-care bedrooms and, thus, every resident with a dedicated bedroom window. With the Proposed Project, each 12-bed Green House would have balcony space. This alternative would not be able to provide balcony space on each floor, and would require longer travel distances between bedrooms and dining rooms, which serve as physical and psychological barriers for residents.

Overall, this alternative would not be consistent with the goals and objectives of the Proposed Project because it would result in an inefficient facility that would not meet Green House design principles to the same extent as the Proposed Project. This alternative would also have more significant construction impacts due to the longer construction time frame. Moreover, unlike the Proposed Project, it is expected that this alternative would continue to present physical challenges that would negatively impact residents' quality of life, mobility, privacy, and independence as well as significantly reduce the number of nursing home residents that could be served by a redeveloped facility.

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[4] Although a Green House-model facility could be constructed on the West 106th Street site, such a facility would only contain 156 beds, 258 fewer beds (62 percent less) than the Proposed Project, and would also be an inefficient facility that would not be viable to operate.

No Significant Adverse Impacts Alternative

Description of the No Significant Adverse Impacts Alternative. As discussed elsewhere in this EIS, the Proposed Project would result in the potential for significant adverse impacts in the areas of operational and construction traffic and construction noise. The Proposed Project would not result in any significant adverse impacts in the other 10 technical areas assessed. The No Significant Adverse Impacts Alternative addresses operational or construction related impacts that could be minimized or eliminated. As this alternative would be smaller than the Proposed Project, its effects would be comparable or more limited in the technical areas for which the Proposed Project would not result in significant adverse impacts.

As discussed in Chapter 7, "Transportation," the Proposed Project would result in the potential for significant adverse traffic impacts at the West 97th Street and Amsterdam Avenue and West 97th Street and Columbus Avenue intersections during the Weekday a.m., Weekday midday, and Weekday p.m. peak hours. In addition, as discussed in Chapter 14, "Mitigation Measures," the Proposed Project would result in unmitigated significant adverse impacts due to construction noise. Therefore, an alternative was developed to explore modifications to the Proposed Project that would avoid these significant adverse impacts.

Traffic. As described in Chapter 7, "Transportation," the Proposed Project would result in the potential for significant adverse operational traffic impacts at the intersections of West 97th Street with Columbus Avenue and Amsterdam Avenue. In order to avoid the potential for significant adverse impacts, the program for the nursing care facility on the Project Site would have to be reduced to 41 beds. A nursing care facility of this size would not generate enough trips to result in a level of service ("LOS") deterioration that would result in a significant adverse impact at either of these intersections. However, a 41-bed alternative would not be consistent with the goals and objectives of the Proposed Project, and would serve very few residents in the community and the borough. Because of the substantial reduction in the size of the facility under this alternative, a similar amount of common space and support areas must be provided for a very small number of beds. This, in turn, would make the facility under this alternative more costly to operate since fewer beds would support the same overhead cost. Further, as described in Chapter 14, "Mitigation Measures," the significant adverse traffic impacts that would result from the Proposed Project could be fully mitigated.

Construction Traffic and Noise. Based on the illustrative construction schedule presented in Chapter 13, "Construction," construction of the Proposed Project would be expected to result in the potential for a significant adverse traffic impact at the West 97th Street and Amsterdam Avenue intersection during the Weekday p.m. peak hour of the peak construction period condition. Subject to review and approval by the relevant agencies, including NYCDOT, this potential significant adverse impact could be fully mitigated by shifting 2 seconds from the southbound phase to the westbound phase.

Construction of the Proposed Project would be expected to result in substantially elevated noise levels for 2 or more years at three locations within the study area. While there would be periods of the construction when these locations experience elevated noise levels that would be intrusive and noisy, noise levels typically fluctuate throughout the day and from day to day during each construction phase, and would not be sustained at the maximum 1-hour noise levels shown in the construction noise analysis results. In addition, the affected buildings have double-glazed windows and alternate ventilation (i.e., air conditioners) and, consequently, would be expected to result in interior noise levels during most of the time that are below 45 dBA $L_{10(1)}$ (the *CEQR* acceptable interior noise level criteria). However, although these structures have double-glazed windows and alternate ventilation, during some limited time periods construction activities may result in interior noise levels that would be above the 45 dBA $L_{10(1)}$ noise level recommended by the *CEQR Technical Manual* guidance for these uses. In addition, two affected buildings have outdoor balconies, which would not experience the same attenuation provided by the windows and alternate means of ventilation that exists at the interior of the buildings. As a consequence, balconies on various floors may experience significant noise impacts due to construction for limited portions of the construction period. The impacts at the residential balcony locations would be considered unmitigated. Furthermore, the east and south façades of P.S. 163 immediately adjacent to the Project Site would experience noise levels that exceed *CEQR Technical Manual* noise level impact criteria during the excavation and foundation activities, superstructure construction, and when two construction stages overlap, each of which would last only for a limited duration. As the work on the superstructure progresses in height to the upper floors of the Proposed Project, noise levels would be expected to decrease with the greater distance to the noise sources. While there would be periods of the construction when P.S. 163 experiences elevated noise levels that would be intrusive and noisy, construction would not result in 2 or more years of sustained elevated noise levels and, therefore, would not be considered a significant adverse noise impact according to *CEQR Technical Manual* construction noise impact criteria. Noise levels typically fluctuate throughout the day and from day to day during each construction phase, and would not be sustained at the maximum 1-hour noise levels shown in the construction noise analysis results.

The noise impacts and the elevated noise levels at P.S. 163 would be temporary and limited and would only occur during the construction period; the operations of the Proposed Project would not result in a significant increase in noise levels at any nearby noise receptor locations. Any construction from the ground up on the Project Site that would require excavation, foundation, and superstructure construction (where large equipment such as cranes and pile drivers would be employed) would result in comparable noise levels at the locations mentioned above.

Both the temporary traffic impacts due to the construction of the Proposed Project and the temporary unmitigated noise impacts at residential balconies would be avoided if there were no construction on the Project Site. However, this would neither meet the goal of the Proposed Project to provide a new, state-of-the-art facility using the innovative Green House-living model of long-term care nor be economically feasible. Finally, any development on the Project Site would result in temporary traffic and noise disruption to the surrounding community during construction.

Conclusions

Under the No-Build Alternative, JHL would not be able to achieve its goal of constructing the first true urban Green House-model nursing facility in New York City and New York State, and would continue to use the existing facilities on West 106th Street, which have an institutional design, with long corridors that are not ideal for the wheelchair-bound. Any as-of-right development that could occur on the Project Site in the future would result in similar soil disturbance as the Proposed Project, and the petroleum spill would be remediated and applicable regulations for the handling and appropriate disposal of excavated and contaminated soil would be followed. However, any future as-of-right development on the Project Site would not require the implementation of a NYSDOH-approved RAP or CHASP, including air monitoring. The No-Build Alternative would not result in the additional vehicle trips or increased parking demand generated by the Proposed Project's construction activities and also would not result in any air pollutant emissions or increased noise levels that would be associated with the construction of the Proposed Project. As such, the No-Build Alternative would not result in the significant adverse impacts to traffic and noise during the construction period.

The West 106th Street Redevelopment Alternative would result in a modest increase in activity along West 106th Street with uses that are different from those that are currently on the site, but would result in a total of 303 beds — 111 fewer beds than the Proposed Project. The West 106th Street Redevelopment Alternative would not result in significant adverse traffic impacts at the intersections of West 97th Street and Amsterdam Avenue and West 97th Street and Columbus Avenue that would be expected with the Proposed Project. However, traffic improvement measures have been identified for the Proposed Project to mitigate these potential significant adverse traffic impacts. The West 106th Street Redevelopment Alternative would result in a longer construction phasing than the Proposed Project, which would result in prolonged disruption to the JHL residents and adjacent community and greater significant construction impacts. The West 106th Street Redevelopment Alternative would not be consistent with the goals and objectives of the Proposed Project, would not be able to adhere to the Green House model as currently contemplated, nor would it result in an efficient new nursing care facility to the same extent as the Proposed Project.

The No Significant Adverse Impacts Alternative would minimize or eliminate the significant adverse impacts identified with the Proposed Project in the areas of operational and construction traffic and construction noise. As this alternative would be smaller than the Proposed Project, its effects would be comparable or more limited in the technical areas for which the Proposed Project would not result in significant adverse impacts. In order to avoid the potential for significant adverse traffic impacts, the program for the nursing care facility on the Project Site would have to be reduced to 41 beds, which would not be consistent with the goals and objectives of the Proposed Project, and would serve very few residents in the community and the borough. The 41-bed facility under this alternative more costly to operate since fewer beds would support the same overhead cost. Further, the significant adverse traffic impacts that would result from the Proposed Project could be fully mitigated. Both the temporary traffic impacts due to the construction of the Proposed Project and the temporary unmitigated noise impacts at residential balconies would be avoided if there were no construction on the Project Site. However, this would not meet the goal of the Proposed Project to provide a new, state-of-the-art facility using the innovative Green House living model of long-term care nor be economically feasible. Finally, any future development on the Project Site would result in temporary traffic and noise disruption to the surrounding community during construction.

As detailed above, neither the No-Build Alternative, the West 106th Street Redevelopment Alternative, nor the No Significant Adverse Impacts Alternative would meet JHL's goals and objectives for the Proposed Project. Therefore, there is no reasonable alternative to the Proposed Project that would substantively meet the goals and objectives of the Proposed Project while also avoiding a significant adverse impact to traffic and construction traffic and noise.

Chapter 16. Unavoidable Significant Adverse Impacts of the Proposed Project

Introduction

This chapter presents the unavoidable significant adverse environmental impacts that would be likely to result from the Proposed Project. Unavoidable significant adverse impacts are defined as those that meet the following two criteria:

- There are no reasonably practicable mitigation measures to eliminate the impacts; and
- There are no reasonable alternatives to the Proposed Project that would meet the purpose and need of the action, eliminate the impact, and not cause other or similar significant adverse impacts.

As described in Chapter 14, "Mitigation Measures," a number of the potential impacts identified for the Proposed Project could be mitigated. However, as described below, in some cases, project impacts would not be fully mitigated.

Construction Impacts

Noise. The approach and procedures for constructing the Proposed Project would be typical of the methods utilized in other construction projects throughout New York City. Since the Project Site is located close to an existing residential community and P.S. 163, the Proposed Project is committed to taking a proactive approach during construction, which would employ a wide variety of measures that exceed standard construction practices, to minimize construction noise and reduce potential off-site noise impacts. The additional noise control measures, which are described in detail below and in Chapter 13, "Construction," are designed to reduce the amount of noise experienced at nearby receptors (including residences, schools, and open spaces) by decreasing the amount of noise produced by on-site equipment and by shielding the receptors from the noise-producing activities and equipment. These additional measures include alternate construction equipment and/or practices as well as additional or improved construction noise barriers.

In terms of source controls (i.e., reducing noise levels at the source or during the most sensitive time periods), the following measures would be implemented:

- Equipment that meets the sound level standards specified in Subchapter 5 of the *New York City Noise Control Code* would be used from the start of construction. Table 16-1 shows the noise levels for typical construction equipment and the mandated noise levels for the equipment that would be used for construction of the Proposed Project.
- As early in the construction period as logistics would allow, diesel- or gas-powered equipment would be replaced with electrical-powered equipment such as welders, water pumps, bench saws, and table saws (i.e., early electrification) to the extent feasible and practicable.

- Where feasible and practical, the construction site would be configured to minimize back-up alarm noise. In addition, all trucks would not be allowed to idle more than 3 minutes at the construction site based upon *New York City Noise Control Code*.
- Contractors and subcontractors would be required to properly maintain their equipment and mufflers.

In terms of path controls (e.g., placement of equipment, implementation of barriers or enclosures between equipment and sensitive receptors), the following measures for construction would be implemented to the extent feasible and practical:

- Where logistics allow, noisy equipment, such as pile drivers, cranes, concrete pumps, concrete trucks, and delivery trucks, would be located away from sensitive receptor locations;
- 10-foot, cantilevered, acoustically-treated noise barriers constructed from plywood or other materials would be utilized to provide shielding (typically construction sites utilize an 8-foot-high standard barrier) during excavation and foundation activities; during other times of the construction period, 8-foot-high noise barriers constructed from plywood would be utilized on the northern, eastern, and southern sides of the Project Site and a 12-foot sidewalk bridge constructed from plywood would be utilized on the western side of the Project Site (i.e., facing P.S. 163) during superstructure, exterior façade, and interior fit-out activities; and
- Path noise control measures (i.e., portable noise barriers, panels, enclosures, and acoustical tents, where feasible) would be used for certain dominant noise equipment to the extent feasible and practical (i.e., cranes and generators). These barriers are conservatively assumed to offer only a reduction of 10 dBA in noise levels for each piece of equipment to which they are applied, as shown in Table 16-1. The details for construction of portable noise barriers, enclosures, tents, etc., are based upon the NYCDEP rules for Citywide Construction Noise Mitigation.

As detailed in Chapter 13, “Construction,” even with the implementation of a wide variety of measures that exceed code requirements and standard construction practices to minimize noise disruption to the community during construction, construction of the Proposed Project would result in significant adverse impacts with respect to noise. This conclusion is based on a conservative analysis of the construction procedures, including peak monthly levels, a maximum amount of construction equipment assumed to be operational at locations closest to nearby receptors, and a conceptual construction schedule.

The noise analysis results show that predicted noise levels would exceed the *CEQR Technical Manual* impact criteria during 2 or more years on 1 or more floors at 6 of the 30 receptor sites analyzed. During the loudest periods of construction, noise level increases resulting from construction at these buildings would range from 14.5 to 21.4 dBA, with absolute noise levels up to 88.1 dBA. Affected locations include residential areas adjacent to the Proposed Project**,** including 125 West 97th Street (Park West Building east of Project Site), 122 West 97th Street (residential building south of Project Site), and 110 West 97th Street (residential building southeast of Project Site). However, these buildings have double-glazed windows and alternate ventilation (i.e., air conditioners). For buildings with double-glazed windows and well-sealed, through-the-wall/sleeve/packaged terminal air conditioners (PTACs”), interior noise levels would be approximately 25 to 30 dBA less than exterior noise levels. The typical attenuation provided by double-glazed windows and the alternate ventilation outlined above would be expected to result in interior noise levels during most of the time that are below 45 dBA $L_{10(1)}$ (the *CEQR Technical Manual* acceptable interior noise level criteria). However, although these structures have double-glazed windows and alternate ventilation, during some limited time periods construction activities may result in interior noise levels that would be above the 45 dBA $L_{10(1)}$ noise level recommended by the *CEQR Technical Manual* for these uses.

Table 16-1. Typical Construction Equipment Noise Emission Levels (dBA) by Type of Construction Equipment

Type of Construction Equipment	NYCDEP and FTA Typical Noise Level at 50 feet[1]	Noise Level with Path Controls at 50 feet [2]
Backhoe/Loader	80	
Compactors	80	
Compressors	58	
Concrete Pump	82	
Concrete Vibrator	80	
Concrete Saw	90	
Concrete Trucks	85	
Cranes (Tower Cranes)	85	75
Delivery Trucks	84	
Dump Trucks	84	
Excavator	85	
Generators	82	72
Hoe Ram	90	
Hoist	85	
Impact Pile Driver	95	
Jackhammers / Pavement Breakers	71	
Pumps	77	
Rebar Bender	80	
Rivet Buster / Chipping Gun	85	
Welding Machines	73	

Notes:
[1] Sources: Citywide Construction Noise Mitigation, Chapter 28, Department of Environmental Protection of New York City, 2007. Transit Noise and Vibration Impact Assessment, FTA, May 2006
[2] Path controls include portable noise barriers, enclosures, acoustical panels, and curtains, whichever feasible and practical.
Source: Kessler, Frederick M., “Noise Control for Construction Equipment and Construction Sites,” report for Hydro Quebec.

Additionally, two buildings — 125 West 97th Street and 122 West 97th Street — have outdoor balconies that would not experience the same attenuation provided by the windows and alternate means of ventilation that exists at the interior of the buildings. During the loudest periods of construction, noise level increases resulting from construction at these balconies would range from 14.5 to 21.4 dBA, with absolute noise levels up to 88.1 dBA. Consequently, balconies on various floors may experience significant noise impacts due to construction for limited portions of the construction period. However, it should be noted that even during the portions of the construction period that would generate the most noise at these balconies, they could still be enjoyed without the effects of construction noise outside of the hours that construction would occur, e.g., during late afternoon, nighttime and on weekends. At these outdoor balconies, there would be no feasible or practicable mitigation to mitigate the construction noise impacts. Therefore, these balconies would be considered to experience unavoidable significant noise impacts as a result of construction.

The noise level increments at these balconies are highest during excavation/foundation activities (3 months), superstructure construction (6 months), and when two construction stages overlap, each of which would last only for a limited duration (2 months for exterior façade construction/interior fit-out activities and 3 months for interior fit-out activities/site work). The interior fit-out stage of construction, when it would not overlap with other construction stages, would result in noise levels that just barely exceed the *CEQR Technical Manual* impact criteria. This stage of construction would be the longest, and would last 7 months without overlap. Due to relatively low levels of traffic volumes on West 97th Street, existing and No-Build noise levels at the sensitive receptor locations near the Project Site are also especially low. The calculation of construction noise associated with the Proposed Project was conservative, tending to produce the highest calculated construction noise level for each stage of construction.

Conclusions

As described in Chapter 14, "Mitigation Measures," a number of the potential impacts identified for the Proposed Project could be mitigated. However, as described above, in some cases, project impacts would not be fully mitigated at the two buildings with outdoor balconies. During the loudest periods of construction, balconies may experience significant noise impacts due to construction for limited portions of the construction period. There would be no feasible or practicable mitigation to mitigate the construction noise impacts. Therefore, these locations would be considered to experience unavoidable, unmitigated significant noise impacts as a result of construction.

Chapter 17. Growth-Inducing Aspects of the Proposed Project

This chapter discusses the potential of the Proposed Project to induce growth on the Project Site and in its vicinity. Proposed actions may induce primary growth by expanding the numbers of employees on a site or secondary growth if further development is triggered by the proposed actions. In an environmental context, secondary growth is the main concern. Actions that may result in secondary growth effects include actions that introduce a substantial amount of new residents or new employment that could induce additional development of a similar kind and/or development of support uses (e.g., stores to serve new residents or employees). In addition, actions that result in the expansion of infrastructure capacity (e.g., sewers, central water supply, or roadways) could also induce secondary growth. This chapter is closely linked to the information presented in other chapters of this EIS, such as Chapter 2, "Land Use, Zoning, and Public Policy," and Chapter 6, "Water and Sewer Infrastructure."

As described in Chapter 1, "Project Description," the Proposed Project would replace the existing, approximately 31,804-square-foot ("sf"), 88-space, surface accessory parking lot on the Project Site with a new, as-of-right, 20-story (plus cellar floor), approximately 376,000-gross-square-foot ("gsf") building on the Project Site. Following the construction of the new facility, Jewish Home Lifecare, Manhattan ("JHL") would close the current location of its Manhattan Division, which is located at 120 West 106th Street in the borough of Manhattan, New York County, New York. Upon completion of the Proposed Project, the total New York State Department of Health ("NYSDOH")-certified bed complement at JHL would be reduced from 514 beds to 414 beds, and would relocate approximately 625 full-time-equivalent ("FTE") employees to the Project Site.

As described in Chapter 2, "Land Use, Zoning, and Public Policy," the Proposed Project would result in a new, more-intensive land use on the Project Site, but would be in keeping with residential uses in the study area, and would be compatible with existing community facility and commercial uses in the study area. In addition, the Proposed Project would result in the construction of a building that is consistent with and permitted under existing zoning. The area surrounding the Project Site is fully developed, and the level of development is controlled by zoning. As such, the Proposed Project would not "induce" new growth in the study area. The Proposed Project and related actions are specific to the Project Site only.

As described in Chapter 6, "Water and Sewer Infrastructure," the Proposed Project would utilize existing infrastructure, and the proposed actions would not result in any significant adverse impacts to water supply or wastewater and storm water infrastructure. Therefore, secondary growth is not expected to be induced as a result of the Proposed Project.

Chapter 18. Irreversible and Irretrievable Commitment of Resources

There are a number of resources, both natural and built, that would be expended in the construction and operation of the Proposed Project. These resources would include the materials used in construction; energy in the form of gas and electricity consumed during construction and operation of the Proposed Project; and the human effort (i.e., time and labor) required to develop, construct, and operate various components of the Proposed Project.

The resources are considered irretrievably committed because their reuse for some purpose other than for the Proposed Project would be unlikely. The land use changes associated with the development of the Project Site would be considered a resource loss. The Proposed Project would constitute an irreversible and irretrievable commitment of the Project Site as a land resource, thereby rendering land use for other purposes infeasible, at least in the near term.

These commitments of land resources and materials are weighed against the benefits of the Proposed Project, which would introduce a new, state-of-the-art nursing-care facility to an underdeveloped site. This action would be expected to substantially improve the Project Site. Overall, the Proposed Project would not represent a substantial new irreversible and irretrievable commitment of energy resources for building operations.

NEW YORK STATE DEPARTMENT OF HEALTH

STATE ENVIRONMENTAL QUALITY REVIEW

APPENDIX A TO THE
DRAFT ENVIRONMENTAL IMPACT STATEMENT

for the

Jewish Home Lifecare, Manhattan
Replacement Nursing Facility Project

CITY PLANNING COMMISSION

March 26, 2012/Calendar No. 1 N120043ZCM

IN THE MATTER OF an application, dated August 18, 2011 and revised January 12, 2012, for a certification pursuant to Section 22-42 of the New York City Zoning Resolution with respect to a skilled nursing facility to be located on West 97th Street between Columbus and Amsterdam Avenues (Block 1852, Lot 5), within Community Board 7, Manhattan .

WHEREAS, Jewish Home Lifecare seeks a certification by the City Planning Commission to the Department of Buildings pursuant to Section 22-42 of the Zoning Resolution of the City of New York that none of the findings which would require a special permit pursuant to Section 74-90 of the Z.R. apply in Community District 7 in the Borough of Manhattan, in connection with the development of a skilled nursing facility to be located on a site on the north side of West 97th Street between Columbus and Amsterdam Avenues (Block 1852, lot 5) (the "Site") ; and

WHEREAS, Section 22-42 of the Z.R. was enacted in 1973 in order to address a " massive expansion" in the construction of nursing homes and other residential health care facilities in certain neighborhoods, with overconcentration of such facilities having the potential to create problems of parking and traffic congestion, a heavy demand for services and facilities such as medical and hospital care, a scarcity of available land for general community purposes, and a disruption of the land use balance in the affected communities (See CP-22490, dated December 3, 1973); and

WHEREAS, in response to the potential problems caused by the proliferation of nursing homes at that time, Section 22-42 was enacted to provide that, for any nursing home or health-related facility located within a residence district or any enlargement, extension, or change in use thereof, the City Planning Commission must certify that none of the following conditions exists: (a) the ratio between the number of beds for such uses in existence, under construction or approved toward construction by the appropriate Federal or State governmental agency, to the population of the Community District compared to such ratio for other Community Districts shows a relative concentration of facilities covered in this Section in the affected district; or (b) a scarcity of land for general community purposes exists; or (c) the incidence of construction of facilities for the last three years warrants review over these facilities because they threaten to disrupt the land use balance in the community, and, if one of these conditions exists, to provide further that a Special Permit is required for the nursing home facility pursuant to Section 74-90 of the Z.R.; and

WHEREAS, the Site is located in a Residence District (R7-2) and development of a new skilled nursing facility at this location is subject to review under Section 22-42; and

WHEREAS, Jewish Home Lifecare currently operates a 514-bed skilled nursing facility at a location on West 106th Street between Columbus and Amsterdam Avenues and seeks to relocate its operations to the Site in a new, state-of-the-art facility with up to 414 beds (the " New Building") , with operations at the current location to cease upon completion of the New Building, such that there will be no increase in the number of nursing homes in Community Board 7, Manhattan; and

WHEREAS, in addition to the current Jewish Home Lifecare facility on West 106th Street, there is only one other nursing home facility in Community Board 7, the Kateri Residence at 150 Riverside Drive; and

WHEREAS, for purposes of finding (a), the absence of a relative concentration of residential health care facilities in Community Board 7 resulting from these two existing facilities is evidenced by data maintained by the Department of City Planning which demonstrates: (a) that Community District 7 contains 1,034 beds in nursing homes and residential care facilities to serve a population of 207,700, resulting in a ratio of 5.0 beds per 1,000 residents, which is below the city-wide average of 5.7 beds per 1,000 residents, and (b) that since the new facility will contain approximately 100 fewer beds than the existing campus, the ratio of beds per 1,000 residents in Community Board 7 will as a result of the decommissioning of the current facility be reduced to approximately 4.5, further below the citywide average; and

WHEREAS, other than the instant application, there have been no applications submitted to the Commission pursuant to Section 22-42 for facilities in Community Board 7, Manhattan, since January, 2002 and no new nursing homes or residential health care facilities have been constructed in Community Board 7 during the past three years ; and

WHEREAS, for purposes of finding (c), there is therefore no incidence of construction of residential health care facilities which warrants review pursuant to special permit because they threaten to disrupt the land use balance in the community; and

WHEREAS, in its application, Jewish Home Lifecare states that the conditions under Finding (b) of Section 22-42 ("… a scarcity of land for general community purposes exists...") do not exist on the basis that, in the absence of a competition for land between nursing homes and other community uses within Community Board 7, the underlying premise for this finding is not present; and

WHEREAS, Jewish Home Lifecare further states in its application that there is no general scarcity of land available for community purposes in Community Board 7 since, for purposes of Section 22-42, land available for community purposes may consist of a new building on a vacant site or an underdeveloped parcel, as well as the purchase or lease of existing buildings or portions of existing buildings, and , with respect to vacant parcels, cites to data showing that as of June, 2011, Community District 7 contained 1.5 million square feet of vacant land (a significant portion of which it acknowledges is associated with open space and streets in the Riverside South/Center Large Scale Development) , and with respect to underdeveloped parcels cites to data showing that as of such date Community District 7 had 524,000 sf of parking facilities; and

WHEREAS, Community Board 7, by Resolution dated February 7, 2012, stated that in its view the conditions set forth in Findings (a) and (c) of Section 22-42 do not currently exist in

Community District 7, Manhattan, but that there exists a " scarcity of land in this District for general community purposes", such that a special permit is required for the New Building; and

WHEREAS, by letter, dated February 17, 2012, Community Board 7 highlighted , in respect of its February 7, 2012 Resolution, that of the 1.5 million sf of vacant land in the Community District, 1.25 million sf is located in Riverside South , with 1.170 million sf of this amount attributable to open space and streets, and that only 80,000 sf is available for other uses, and that the applicant's consequent " reliance on 'underdeveloped' parcels whose current structures use less than the total permissible floor area as potential sites [for residential care facilities] further confirms the existence of a scarcity of land" and reflects an admission that " such uses must be shoe-horned into other structures since there is no other for place them to go in our District." ; and

WHEREAS, by letter dated February 28, 2012, Jewish Home Lifecare responded to the February 17, 2012 Community Board 7 letter, reiterating its view that "land for general community purposes" includes " both vacant land and underdeveloped parcels, such as a one story building, or parking lot or garage" and noting that " many community facilities seek to locate within an existing building, since they do not have the ability to obtain financing for new construction, and may have immediate space needs that cannot await the completion of a new building" ; and

WHEREAS, by letter dated March 1, 2012, Community Board 7 responded to certain points in Jewish Home Lifecare's February 28 letter, reiterating its view that streets, parks and sites already slated for development should not be counted towards available vacant land in order to evaluate finding (b) and that JHL had not offered any additional evidence for the absence of a scarcity of land " other than the potential for community groups to share unspecified space, [thereby] reaffirming rather than dispelling the existence of scarcity…"; and

WHEREAS, the Commission has considered the application, the Community Board Resolution, the several letters described above, as well as analysis and data presented to it by Department staff, at the Review Session held on March 26, 2012; and

WHEREAS, the Commission notes that the legislative purpose of Section 22-42 , as stated in the Commission's 1973 Report, was " to regulate the trends toward overconcentration in various areas of the City" (CP-22490, P.2), and that, in view of the absence of any current or anticipated trend of proliferation of nursing homes in Community District 7, Manhattan, as well as the fact that the instant application will not result in an increase in the number of nursing homes in the area, there would appear to be no underlying predicate for a finding there is a scarcity of land in the Community District which warrants special permit review of the New Building; and

WHEREAS, the Commission further believes that in predominantly built-up areas of the City such as Community District 7, the number of vacant sites does not constitute the sole measure of whether there is a scarcity of land for purposes of finding (b) and that doing so would provide an inaccurate assessment of the actual opportunities for community facilities to grow and expand within the area, in that that sole reliance upon the amount of vacant land would almost inevitably lead to a finding of scarcity where none may be found based on a more realistic assessment of such opportunities; and

WHEREAS, the Commission notes that, while the Far Rockaway and other neighborhoods in Queens which experienced the significant increase in the number of nursing homes and other facilities in the 1970's which precipitated the adoption of Section 22-42 had tracts of vacant land at the time, Section 22-42 does not by its terms limit the Commission's consideration to land which is vacant; and

WHEREAS, the Commission therefore believes it appropriate to consider the amount and number of underdeveloped parcels in Community District 7, as well as the number and size of existing buildings which currently house or could house community or public facilities; and

WHEREAS, the Commission also believes that , in determining whether a scarcity exists, it may be useful to assess whether new community facilities have been newly constructed on underdeveloped parcels and have newly occupied space within existing buildings or have expanded within existing buildings in recent years, thereby providing a further indication whether opportunities for the growth and expansion of community facilities exist; and

WHEREAS, the Commission has been advised by Department staff of each of the following with respect to Community Board 7, Manhattan:

a. Vacant Sites: There are 24 vacant lots in Community District 7 with 1.7 acres of lot area. This figure excludes City-owned sites as the Riverside South and Riverside Center developments ;

b. Riverside Center/Riverside South: The unbuilt sites at Riverside South and Riverside Center are approved for 332,000 sf of community facility floor area, of which approximately 110,000 sf will be dedicated for a new school;

c. Parking Facilities: There are 24 lots in Community District 7 with a total of 3.9 acres of lot area classified as in use for parking facilities. This calculation also excludes City-owned sites;

d. Other Soft Sites: There are 64 lots in private ownership in Community District 7 not located in historic districts, and also excluding individual landmarks and houses of worship, that meet the Department's criteria for qualifying as 'soft sites'; that is, sites of at least 5,000 sf built to less than half the FAR allowed pursuant to the underlying Zoning District. The soft sites exclude the parking facilities and vacant sites described in a. and c. above;

e. Existing Buildings: The Department's PLUTO records [11v2] indicate that there are 234 privately owned existing buildings within Community District 7, having floor area of approximately 6,328,599 sf that currently house or could house community or public facilities (based on the following Building Class Codes: Hospitals and Health; Theaters; Store Buildings; Houses of Worship; Asylums & Homes; Office Buildings; Places of Public Assembly; and Education);

f. Existing Public Facilities: The Department's PLUTO records [11v2] indicate that there are 25 publicly owned existing buildings within Community District 7, having floor area of approximately 4,062,813 sf that currently house or could house community or public facilities (based on the following Building Class Codes: Hospitals and Health; Theaters; Store Buildings; Houses of Worship; Asylums & Homes; Office Buildings; Places of Public Assembly; and Education);

g. Existing Campuses: The campuses of Fordham Law School and Lincoln center also provide a significant supply of facility space. The 11 tax lots comprising these campuses provide over 1.5 million sf of facility space today according to PLUTO [11v2];

h. Major Alterations: Since 2000, there have been 13 Major Alteration (Alt 1) permits issued or construction completed under previously issued permits for the purpose of conversion of existing space to community facility use or enlargements of existing buildings for expanded community facility use, for the purpose of schools, community centers, daycare facilities, and medical facilities . In some cases, the alteration or enlargement represents a significant amount of community facility space, such as in the case of the Jewish Community Center on Amsterdam Avenue at W. 76th St; and

i. New Buildings: Since 2000, there have been 3 New Building (NB) permits issued for new community facilities in Community District 7. This figure does not include new construction within institutional campuses, such as recent construction on the Lincoln Center and Fordham University campuses; and

WHEREAS, the Commission believes that the above data and information demonstrates that, in addition to vacant land, there exists underdeveloped property and existing buildings within Community District 7 that is available for the development of new community facilities and the expansion of existing facilities, such that there is no scarcity of land available for such purpose;

NOW THEREFORE, the Commission adopts the following Resolution:

RESOLVED, by the City Planning Commission that, based on the considerations described in this report, as of the date hereof, none of the conditions set forth in Findings (a), (b) or (c) of Section 22-42 of the Zoning Resolution exist in Community Board 7 , Manhattan; and be it further

RESOLVED, that Application N120043ZCM , for a certification pursuant to Section 22-42 of the Zoning Resolution is hereby APPROVED.

AMANDA M. BURDEN, FAICP, Chair
ANGELA M. BATTAGLIA, RAYANN BESSER, IRWIN G. CANTOR, P.E., ALFRED C. CERULLO, III, MARIA M. DEL TORO, RICHARD W. EADDY, ORLANDO MARIN, SHIRLEY A. MCRAE, Commissioners

ANNA HAYES LEVIN, Commissioner, Abstained

RESOLUTION

Date: February 7, 2012
Committees of Origin: Steering, Land Use and Health & Human Services
Re: 125 West 97th Street, Jewish Home Lifecare (Columbus-Amsterdam Avenues.)
Application by Jewish Home Lifecare ("JHL") for a certification by the Department of City Planning pursuant to section 22-42 of the Zoning Resolution concerning 125 West 97th Street, Block 1852, Lot 5, Application No. 120043 ZCM.

Full Board Vote: 37 In favor 0 Against 4 Abstentions 0 Present

This resolution is based on the following facts:

Section 22-42 of the Zoning Resolution provides as follows:

22-42 Certification of Certain Community Facility Uses
R1 R2 R3 R4 R5 R6 R7 R8 R9 R10

In all #Residence Districts#, for any nursing homes and health-related facilities or #enlargement#, #extension# or change in #use# thereof, the City Planning Commission shall certify to the Department of Buildings, prior to the filing of any plans by the applicant for a building permit for such #use#, that none of the following conditions applies to the Community District within which such #use# or #enlargement#, #extension# or change in such #use# is to be located:

(a) the ratio between the number of beds for such #uses# in existence, under construction or approved toward construction by the appropriate Federal or State governmental agency, to the population of the Community District compared to such ratio for other Community Districts shows a relative concentration of facilities covered in this Section in the affected district; or

(b) a scarcity of land for general community purposes exists; or

(c) the incidence of construction of facilities for the last three years warrants review over these facilities because they threaten to disrupt the land use balance in the community.

If the Commission finds that one or more of the conditions set forth in this Section applies to the Community District within which such #use# or #enlargement#, #extension# or change in #use# is to be located, a special permit pursuant to Section 74-90 shall be required.

250 West 87th Street New York, NY 10024-2706
Phone: (212) 362-4008 *Fax:*(212) 595-9317
Web site: nyc.gov/mcb7 e-mail address: office@cb7.org

The Department of City Planning referred JHL's application under section 22-42 to Community Board 7/Manhattan for comment.

CB7 held a public hearing on this application on January 17, 2012, in the auditorium of PS 163, which is adjacent to the site which is the subject of JHL's application.

THEREFORE, BE IT RESOLVED THAT Community Board 7/Manhattan finds that:

(1) To the best of CB7's knowledge and understanding, the condition identified in subsection (a) of section 22-42 of the Zoning Resolution does not currently exist in Community District 7/Manhattan *[Vote of Combined Committee Members: 19-6-0-0; Vote of Non-Committee Board Members: 1-1-1-0]*; and

(2) The condition identified in subsection (b) of section 22-42 of the Zoning Resolution does exist in Community District 7/Manhattan, in that there is a scarcity of land in this District for general community purposes *[Vote of Combined Committee Members: 15-6-5-0; Vote of Non-Committee Board Members: 4-0-1-0]*; and

(3) To the best of CB7's knowledge and understanding, the condition identified in subsection (c) of section 22-42 of the Zoning Resolution does not currently exist in Community District 7/Manhattan *[Vote of Combined Committee Members: 25-0-1-0; Vote of Non-Committee Board Members: 4-0-1-0]*; and

(4) Therefore a special permit under section 74-90 of the Zoning Resolution is required in connection with this application and project.

250 West 87th Street New York, NY 10024-2706
Phone: (212) 362-4008 *Fax:*(212) 595-9317
Web site: nyc.gov/mcb7 e-mail address: office@cb7.org

NEW YORK STATE DEPARTMENT OF HEALTH

STATE ENVIRONMENTAL QUALITY REVIEW

APPENDIX B TO THE
DRAFT ENVIRONMENTAL IMPACT STATEMENT

for the

Jewish Home Lifecare, Manhattan
Replacement Nursing Facility Project

New York State Office of Parks, Recreation and Historic Preservation

Division for Historic Preservation
P.O. Box 189, Waterford, New York 12188-0189
518-237-8643

Andrew M. Cuomo
Governor

Rose Harvey
Commissioner

December 13, 2013

Charles P. Abel
New York State Department of Health
Div. of Health Facility Planning
Corning Tower, Room 1805
Albany, New York 12337

Re: DOH
Jewish Home Lifecare - New Nursing Facility
North side of W. 97th St. between Columbus
and Amsterdam Aves/MANHATTAN, New
York County
13PR02920

Dear Mr. Abel:

Thank you for requesting the comments of the Office of Parks, Recreation and Historic Preservation (OPRHP). We have reviewed the project in accordance with the New York State Historic Preservation Act of 1980 (Section 14.09 of the New York Parks, Recreation and Historic Preservation Law). These comments are those of the Division for Historic Preservation and relate only to Historic/Cultural resources. They do not include potential environmental impacts to New York State Parkland that may be involved in or near your project. Such impacts must be considered as part of the environmental review of the project pursuant to the State Environmental Quality Review Act (New York Environmental Conservation Law Article 8) and its implementing regulations (6 NYCRR Part 617).

Based upon this review, it is the OPRHP's opinion that your project will have No Impact upon cultural resources in or eligible for inclusion in the State and National Register of Historic Places.

If further correspondence is required regarding this project, please be sure to refer to the OPRHP Project Review (PR) number noted above.

Sincerely,

Ruth L. Pierpont

Ruth L. Pierpont
Deputy Commissioner for Historic Preservation

NEW YORK STATE DEPARTMENT OF HEALTH

STATE ENVIRONMENTAL QUALITY REVIEW

APPENDIX C TO THE
DRAFT ENVIRONMENTAL IMPACT STATEMENT

for the

Jewish Home Lifecare, Manhattan
Replacement Nursing Facility Project

New York State Department of Health

SMART GROWTH IMPACT STATEMENT ASSESSMENT FORM

Date: March 2014
Project Name: Jewish Home Lifecare, Manhattan
Project Number: CEQR Reference Number 13SHD001M
Completed by: AKRF, Inc.

This Smart Growth Impact Statement Assessment Form ("SGISAF") is a tool to assist the applicant and the New York State Department of Health ("NYSDOH") Smart Growth Advisory Committee in deliberations to determine whether a project is consistent with the State of New York *State Smart Growth Public Infrastructure Policy Act ("SSGPIPA"),* article 6 of the New York State *Environmental Conservation Law ("ECL").* Not all questions/answers may be relevant to all projects.

Description of Proposed Action and Proposed Project:

Jewish Home Lifecare, Manhattan ("JHL"), a member of the Jewish Home Lifecare System, proposes to construct a replacement nursing facility (the "Proposed Project"). For purposes of *State Environmental Quality Review* ("*SEQR*"), the Proposed Action would consist of NYSDOH's approval of a construction application filed pursuant to Section 2802 of the *Public Health Law ("PHL")* that would consist of JHL's plan to construct a new facility at 125 West 97th Street in Manhattan's Upper West Side neighborhood (the "Project Site"). Following the construction of the new facility, JHL would close the current location of its Manhattan Division, which is located at 120 West 106th Street in the borough of Manhattan, New York County, New York. The Proposed Project would result in the construction of a LEED-certified replacement facility with 100 fewer beds than the current location. Upon completion of the Proposed Project, the total NYSDOH-certified bed complement at JHL would be reduced from 514 beds to 414 beds.

More specifically, the Proposed Project would replace the existing, approximately 0.73±-acre, 88-space, accessory surface parking lot on the Project Site with a new, 20-story (plus cellar floor), approximately 376,000-gross-square-foot ("gsf") building. Users of the existing surface parking lot would receive substitute nearby parking within the Park West Village ("PWV") complex (the property owner commenced construction of the relocated surface parking lot in March 2014). The proposed building would have three access areas: (1) a public pedestrian entrance on West 97th Street with access to the reception, main lobby, and resident and family areas, for residents, visitors, staff, and the general public; (2) a public vehicular entrance on the north side of the building to the same areas via a covered, semi-circular driveway for patient drop-off and pick-up, including ambulette and taxi access, utilizing the existing driveway along the eastern end of the Project Site for access from West 97th Street; and (3) loading and service access on West 97th Street. The ground-floor level would include an approximately 8,700-gsf landscaped area along the west side of the Project Site for JHL residents, visitors, and employees, and PWV residents, of which about 1,850 gsf would be covered by the building above. This area would be accessible for JHL residents, visitors, and employees, as well as PWV residents, who would access it using a keycard. The Proposed Project would also comply with the street tree planting requirements of the *Zoning Resolution of the City of New York (“Zoning Resolution”)* and would also replace trees removed from the Project Site during construction. As part of the Builders Pavement Plan (“BPP”) and Forestry Application, as currently contemplated, approximately 3 existing street trees would be removed and 5 would be protected along the West 97th Street frontage of the Project Site. Approximately 18 trees would be planted along the boundary of the zoning lot, including along West 97th and West 100th Streets, and Columbus Avenue, and additional trees would be planted off site at the direction of the New York City Department of Parks and Recreation (“NYCDPR”). The size and species of the proposed replacement trees would be determined by NYCDPR. Trees that are currently located on the Project Site would be removed during the construction of the Proposed Project, and new trees would be planted within the PWV property.

The Proposed Project would include a total of 414 beds, with 264 long-term-care beds located on the 9th floor through the 19th floor. Each floor would house 24 beds that include two “Green House” homes, complete with living and dining areas, a kitchen, private bedrooms and bathrooms with showers, and staff support areas. Another 150 post-acute (short-term rehabilitation) beds would be located on the 4th floor through the 8th floor, along with community dining and decentralized therapy and activity space. The remaining floors would contain shared common areas, administrative offices, and service and support areas. The building would have one cellar level and one mechanical story, and would include an approximately 1,950-gsf rooftop garden for JHL residents and their visitors. The proposed building would be up to approximately 275 feet in height.

The Proposed Project would relocate approximately 625 full-time-equivalent (“FTE”) employees at the proposed facility. The new facility would decertify 100 beds from the current, NYSDOH-certified complement of 514 beds, for a new total reduced bed count of 414.

As noted above, the PWV property owner would relocate the Project Site’s surface parking to another location within the PWV complex, on a surface lot. The driveway (Park West Drive), the north-south access road within the PWV complex, may be modified as part of the PWV property owner’s planning for the complex, but will continue to function as a discontinuous two-way access road for PWV parkers. These potential changes, if approved, would occur independently of the Proposed Project.

The proposed JHL facility would make use of the shared Park West Drive to access a private loop roadway allowing for pick-up and drop-off activity. The actual pick ups and drop offs would occur on the private loop roadway separate from Park West Drive. Pick-up and drop-off activities are not anticipated to affect traffic along Park West Drive.

Construction of the Proposed Project is expected to begin in 2014 and would last approximately 30 months. It is expected that construction would be completed in a single phase, and that occupants would move into the new facility over the course of approximately 4 to 10 months.

Have any other entities issued a Smart Growth Impact Statement (“SGIS”) with regard to this project? (If so, attach same). ☐ Yes ☒ No

1. Does the project advance or otherwise involve the use of, maintain, or improve existing infrastructure? Check one and describe:

☒ Yes ☐ No ☐ Not Relevant

The Proposed Project, which would result in the development of a new building to replace the existing accessory parking lot, would connect to water supply, sewer, and energy infrastructure on the Project Site superblock.

The Proposed Project demands on the New York City water supply and associated infrastructure would be negligible. To avoid impacts on New York City's sanitary and storm water infrastructure (which is a combined system in the location of the Project Site), the Proposed Project would employ storm water source control best management practices ("BMPs") to reduce storm water runoff volumes to the combined sewer system, thus alleviating the demand on the sewer system as compared to existing conditions (which comprise a surface parking lot with impervious surface coverage). BMPs would also include measures to reduce water consumption and sanitary sewer discharges (such as low-flow fixtures) to further minimize demand on the combined sewer system. The Proposed Project would replace an outdated existing nursing facility, located at 120 West 106th Street, which did not incorporate these measures.

In terms of energy infrastructure demand, the existing nursing facility, located at 120 West 106th Street, is housed in three distinct, outdated buildings constructed between 1898 and 1964 which are at the end of their useful lives and operating inefficiently. The existing facility presents physical challenges that negatively impact residents' quality of life, mobility, privacy, and independence; the buildings operate inefficiently, are antiquated and require major infrastructure replacement. The Proposed Project would result in the construction of a state-of-the-art and efficiently-designed facility that would support the 414 residents in a single building. The new facility would incorporate sustainable design elements and systems. Therefore, the Proposed Project would be supportive of this criterion.

2. Is the project located wholly or partially in a **municipal center**, characterized by any of the following: Check all that apply and explain briefly:

   ☒ A city or a village
   ☐ Within the interior of the boundaries of a generally recognized college, university, hospital, or nursing home campus
   ☒ Area of concentrated and mixed land use that serves as a center for various activities including, but not limited to:
   ☐ Central business districts (such as the commercial and often geographic heart of a city, "downtown", "city center")
   ☐ Main streets (such as the primary retail street of a village, town, or small city. It is usually a focal point for shops and retailers in the central business district, and is most often used in reference to retailing and socializing)
   ☐ Downtown areas (such as a city's core (or center) or central business district, usually in a geographical, commercial, and community sense).
   ☐ Brownfield Opportunity Areas (http://nyswaterfronts.com/BOA_projects.asp)
   ☐ Downtown areas of Local Waterfront Revitalization Plan areas (http://nyswaterfronts.com/maps_regions.asp)
   ☒ Locations of transit-oriented development (such as projects serving areas that have access to mass or public transit for residents)
   ☐ Environmental Justice areas (http://www.dec.ny.gov/public/899.html)
   ☐ Hardship areas

   The Proposed Project would result in infill development in a dense urban setting with a diverse mixture of uses and proximity to multiple subway and bus lines. In addition, as described in Chapter 9, "Greenhouse Gas Emissions," JHL would continue to provide its employees with access to tax-free options for commuter expenses, and would continue to operate a shuttle bus for patient transport. Further, JHL is investigating the option of upgrading to hybrid-engine shuttles. Therefore, the Proposed Project would be consistent with this criterion.

3. Is the project located adjacent to municipal centers (please see characteristics in question 2, above) with clearly-defined borders, in an area designated for concentrated development in the future by a municipal or regional comprehensive plan that exhibits strong land use, transportation, infrastructure and economic connections to an existing municipal center? Check one and describe:

   ☒ Yes ☐ No ☐ Not Relevant

   As described in Chapter 2, "Land Use, Zoning, and Public Policy," the Proposed Project is located in the former West Park Urban Renewal Area ("URA"), which expired in 2006. The URA was created in 1952, when the land acquisition and disposition were authorized for development according to the approved redevelopment plan for the area (the "Redevelopment Plan" or "Plan"). The purpose of the West Park URA was to improve a deteriorating area and to preserve some existing buildings, including the Trinity Lutheran Church of Manhattan. The Redevelopment Plan established use and bulk controls for parcels in the URA, and originally called for 17 residential buildings clustered on portions of the URA as well as sites for commercial and recreational uses. The original Redevelopment Plan and subsequent modifications were to remain in effect for 40 years from the completion of the project, defined as the time when all certificates of occupancy have been issued for the residential buildings. The final residential certificate of occupancy for the URA was issued in 1966 and, as described above, the Plan expired on July 22, 2006.

4. Is the project located in an area designated by a municipal or comprehensive plan, and appropriately zoned, as a future municipal center? Check one and describe:

   ☐ Yes ☐ No ☒ Not Relevant

5. Is the project located wholly or partially in a developed area or an area designated for concentrated infill development in accordance with a municipally-approved comprehensive land use plan, a local waterfront revitalization plan, brownfield opportunity area plan or other development plan? Check one and describe:

   ☐ Yes ☒ No ☐ Not Relevant

6. Does the project preserve and enhance the state's resources, including agricultural lands, forests, surface and groundwater, air quality, recreation and open space, scenic areas, and/or significant historic and archeological resources? Check one and describe:

   ☒ Yes ☐ No ☐ Not Relevant

   The shadows impact assessment in Chapter 3, "Shadows," concluded that the proposed building would cast new shadows on the Happy Warrior Playground for 2¼ hours in the early spring and fall, and up to approximately 4½ hours in winter. These new shadows would not reach any areas of the playground containing trees or other vegetation in March 21/September 21, and could not affect the trees in winter when they have no leaves. The analysis concluded that the new shadows would not significantly alter the public's use of the Happy Warrior Playground and that the Proposed Project would not cause a significant adverse impact to this resource, or any other resources. Otherwise, the Proposed Project would not have an adverse impact on agricultural land, forests, surface and groundwater, air quality, recreation and open space, scenic areas. Additionally, the New York State Office of Parks, Recreation and Historic Preservation ("OPRHP") has determined that the Proposed Project will not have an adverse impact on cultural resources listed in or eligible for listing in the National and/or State Registers of Historic Places.

7. Does the project foster mixed land uses and compact development, downtown revitalization, brownfield redevelopment, the enhancement of beauty in public spaces, the diversity and affordability of housing in proximity to places of employment, recreation and commercial development and/or the integration of all income and age groups? Check one and describe:

☒ Yes ☐ No ☐ Not Relevant

The Proposed Project would foster compact development by replacing JHL's three existing nursing facility buildings located at 120 West 106th Street, which operate at 65 percent efficiency, and require major infrastructure replacement. The Proposed Project would result in the development of a state-of-the-art and efficiently-designed facility that would support the 414 residents in a single building, and would be designed with a commitment to Leadership in Energy and Environmental Design ("LEED") certification. Therefore, the Proposed Project would be supportive of this criterion.

8. Does the project provide mobility through transportation choices, including improved public transportation and reduced automobile dependency? Check one and describe:

☒ Yes ☐ No ☐ Not Relevant

The Project Site is well-served by public transit services, including the №. 1, №. 2, and №. 3 subway lines and the M7, M11, and M106 buses. However, the Proposed Project would not result in changes to transportation choices for the Project Site's worker population. The Proposed Project is located next to a major protected, southbound bike route on Columbus Avenue, (currently beginning at West 96th Street but planned to extend further north), and near the northbound bike route on Central Park West. Bicycle storage, showers, and changing rooms would be provided within the proposed building, and JHL would continue to provide its employees with access to tax-free options for commuter expenses. JHL currently operates a shuttle bus for patient transport and would continue to do so at the new location; JHL is investigating the option of upgrading to hybrid-engine shuttles. Therefore, the Proposed Project would encourage transit use, and promote cycling and other sustainable modes of transportation, and would be supportive of this criterion.

9. Does the project demonstrate coordination among state, regional, and local planning and governmental officials? (Demonstration may include *SEQR* coordination with involved and interested agencies, district formation, agreements between involved parties, letters of support, State Pollutant Discharge Elimination System ("SPDES") permit issuance/revision notices, etc.). Check one and describe:

☒ Yes ☐ No ☐ Not Relevant

NYSDOH, as the only state agency with a discretionary action, will serve as the lead agency for the environmental review. Other involved agencies and interested parties include the New York State Office of Parks, Recreation, and Historic Preservation ("OPRHP") and the New York City Department of Buildings ("NYCDOB").[1]

10. Does the project involve community-based planning and collaboration? Check one and describe:

☒ Yes ☐ No ☐ Not Relevant

A public scoping meeting was held for the Proposed Project at 6:30 p.m. on September 17, 2013, at P.S. 163 (163 West 97th Street, in Manhattan, New York) allowing all involved agencies, interested parties and members of the public an opportunity to comment on the scope of the DEIS. The comment period for the *Draft Scoping Document* was extended beyond the customary 10-calendar-day period, and written comments were accepted until October 4, 2013. After all comments were considered, NYSDOH prepared and issued the *Final Scoping Document*. Once the DEIS is certified as complete, there will be a comment period during which the public may review and comment on the DEIS either in writing or at a public hearing that will be convened for the purpose of receiving such comments. Once the DEIS public comment period has closed, NYSDOH will prepare the Final Environmental Impact Statement ("FEIS"), which will summarize and respond to all substantive comments received during the public comment period. Once NYSDOH determines that the FEIS is complete, it will issue a Notice of Completion ("NOC") for the FEIS and circulate the document to the involved agencies, interested parties and the public. The FEIS will be made available to the public and agencies for a minimum of 10 days before NYSDOH makes its finding regarding the Proposed Project under *SEQR*. Therefore, the Proposed Project would be supportive of this criterion.

11. Is the project consistent with local building and land use codes? Check one and describe:

☒ Yes ☐ No ☐ Not Relevant

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[1] Previously, a CPC certification pursuant to Section 22-42, "Certification of Certain Community Facility Uses," of the *Zoning Resolution of the City of New York* was approved on March 26, 2012. A foundation permit was obtained from NYCDOB.

As described in Chapter 2, "Land Use, Zoning, and Public Policy," the Proposed Project would be in keeping with existing residential uses in the study area, and would be compatible with community facility uses — including the William F. Ryan Community Health Center located at 110 West 97th Street and P.S. 163 Alfred E. Smith School — as well as commercial uses. The Proposed Project would not alter the mix of uses in the study area, and the study area would continue to include a mix of residential, commercial, institutional, parking, and open space uses. The Proposed Project would not affect the existing zoning of the Project Site or study area, and would comply with the *Zoning Resolution*. The Proposed Project would result in the construction of a building allowable under existing zoning, which permits up to 1,061,154 square feet of zoning floor area for community facilities within the zoning lot. In addition, the Proposed Project would comply with Section 22-42, "Certification of Certain Community Facility Uses," of the *Zoning Resolution*, which requires that, prior to any development, enlargement, extension or change in use involving a nursing home or health-related facility in a residence district, the CPC must certify to NYCDOB that none of the findings set forth in Section 22-42 of the *Zoning Resolution* exist in the Community District within which such use is to be located. The CPC determined that none of these findings exist in Community District 7 and the certification was approved on March 26, 2012. Overall, the Proposed Project would not result in any significant adverse impacts to land use, zoning, or public policy, and therefore, the Proposed Project would be supportive of this criterion.

12. Does the project promote sustainability by strengthening existing and creating new communities which reduce greenhouse gas emissions and do not compromise the needs of future generations?

☒ Yes ☐ No ☐ Not Relevant

As discussed in Chapter 9, "Greenhouse Gas Emissions," energy measures to be implemented as part of the Proposed Project under LEED are expected to reduce energy expenditure by at least 10 percent, and may reduce energy expenditure by as much as 20 percent, as compared to a baseline building designed to meet by not exceed building energy code requirement. These measures would also result in development that is consistent with the city's emissions reduction goal, as demonstrated by the review of the PlaNYC goals of (1) building efficient buildings; (2) using clean power; (3) transit-oriented development and sustainable transportation; (4) reducing construction operation emissions; and (5) using building materials with low carbon intensity, as defined in the *CEQR Technical Manual*. Therefore, the Proposed Project would be supportive of this criterion.

13. During the development of the project, was there broad-based public involvement? (Documentation may include *SEQR* coordination with involved and interested agencies, SPDES permit issuance/revision notice, approval of Bond Resolution, formation of district,

evidence of public hearings, *Environmental Notice Bulletin ("ENB")*, or other published notices, letters of support, etc.). Check one and describe:

☒ Yes ☐ No ☐ Not Relevant

The *Draft Scoping Document* was distributed on June 5, 2013, to the involved agencies and interested parties for review and comment. Notice of the *Positive Declaration* and *Draft Scoping Document* was first published in the New York State Department of Environmental Conservation's ("NYSDEC's") *ENB* on June 12, 2013, and the Notice of Public Scoping Meeting was published in the June 28, 2013, edition of the *New York Daily News*. The Scoping Meeting was subsequently postponed and a second notice of the *Positive Declaration* and *Draft Scoping Document* was published in the *ENB* on July 10, 2013; a Notice of Public Scoping Meeting was published in the July 29, 2013 edition of the *New York Daily News*. The Scoping Meeting was postponed a second time, and the final notice of the *Positive Declaration* and *Draft Scoping Document* was published in the *ENB* on August 7, 2013; a Notice of Public Scoping Meeting was published in the August 17, 2013 edition of the *New York Daily News*. As described above, A public scoping meeting was held for the Proposed Project at 6:30 p.m. on September 17, 2013, at P.S. 163 (163 West 97th Street, in Manhattan, New York) allowing all involved agencies, interested parties and members of the public an opportunity to comment on the scope of the DEIS. The comment period for the *Draft Scoping Document* was extended beyond the customary 10-calendar-day period, and written comments were accepted until October 4, 2013. After all comments were considered, NYSDOH prepared and issued the *Final Scoping Document*. Once the DEIS is certified as complete, there will be a comment period during which the public may review and comment on a DEIS either in writing or at a public hearing that will be convened for the purpose of receiving such comments. Once the DEIS public comment period has closed, NYSDOH will prepare the Final Environmental Impact Statement ("FEIS"), which will summarize and respond to all substantive comments received during the public comment period. Once NYSDOH determines that the FEIS is complete, it will issue a Notice of Completion ("NOC") for the FEIS and circulate the document to the involved agencies, interested parties and the public. The FEIS will be made available to the public and agencies for a minimum of 10 days before NYSDOH makes its finding regarding the Proposed Project under *SEQR*. Therefore, the Proposed Project would be supportive of this criterion.

14. Does the Recipient have an ongoing governance structure to sustain the implementation of community planning? Check one and describe:

☐ Yes ☐ No ☒ Not Relevant

NYSDOH has reviewed the available information regarding this project and finds:

☒ The project was developed in general consistency with the relevant Smart Growth Criteria.

☐ The project was not developed in general consistency with the relevant Smart Growth Criteria.

☐ It was impracticable to develop this project in a manner consistent with the relevant Smart Growth Criteria for the following reasons:

ATTESTATION

I, Commissioner of Health of NYSDOH/designee of the Commissioner of Health of NYSDOH, hereby attest that the Proposed Project, to the extent practicable, meets the relevant criteria set forth above and that to the extent that it is not practical to meet any relevant criterion, for the reasons given above.

____

Signature

____

Print Name and Title

____

Date

NEW YORK STATE DEPARTMENT OF HEALTH

STATE ENVIRONMENTAL QUALITY REVIEW

APPENDIX D TO THE
DRAFT ENVIRONMENTAL IMPACT STATEMENT

for the

Jewish Home Lifecare, Manhattan
Replacement Nursing Facility Project

Construction Workforce and Truck Projections

Jewish Home Lifecare

Daily Construction Workforce Projections	Year 1												Year 2												Year 3					
	M1	M2	M3	M4	M5	M6	M7	M8	M9	M10	M11	M12	M13	M14	M15	M16	M17	M18	M19	M20	M21	M22	M23	M24	M25	M26	M27	M28	M29	M30
Excavation & Foundation	50	60	70																											
Superstructure				75	100	100	100	100	100																					
Exterior Façade										20	30	50	50	75																
Interior Fit-Out													100	100	200	300	400	500	500	500	450	400	300	200	100					
Site Work																						30	30	30						
Commissioning																										40	40	40	40	40
AVERAGE DAILY WORKFORCE	50	60	70	75	100	100	100	100	100	20	30	50	150	175	200	300	400	500	500	500	450	430	330	230	100	40	40	40	40	40

Year 1				Year 2				Year 3			
1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	Max	Avg
60	92	100	33	175	400	483	330	60	117	483	177

Jewish Home Lifecare

Daily Construction Truck Projections	Year 1												Year 2												Year 3					
	M1	M2	M3	M4	M5	M6	M7	M8	M9	M10	M11	M12	M13	M14	M15	M16	M17	M18	M19	M20	M21	M22	M23	M24	M25	M26	M27	M28	M29	M30
Excavation & Foundation	15	15	15																											
Superstructure				18	18	18	18	18	18																					
Exterior Façade										4	4	4	4	4																
Interior Fit-Out													22	22	22	22	22	22	22	22	22	22	22	22	22					
Site Work																						5	5	5						
Commissioning																										15	15	15	15	15
AVERAGE DAILY TRUCKS:	15	15	15	18	18	18	18	18	18	4	4	4	26	26	22	22	22	22	22	22	22	27	27	27	22	15	15	15	15	15

Year 1				Year 2				Year 3			
1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	Max	Avg
15	18	18	4	25	22	22	27	17	15	27	18

Noise Analysis Results

Construction Noise Results

Jewish Home Life

CadnaA Receptor Sites	Elevation (floor)	Existing Leq(1)	Existing L10	Construction Duration: Excavation and Foundation					Excav and Found Off Hour					Super Structure					Super Structure Off Hour				
				Leq				L10	Leq				L10	Leq				L10	Leq				L10
				Const	Total	Change	Exceed?	Total	Const	Total	Change	Exceed?	Total	Const	Total	Change	Exceed?	Total	Const	Total	Change	Exceed?	Total
A1	1	55.9	58.5	72.5	72.6	16.7	YES	75.2	67.1	67.4	11.5	YES	70.0	79.7	79.7	23.8	YES	82.3	76.9	76.9	21.0	YES	79.5
A1	2	56.9	59.5	76.2	76.3	19.4	YES	78.9	72.5	72.6	15.7	YES	75.2	81.0	81.0	24.1	YES	83.6	78.0	78.0	21.1	YES	80.6
A1	3	58.3	60.9	79.5	79.5	21.2	YES	82.1	75.5	75.6	17.3	YES	78.2	80.3	80.3	22.0	YES	82.9	77.0	77.1	18.8	YES	79.7
A2	1	55.6	57.9	68.5	68.7	13.1	YES	71.0	64.9	65.4	9.8	YES	67.7	77.2	77.2	21.6	YES	79.5	74.6	74.7	19.0	YES	77.0
A2	2	55.6	57.9	71.5	71.6	16.0	YES	73.9	68.7	68.9	13.3	YES	71.2	77.3	77.3	21.7	YES	79.6	74.1	74.2	18.5	YES	76.5
A2	3	55.9	58.2	75.7	75.7	19.8	YES	78.0	72.0	72.1	16.2	YES	74.4	76.1	76.1	20.2	YES	78.4	73.0	73.1	17.2	YES	75.4
A2	4	56.8	59.1	76.3	76.3	19.5	YES	78.6	73.0	73.1	16.3	YES	75.4	76.3	76.3	19.5	YES	78.6	73.3	73.4	16.6	YES	75.7
A3	1	55.6	57.9	66.5	66.8	11.2	YES	69.1	63.7	64.3	8.7	YES	66.6	74.4	74.5	18.8	YES	76.8	71.7	71.8	16.2	YES	74.1
A3	2	55.6	57.9	68.8	69.0	13.4	YES	71.3	66.4	66.7	11.1	YES	69.0	74.0	74.1	18.4	YES	76.4	71.0	71.1	15.5	YES	73.4
A3	3	55.6	57.9	71.2	71.3	15.7	YES	73.6	68.5	68.7	13.1	YES	71.0	74.1	74.2	18.5	YES	76.5	71.1	71.2	15.6	YES	73.5
A3	4	55.6	57.9	72.4	72.5	16.9	YES	74.8	69.7	69.9	14.2	YES	72.2	74.2	74.3	18.6	YES	76.6	71.2	71.3	15.7	YES	73.6
A4	1	55.6	57.9	64.7	65.2	9.6	YES	67.5	62.3	63.1	7.5	YES	65.4	73.3	73.4	17.7	YES	75.7	70.1	70.3	14.6	YES	72.6
A4	2	55.6	57.9	66.6	66.9	11.3	YES	69.2	64.6	65.1	9.5	YES	67.4	73.1	73.2	17.5	YES	75.5	69.6	69.8	14.1	YES	72.1
A4	3	55.6	57.9	68.1	68.3	12.7	YES	70.6	66.1	66.5	10.8	YES	68.8	73.1	73.2	17.5	YES	75.5	69.6	69.8	14.1	YES	72.1
A4	4	55.6	57.9	69.5	69.7	14.0	YES	72.0	67.2	67.5	11.9	YES	69.8	73.3	73.4	17.7	YES	75.7	69.8	70.0	14.3	YES	72.3
A5	1	62.2	64.8	71.3	71.8	9.6	YES	74.4	71.2	71.7	9.5	YES	74.3	70.1	70.8	8.6	YES	73.4	66.6	67.9	5.7	YES	70.5
A5	2	63.9	66.5	74.2	74.6	10.7	YES	77.2	74.1	74.5	10.6	YES	77.1	73.2	73.7	9.8	YES	76.3	68.6	69.9	6.0	YES	72.5
A5	3	64.5	67.1	75.7	76.0	11.5	YES	78.6	75.6	75.9	11.4	YES	78.5	74.9	75.3	10.8	YES	77.9	71.5	72.3	7.8	YES	74.9
B1	1	56.1	58.4	68.4	68.6	12.5	YES	70.9	65.2	65.7	9.6	YES	68.0	79.5	79.5	23.4	YES	81.8	77.1	77.1	21.0	YES	79.4
B1	2	56.8	59.1	72.8	72.9	16.1	YES	75.2	70.3	70.5	13.7	YES	72.8	79.2	79.2	22.4	YES	81.5	76.7	76.7	19.9	YES	79.0
B1	3	57.5	59.8	75.5	75.6	18.1	YES	77.9	73.0	73.1	15.6	YES	75.4	79.0	79.0	21.5	YES	81.3	76.4	76.5	19.0	YES	78.8
B1	4	58.2	60.5	78.5	78.5	20.3	YES	80.8	74.6	74.7	16.5	YES	77.0	76.9	77.0	18.8	YES	79.3	74.7	74.8	16.6	YES	77.1
B1	5	58.8	61.1	78.8	78.8	20.0	YES	81.1	75.5	75.6	16.8	YES	77.9	76.8	76.9	18.1	YES	79.2	74.8	74.9	16.1	YES	77.2
B1	6	59.4	61.7	78.9	78.9	19.5	YES	81.2	75.7	75.8	16.4	YES	78.1	76.6	76.7	17.3	YES	79.0	74.4	74.5	15.1	YES	76.8
B1	7	59.9	62.2	78.7	78.8	18.9	YES	81.1	75.6	75.7	15.8	YES	78.0	76.6	76.7	16.8	YES	79.0	74.4	74.6	14.7	YES	76.9
B1	8	60.4	62.7	78.6	78.7	18.3	YES	81.0	75.7	75.8	15.4	YES	78.1	76.6	76.7	16.3	YES	79.0	74.3	74.5	14.1	YES	76.8
B1	9	60.9	63.2	78.4	78.5	17.6	YES	80.8	75.6	75.7	14.8	YES	78.0	76.3	76.4	15.5	YES	78.7	74.1	74.3	13.4	YES	76.6
B1	10	61.2	63.5	78.1	78.2	17.0	YES	80.5	75.3	75.5	14.3	YES	77.8	76.1	76.2	15.0	YES	78.5	73.9	74.1	12.9	YES	76.4
B1	11	61.3	63.6	77.9	78.0	16.7	YES	80.3	75.2	75.4	14.1	YES	77.7	75.8	76.0	14.7	YES	78.3	73.3	73.6	12.3	YES	75.9
B1	12	61.3	63.6	77.7	77.8	16.5	YES	80.1	75.0	75.2	13.9	YES	77.5	75.8	76.0	14.7	YES	78.3	73.3	73.6	12.3	YES	75.9
B1	13	61.4	63.7	77.6	77.7	16.3	YES	80.0	74.9	75.1	13.7	YES	77.4	75.9	76.1	14.7	YES	78.4	73.2	73.5	12.1	YES	75.8
B1	14	61.4	63.7	77.4	77.5	16.1	YES	79.8	74.8	75.0	13.6	YES	77.3	75.8	76.0	14.6	YES	78.3	73.2	73.5	12.1	YES	75.8
B1	15	61.3	63.6	77.2	77.3	16.0	YES	79.6	74.7	74.9	13.6	YES	77.2	75.8	76.0	14.7	YES	78.3	73.1	73.4	12.1	YES	75.7
B1	16	61.3	63.6	77.1	77.2	15.9	YES	79.5	74.6	74.8	13.5	YES	77.1	75.3	75.5	14.2	YES	77.8	72.6	72.9	11.6	YES	75.2
B2	1	55.6	57.9	67.2	67.5	11.9	YES	69.8	63.6	64.2	8.6	YES	66.5	76.5	76.5	20.9	YES	78.8	73.3	73.4	17.7	YES	75.7
B2	2	55.6	57.9	71.2	71.3	15.7	YES	73.6	68.8	69.0	13.4	YES	71.3	76.5	76.5	20.9	YES	78.8	73.3	73.4	17.7	YES	75.7
B2	3	55.6	57.9	74.6	74.7	19.0	YES	77.0	71.5	71.6	16.0	YES	73.9	76.5	76.5	20.9	YES	78.8	73.1	73.2	17.5	YES	75.5
B2	4	56.1	58.4	77.4	77.4	21.3	YES	79.7	72.8	72.9	16.8	YES	75.2	75.8	75.8	19.7	YES	78.1	72.5	72.6	16.5	YES	74.9
B2	5	57.4	59.7	77.8	77.8	20.4	YES	80.1	73.9	74.0	16.6	YES	76.3	75.3	75.4	18.0	YES	77.7	72.4	72.5	15.1	YES	74.8
B2	6	58.2	60.5	78.0	78.0	19.8	YES	80.3	74.2	74.3	16.1	YES	76.6	75.2	75.3	17.1	YES	77.6	71.7	71.9	13.7	YES	74.2
B2	7	59.2	61.5	77.8	77.9	18.7	YES	80.2	74.2	74.3	15.1	YES	76.6	75.4	75.5	16.3	YES	77.8	71.8	72.0	12.8	YES	74.3
B2	8	59.7	62.0	77.3	77.4	17.7	YES	79.7	74.0	74.2	14.5	YES	76.5	75.5	75.6	15.9	YES	77.9	72.0	72.2	12.5	YES	74.5
B2	9	60.2	62.5	77.2	77.3	17.1	YES	79.6	73.9	74.1	13.9	YES	76.4	75.4	75.5	15.3	YES	77.8	72.0	72.3	12.1	YES	74.6
B2	10	60.5	62.8	77.0	77.1	16.6	YES	79.4	73.8	74.0	13.5	YES	76.3	75.2	75.3	14.8	YES	77.6	72.0	72.3	11.8	YES	74.6
B2	11	60.8	63.1	76.9	77.0	16.2	YES	79.3	73.8	74.0	13.2	YES	76.3	75.2	75.4	14.6	YES	77.7	72.2	72.5	11.7	YES	74.8
B2	12	60.9	63.2	76.7	76.8	15.9	YES	79.1	73.7	73.9	13.0	YES	76.2	75.3	75.5	14.6	YES	77.8	72.3	72.6	11.7	YES	74.9
B2	13	61.0	63.3	76.6	76.7	15.7	YES	79.0	73.6	73.8	12.8	YES	76.1	75.4	75.6	14.6	YES	77.9	72.2	72.5	11.5	YES	74.8
B2	14	61.0	63.3	76.4	76.5	15.5	YES	78.8	73.4	73.6	12.6	YES	75.9	75.3	75.5	14.5	YES	77.8	72.1	72.4	11.4	YES	74.7
B2	15	61.1	63.4	76.3	76.4	15.3	YES	78.7	73.3	73.6	12.5	YES	75.9	75.2	75.4	14.3	YES	77.7	71.9	72.2	11.1	YES	74.5
B2	16	61.1	63.4	76.1	76.2	15.1	YES	78.5	73.1	73.4	12.3	YES	75.7	74.9	75.1	14.0	YES	77.4	71.8	72.2	11.1	YES	74.5
B3	1	55.6	57.9	60.4	61.7	6.0	YES	64.0	56.2	58.9	3.3		61.2	68.1	68.3	12.7	YES	70.6	65.9	66.3	10.7	YES	68.6
B3	2	55.6	57.9	61.9	62.8	7.2	YES	65.1	59.2	60.8	5.1	YES	63.1	67.7	68.0	12.3	YES	70.3	65.5	65.9	10.3	YES	68.2
B3	3	55.6	57.9	62.3	63.1	7.5	YES	65.4	59.9	61.3	5.6	YES	63.6	66.8	67.1	11.5	YES	69.4	64.1	64.7	9.0	YES	67.0
B3	4	55.6	57.9	62.7	63.5	7.8	YES	65.8	60.6	61.8	6.2	YES	64.1	65.6	66.0	10.4	YES	68.3	63.0	63.7	8.1	YES	66.0
B3	5	55.6	57.9	63.2	63.9	8.3	YES	66.2	59.4	60.9	5.3	YES	63.2	64.1	64.7	9.0	YES	67.0	61.7	62.7	7.0	YES	65.0
B3	6	55.6	57.9	63.5	64.2	8.5	YES	66.5	60.1	61.4	5.8	YES	63.7	61.8	62.7	7.1	YES	65.0	56.4	59.0	3.4		61.3
B3	7	56.3	58.6	63.8	64.5	8.2	YES	66.8	60.7	62.0	5.7	YES	64.3	61.9	63.0	6.7	YES	65.3	56.4	59.4	3.1		61.7
B3	8	56.9	59.2	63.7	64.5	7.6	YES	66.8	60.5	62.1	5.2	YES	64.4	62.1	63.2	6.3	YES	65.5	57.2	60.1	3.2		62.4
B3	9	57.3	59.6	63.3	64.3	7.0	YES	66.6	59.7	61.7	4.4		64.0	62.1	63.3	6.0	YES	65.6	57.1	60.2	2.9		62.5
B3	10	57.8	60.1	63.2	64.3	6.5	YES	66.6	59.5	61.7	3.9		64.0	62.1	63.5	5.7	YES	65.8	57.1	60.5	2.7		62.8
B3	11	58.3	60.6	63.1	64.3	6.0	YES	66.6	59.4	61.9	3.6		64.2	62.0	63.5	5.2	YES	65.8	57.1	60.8	2.5		63.1
B3	12	58.7	61.0	63.0	64.4	5.7	YES	66.7	59.4	62.1	3.4		64.4	62.3	63.9	5.2	YES	66.2	57.0	60.9	2.2		63.2
B3	13	59.1	61.4	62.9	64.4	5.3	YES	66.7	59.2	62.2	3.1		64.5	62.2	63.9	4.8		66.2	57.0	61.2	2.1		63.5
B3	14	59.3	61.6	62.8	64.4	5.1	YES	66.7	59.1	62.2	2.9		64.5	62.2	64.0	4.7		66.3	56.9	61.3	2.0		63.6
B3	15	59.4	61.7	62.7	64.4	5.0		66.7	59.0	62.2	2.8		64.5	62.1	64.0	4.6		66.3	56.8	61.3	1.9		63.6
B3	16	59.5	61.8	62.6	64.3	4.8		66.6	59.0	62.3	2.8		64.6	62.1	64.0	4.5		66.3	56.9	61.4	1.9		63.7
B4	1	55.6	57.9	56.1	58.9	3.2		61.2	49.1	56.5	0.9		58.8	62.5	63.3	7.7	YES	65.6	60.4	61.7	6.0	YES	64.0
B4	2	55.6	57.9	56.2	58.9	3.3		61.2	49.5	56.6	0.9		58.9	61.3	62.3	6.7	YES	64.6	58.5	60.3	4.7		62.6
B4	3	55.6	57.9	57.1	59.4	3.8		61.7	52.5	57.4	1.7		59.7	61.2	62.3	6.6	YES	64.6	58.4	60.2	4.6		62.5
B4	4	55.6	57.9	57.2	59.5	3.9		61.8	52.8	57.5	1.8		59.8	61.6	62.6	6.9	YES	64.9	59.2	60.8	5.1	YES	63.1
B4	5	55.6	57.9	57.4	59.6	4.0		61.9	53.4	57.7	2.0		60.0	61.9	62.8	7.2	YES	65.1	59.6	61.1	5.4	YES	63.4
B4	6	55.6	57.9	57.9	59.9	4.3		62.2	54.4	58.1	2.4		60.4	61.9	62.8	7.2	YES	65.1	59.7	61.1	5.5	YES	63.4
B4	7	55.6	57.9	58.3	60.2	4.5		62.5	55.2	58.4	2.8		60.7	61.8	62.7	7.1	YES	65.0	59.9	61.3	5.6	YES	63.6
B4	8	56.0	58.3	62.0	63.0	7.0	YES	65.3	55.7	58.9	2.9		61.2	61.8	62.8	6.8	YES	65.1	59.9	61.4	5.4	YES	63.7
B4	9	56.5	58.8	62.1	63.2	6.7	YES	65.5	56.2	59.4	2.9		61.7	61.8	62.9	6.4	YES	65.2	60.0	61.6	5.1	YES	63.9
B4	10	57.0	59.3	62.8	63.8	6.8	YES	66.1	58.6	60.9	3.9		63.2	61.9	63.1	6.1	YES	65.4	60.0	61.8	4.8		64.1
B4	11	57.6	59.9	62.9	64.0	6.4	YES	66.3	58.9	61.3	3.7		63.6	61.5	63.0	5.4	YES	65.3	59.4	61.6	4.0		63.9
B4	12	58.0	60.3	63.1	64.3	6.3	YES	66.6	59.4	61.8	3.8		64.1	61.7	63.2	5.2	YES	65.5	59.5	61.8	3.8		64.1
B4	13	58.5	60.8	63.3	64.5	6.0	YES	66.8	59.9	62.3	3.8		64.6	61.9	63.5	5.0	YES	65.8	59.8	62.2	3.7		64.5
B4	14	58.8	61.1	63.2	64.5	5.7	YES	66.8	59.8	62.3	3.5		64.6	61.9	63.6	4.8		65.9	59.8	62.3	3.5		64.6
B4	15	59.0	61.3	63.2	64.6	5.6	YES	66.9	59.8	62.4	3.4		64.7	62.9	64.4	5.4	YES	66.7	59.9	62.5	3.5		64.8
B4	16	59.1	61.4	63.1	64.6	5.5	YES	66.9	59.7	62.4	3.3		64.7	62.8	64.3	5.2	YES	66.6	60.0	62.6	3.5		64.9
B5	1	55.6	57.9	54.3	58.0	2.4		60.3	53.7	57.8	2.2		60.1	58.4	60.2	4.6		62.5	58.2	60.1	4.5		62.4
B5	2	55.6	57.9	59.0	60.6	5.0	YES	62.9	58.8	60.5	4.9		62.8	57.9	59.9	4.3		62.2	57.7	59.8	4.2		62.1
B5	3	55.6	57.9	56.3	59.0	3.4		61.3	55.9	58.8	3.1		61.1	58.0	60.0	4.4		62.3	57.7	59.8	4.2		62.1
B5	4	55.6	57.9	58.4	60.2	4.6		62.5	58.2	60.1	4.5		62.4	58.0	60.0	4.4		62.3	57.8	59.9	4.2		62.2
B5	5	56.2	58.5	59.4	61.1	4.9		63.4	59.2	61.0	4.8		63.3	58.1	60.3	4.1		62.6	57.9	60.1	3.9		62.4
B5	6	56.0	58.3	61.9	62.9	6.9	YES	65.2	61.8	62.8	6.8	YES	65.1	57.2	59.7	3.7		62.0	56.9	59.5	3.5		61.8
B5	7	57.0	59.3	61.0	62.5	5.5	YES	64.8	60.4	62.0	5.0	YES	64.3	57.8	60.4	3.4		62.7	57.6	60.3	3.3		62.6
B5	8	57.7	60.0	63.0	64.1	6.4	YES	66.4	61.3	62.9	5.2	YES	65.2	58.4	61.1	3.4		63.4	58.2	61.0	3.3		63.3
B5	9	58.2	60.5	64.1	65.1	6.9	YES	67.4	62.9	64.2	6.0	YES	66.5	58.4	61.3	3.1		63.6	58.2	61.2	3.0		63.5
B5	10	58.5	60.8	64.0	65.1	6.6	YES	67.4	62.8	64.2	5.7	YES	66.5	57.3	61.0	2.5		63.3	57.1	60.9	2.4		63.2
B5	11	58.8	61.1	64.1	65.2	6.4	YES	67.5	62.8	64.3	5.5	YES	66.6	57.3	61.1	2.3		63.4	57.0	61.0	2.2		63.3
B5	12	58.9	61.2	64.2	65.3	6.4	YES	67.6	63.0	64.4	5.5	YES	66.7	58.0	61.5	2.6		63.8	57.7	61.4	2.5		63.7
B5	13	58.9	61.2	64.1	65.2	6.3	YES	67.5	62.9	64.4	5.5	YES	66.7	57.5	61.3	2.4		63.6	57.2	61.1	2.2		63.4
B5	14	58.6	60.9	64.1	65.2	6.6	YES	67.5	62.9	64.3	5.7	YES	66.6	57.9	61.3	2.7		63.6	57.3	61.0	2.4		63.3
B5	15	58.3	60.6	64.0	65.0	6.7	YES	67.3	62.8	64.1	5.8	YES	66.4	58.2	61.3	3.0		63.6	57.6	61.0	2.7		63.3
B5	16	58.7	61.0	63.9	65.0	6.3	YES	67.3	62.7	64.2	5.5	YES	66.5	58.3	61.5	2.8		63.8	57.6	61.2	2.5		63.5
B6	1	55.6	57.9	56.2	58.9	3.3		61.2	55.5	58.6	2.9		60.9	60.9	62.0	6.4	YES	64.3	60.8	62.0	6.3	YES	64.3
B6	2	55.6	57.9	62.6	63.4	7.8	YES	65.7	61.1	62.2	6.6	YES	64.5	60.1	61.4	5.8	YES	63.7	59.9	61.3	5.6	YES	63.6
B6	3	55.6	57.9	62.2	63.1	7.4	YES	65.4	59.6	61.1	5.4	YES	63.4	60.1	61.4	5.8	YES	63.7	59.9	61.3	5.6	YES	63.6
B6	4	56.4	58.7	63.8	64.5	8.1	YES	66.8	61.3	62.5	6.1	YES	64.8	60.1	61.6	5.2	YES	63.9	60.0	61.6	5.2	YES	63.9
B6	5	57.2	59.5	66.8	67.3	10.1	YES	69.6	64.9	65.6	8.4	YES	67.9	60.6	62.2	5.0	YES	64.5	60.5	62.2	5.0		64.5
B6	6	57.3	59.6	67.6	68.0	10.7	YES	70.3	65.2	65.9	8.6	YES	68.2	60.7	62.3	5.0	YES	64.6	60.6	62.3	5.0		64.6
B6	7	57.8	60.1	67.5	67.9	10.1	YES	70.2	64.9	65.7	7.9	YES	68.0	60.7	62.5	4.7		64.8	60.6	62.4	4.6		64.7
B6	8	58.6	60.9	68.1	68.6	10.0	YES	70.9	65.3	66.1	7.5	YES	68.4	61.2	63.1	4.5		65.4	61.0	63.0	4.4		65.3
B6	9	59.3	61.6	69.6	70.0	10.7	YES	72.3	65.4	66.4	7.1	YES	68.7	61.1	63.3	4.0		65.6	61.0	63.2	3.9		65.5
B6	10	59.7	62.0	69.8	70.2	10.5	YES	72.5	65.5	66.5	6.8	YES	68.8	61.3	63.6	3.9		65.9	61.2	63.5	3.8		65.8
B6	11	60.0	62.3	70.1	70.5	10.5	YES	72.8	65.5	66.6	6.6	YES	68.9	61.4	63.8	3.8		66.1	61.3	63.7	3.7		66.0

CadnaA Receptor Sites	Elevation (floor)	Exterior Façade / Interior Fitout					Exterior Façade / Interior Fitout Off Hour					Interior Fitout					Interior Fitout / Site Work					Interior Fitout / Site Work Off Hour				
		Leq				L10	Leq				L10	Leq				L10	Leq				L10	Leq				L10
		Const	Total	Change	Exceed?	Total	Const	Total	Change	Exceed?	Total	Const	Total	Change	Exceed?	Total	Const	Total	Change	Exceed?	Total	Const	Total	Change	Exceed?	Total
A1	1	63.9	64.5	8.6	YES	67.1	57.5	59.8	3.9		62.4	49.6	56.8	0.9		59.4	62.4	63.3	7.4	YES	65.9	57	59.5	3.6		62.1
A1	2	64.7	65.4	8.5	YES	68.0	60.0	61.7	4.8		64.3	53.5	58.5	1.6		61.1	63.5	64.4	7.5	YES	67.0	59.3	61.3	4.4		63.9
A1	3	65.4	66.2	7.9	YES	68.8	61.0	62.9	4.6		65.5	54.5	59.8	1.5		62.4	64.3	65.3	7.0	YES	67.9	59.9	62.2	3.9		64.8
A2	1	62.6	63.4	7.8	YES	65.7	55.3	58.5	2.8		60.8	47.8	56.3	0.7		58.6	54.6	58.2	2.5		60.5	53.1	57.6	1.9		59.9
A2	2	63.2	63.9	8.3	YES	66.2	57.1	59.4	3.8		61.7	50.5	56.8	1.2		59.1	57.8	59.9	4.2		62.2	55.9	58.8	3.1		61.1
A2	3	63.7	64.4	8.5	YES	66.7	57.8	60.0	4.1		62.3	51.6	57.3	1.4		59.6	58.7	60.5	4.6		62.8	56.8	59.4	3.5		61.7
A2	4	64.0	64.8	8.0	YES	67.1	58.3	60.6	3.8		62.9	51.8	58.0	1.2		60.3	58.5	60.7	3.9		63.0	56.7	59.8	3.0		62.1
A3	1	61.5	62.5	6.9	YES	64.8	53.7	57.8	2.2		60.1	43.3	55.9	0.2		58.2	50.2	56.7	1.1		59.0	49.2	56.5	0.9		58.8
A3	2	61.8	62.7	7.1	YES	65.0	54.1	57.9	2.3		60.2	44.5	56.0	0.3		58.3	50.9	56.9	1.3		59.2	50.3	56.7	1.1		59.0
A3	3	62.1	63.0	7.4	YES	65.3	54.7	58.2	2.6		60.5	46.0	56.1	0.4		58.4	51.7	57.1	1.5		59.4	51	56.9	1.3		59.2
A3	4	62.5	63.3	7.7	YES	65.6	55.7	58.7	3.0		61.0	46.8	56.2	0.5		58.5	52.0	57.2	1.6		59.5	51.3	57.0	1.4		59.3
A4	1	60.4	61.7	6.0	YES	64.0	52.0	57.2	1.6		59.5	39.6	55.7	0.1		58.0	48.3	56.4	0.7		58.7	47.8	56.3	0.7		58.6
A4	2	60.5	61.7	6.1	YES	64.0	52.1	57.2	1.6		59.5	40.0	55.8	0.1		58.1	48.1	56.3	0.7		58.6	47.6	56.3	0.6		58.6
A4	3	60.7	61.9	6.2	YES	64.2	52.3	57.3	1.7		59.6	40.3	55.8	0.1		58.1	48.3	56.4	0.7		58.7	48.1	56.3	0.7		58.6
A4	4	60.9	62.0	6.4	YES	64.3	52.8	57.5	1.8		59.8	41.3	55.8	0.2		58.1	48.8	56.5	0.8		58.8	48.3	56.4	0.7		58.7
A5	1	63.5	65.9	3.7	YES	68.5	62.8	65.5	3.3	YES	68.1	56.2	63.2	1.0		65.8	67.0	68.2	6.0	YES	70.8	64.9	66.8	4.6	YES	69.4
A5	2	65.4	67.7	3.8	YES	70.3	64.9	67.4	3.5	YES	70.0	58.6	65.0	1.1		67.6	68.3	69.6	5.7	YES	72.2	67.2	68.9	5.0	YES	71.5
A5	3	69.0	70.3	5.8	YES	72.9	68.3	69.8	5.3	YES	72.4	60.4	65.9	1.4		68.5	71.6	72.4	7.9	YES	75.0	71.1	72.0	7.5	YES	74.6
B1	1	56.5	59.3	3.2		61.6	56.2	59.2	3.1		61.5	42.5	56.3	0.2		58.6	55.3	58.7	2.6		61.0	52.5	57.7	1.6		60.0
B1	2	58.1	60.5	3.7		62.8	57.9	60.4	3.6		62.7	43.0	57.0	0.2		59.3	58.7	60.9	4.1		63.2	56.2	59.5	2.7		61.8
B1	3	58.5	61.0	3.5		63.3	58.3	60.9	3.4		63.2	43.2	57.7	0.2		60.0	59.2	61.4	3.9		63.7	56.7	60.1	2.6		62.4
B1	4	58.8	61.5	3.3		63.8	58.7	61.5	3.3		63.8	43.5	58.3	0.1		60.6	59.5	61.9	3.7		64.2	57.2	60.7	2.5		63.0
B1	5	59.1	62.0	3.2		64.3	58.9	61.9	3.1		64.2	43.9	58.9	0.1		61.2	59.8	62.3	3.5		64.6	57.6	61.3	2.5		63.6
B1	6	59.3	62.4	3.0		64.7	59.1	62.3	2.9		64.6	44.2	59.5	0.1		61.8	60.0	62.7	3.3		65.0	58.1	61.8	2.4		64.1
B1	7	59.5	62.7	2.8		65.0	59.4	62.7	2.8		65.0	44.6	60.0	0.1		62.3	60.2	63.1	3.2		65.4	58.4	62.2	2.3		64.5
B1	8	59.9	63.2	2.8		65.5	59.8	63.1	2.7		65.4	44.8	60.5	0.1		62.8	60.4	63.4	3.0		65.7	58.7	62.6	2.2		64.9
B1	9	60.6	63.8	2.9		66.1	60.5	63.7	2.8		66.0	45.1	61.0	0.1		63.3	60.8	63.9	3.0		66.2	60.7	63.8	2.9		66.1
B1	10	61.3	64.3	3.1		66.6	61.1	64.2	3.0		66.5	45.3	61.3	0.1		63.6	61.4	64.3	3.1		66.6	63.7	65.6	4.4	YES	67.9
B1	11	61.5	64.4	3.1		66.7	61.4	64.4	3.1		66.7	45.5	61.4	0.1		63.7	62.7	65.1	3.8	YES	67.4	59.3	63.4	2.1		65.7
B1	12	61.9	64.6	3.3		66.9	61.8	64.6	3.3		66.9	45.5	61.4	0.1		63.7	62.7	65.1	3.8	YES	67.4	59.6	63.5	2.2		65.8
B1	13	62.1	64.8	3.4		67.1	62.0	64.7	3.3		67.0	45.6	61.5	0.1		63.8	62.8	65.2	3.8	YES	67.5	60	63.8	2.4		66.1
B1	14	62.0	64.7	3.3		67.0	61.9	64.7	3.3		67.0	45.5	61.5	0.1		63.8	62.9	65.2	3.8	YES	67.5	62	64.7	3.3		67.0
B1	15	62.0	64.7	3.4		67.0	61.8	64.6	3.3		66.9	45.5	61.4	0.1		63.7	63.2	65.4	4.1	YES	67.7	62.8	65.1	3.8	YES	67.4
B1	16	61.9	64.6	3.3		66.9	61.8	64.6	3.3		66.9	45.4	61.4	0.1		63.7	63.3	65.4	4.1	YES	67.7	62.2	64.8	3.5		67.1
B2	1	55.5	58.6	2.9		60.9	54.0	57.9	2.3		60.2	42.7	55.8	0.2		58.1	50.0	56.7	1.0		59.0	49.4	56.6	0.9		58.9
B2	2	56.8	59.3	3.6		61.6	55.7	58.7	3.0		61.0	43.5	55.9	0.3		58.2	51.4	57.0	1.4		59.3	50.9	56.9	1.3		59.2
B2	3	57.3	59.6	3.9		61.9	56.3	59.0	3.4		61.3	45.6	56.0	0.4		58.3	51.9	57.2	1.5		59.5	51.2	57.0	1.3		59.3
B2	4	57.5	59.9	3.8		62.2	56.5	59.3	3.2		61.6	46.2	56.5	0.4		58.8	52.0	57.5	1.4		59.8	49.2	56.9	0.8		59.2
B2	5	56.1	59.8	2.4		62.1	54.5	59.2	1.8		61.5	44.9	57.6	0.2		59.9	50.1	58.1	0.7		60.4	49.3	58.0	0.6		60.3
B2	6	56.3	60.4	2.2		62.7	54.9	59.9	1.7		62.2	47.1	58.5	0.3		60.8	50.3	58.9	0.7		61.2	49.4	58.7	0.5		61.0
B2	7	56.6	61.1	1.9		63.4	55.2	60.7	1.5		63.0	47.6	59.5	0.3		61.8	50.4	59.7	0.5		62.0	49.6	59.7	0.5		62.0
B2	8	56.8	61.5	1.8		63.8	55.4	61.1	1.4		63.4	47.9	60.0	0.3		62.3	50.6	60.2	0.5		62.5	49.7	60.1	0.4		62.4
B2	9	57.1	61.9	1.7		64.2	55.7	61.5	1.3		63.8	48.3	60.5	0.3		62.8	50.9	60.7	0.5		63.0	49.8	60.6	0.4		62.9
B2	10	57.3	62.2	1.7		64.5	55.9	61.8	1.3		64.1	48.3	60.8	0.3		63.1	51.1	61.0	0.5		63.3	49.8	60.9	0.4		63.2
B2	11	57.4	62.4	1.6		64.7	56.0	62.0	1.2		64.3	48.7	61.1	0.3		63.4	51.4	61.3	0.5		63.6	49.9	61.1	0.3		63.4
B2	12	57.5	62.5	1.6		64.8	56.0	62.1	1.2		64.4	49.4	61.2	0.3		63.5	51.6	61.4	0.5		63.7	49.9	61.2	0.3		63.5
B2	13	57.5	62.6	1.6		64.9	55.9	62.2	1.2		64.5	51.3	61.4	0.4		63.7	51.6	61.5	0.5		63.8	49.9	61.3	0.3		63.6
B2	14	57.4	62.6	1.6		64.9	55.8	62.1	1.1		64.4	51.3	61.4	0.4		63.7	51.6	61.5	0.5		63.8	49.9	61.3	0.3		63.6
B2	15	57.4	62.6	1.5		64.9	55.7	62.2	1.1		64.5	51.3	61.5	0.4		63.8	51.6	61.6	0.5		63.9	49.8	61.4	0.3		63.7
B2	16	57.4	62.6	1.5		64.9	55.5	62.2	1.1		64.5	51.2	61.5	0.4		63.8	51.5	61.6	0.5		63.9	49.8	61.4	0.3		63.7
B3	1	53.2	57.6	2.0		59.9	49.8	56.6	1.0		58.9	44.8	56.0	0.3		58.3	47.1	56.2	0.6		58.5	46	56.1	0.4		58.4
B3	2	53.8	57.8	2.2		60.1	50.7	56.8	1.2		59.1	46.7	56.2	0.5		58.5	47.7	56.3	0.6		58.6	47	56.2	0.6		58.5
B3	3	54.4	58.1	2.4		60.4	51.9	57.2	1.5		59.5	47.2	56.2	0.6		58.5	48.9	56.5	0.8		58.8	47.2	56.2	0.6		58.5
B3	4	54.6	58.2	2.5		60.5	52.1	57.2	1.6		59.5	47.2	56.2	0.6		58.5	49.1	56.5	0.9		58.8	47.4	56.2	0.6		58.5
B3	5	53.0	57.5	1.9		59.8	48.5	56.4	0.8		58.7	39.5	55.7	0.1		58.0	46.6	56.1	0.5		58.4	45.9	56.1	0.4		58.4
B3	6	53.2	57.6	2.0		59.9	48.7	56.4	0.8		58.7	40.1	55.8	0.1		58.1	46.7	56.2	0.5		58.5	46	56.1	0.4		58.4
B3	7	53.3	58.1	1.8		60.4	48.8	57.0	0.7		59.3	40.6	56.4	0.1		58.7	46.8	56.8	0.5		59.1	46.2	56.7	0.4		59.0
B3	8	53.4	58.5	1.6		60.8	49.0	57.6	0.7		59.9	41.2	57.0	0.1		59.3	46.9	57.3	0.4		59.6	46.3	57.3	0.4		59.6
B3	9	53.6	58.8	1.5		61.1	49.1	57.9	0.6		60.2	41.5	57.4	0.1		59.7	47.0	57.7	0.4		60.0	46.3	57.6	0.3		59.9
B3	10	53.7	59.2	1.4		61.5	49.2	58.4	0.6		60.7	42.0	57.9	0.1		60.2	47.1	58.2	0.4		60.5	46.5	58.1	0.3		60.4
B3	11	54.7	59.9	1.6		62.2	51.6	59.1	0.8		61.4	43.1	58.4	0.1		60.7	47.4	58.6	0.3		60.9	46.9	58.6	0.3		60.9
B3	12	54.8	60.2	1.5		62.5	51.6	59.5	0.8		61.8	43.5	58.8	0.1		61.1	47.5	59.0	0.3		61.3	47	59.0	0.3		61.3
B3	13	54.9	60.5	1.4		62.8	51.7	59.8	0.7		62.1	43.9	59.2	0.1		61.5	47.7	59.4	0.3		61.7	47.1	59.4	0.3		61.7
B3	14	55.0	60.7	1.4		63.0	51.7	60.0	0.7		62.3	44.0	59.4	0.1		61.7	47.7	59.6	0.3		61.9	47.2	59.6	0.3		61.9
B3	15	55.0	60.7	1.3		63.0	51.6	60.1	0.7		62.4	44.0	59.5	0.1		61.8	47.7	59.7	0.3		62.0	47.2	59.7	0.3		62.0
B3	16	55.0	60.8	1.3		63.1	51.6	60.2	0.7		62.5	44.0	59.6	0.1		61.9	47.8	59.8	0.3		62.1	47.3	59.8	0.3		62.1
B4	1	53.5	57.7	2.1		60.0	47.4	56.2	0.6		58.5	36.7	55.7	0.1		58.0	44.2	55.9	0.3		58.2	43.6	55.9	0.3		58.2
B4	2	53.6	57.7	2.1		60.0	47.5	56.3	0.6		58.6	37.1	55.7	0.1		58.0	44.5	56.0	0.3		58.3	43.5	55.9	0.3		58.2
B4	3	53.7	57.8	2.2		60.1	47.6	56.3	0.6		58.6	37.4	55.7	0.1		58.0	44.6	56.0	0.3		58.3	43.9	55.9	0.3		58.2
B4	4	53.8	57.8	2.2		60.1	47.7	56.3	0.6		58.6	37.7	55.7	0.1		58.0	44.6	56.0	0.3		58.3	43.9	55.9	0.3		58.2
B4	5	54.0	57.9	2.3		60.2	47.8	56.3	0.7		58.6	38.2	55.7	0.1		58.0	44.7	56.0	0.3		58.3	44	55.9	0.3		58.2
B4	6	54.1	57.9	2.3		60.2	47.9	56.3	0.7		58.6	38.7	55.7	0.1		58.0	44.8	56.0	0.3		58.3	44.2	55.9	0.3		58.2
B4	7	54.2	58.0	2.4		60.3	48.0	56.3	0.7		58.6	39.2	55.7	0.1		58.0	44.9	56.0	0.4		58.3	44.3	55.9	0.3		58.2
B4	8	54.2	58.2	2.2		60.5	48.0	56.6	0.6		58.9	39.5	56.1	0.1		58.4	45.0	56.3	0.3		58.6	44.4	56.3	0.3		58.6
B4	9	54.3	58.5	2.0		60.8	48.1	57.1	0.6		59.4	39.9	56.6	0.1		58.9	45.1	56.8	0.3		59.1	44.5	56.8	0.3		59.1
B4	10	54.4	58.9	1.9		61.2	48.2	57.5	0.5		59.8	40.3	57.1	0.1		59.4	45.2	57.3	0.3		59.6	44.6	57.2	0.2		59.5
B4	11	54.5	59.3	1.7		61.6	48.2	58.1	0.5		60.4	40.6	57.7	0.1		60.0	45.3	57.8	0.2		60.1	44.7	57.8	0.2		60.1
B4	12	54.6	59.6	1.6		61.9	48.3	58.4	0.4		60.7	40.9	58.1	0.1		60.4	45.4	58.2	0.2		60.5	44.8	58.2	0.2		60.5
B4	13	54.7	60.0	1.5		62.3	48.3	58.9	0.4		61.2	41.2	58.6	0.1		60.9	45.4	58.7	0.2		61.0	44.9	58.7	0.2		61.0
B4	14	54.7	60.2	1.4		62.5	48.4	59.2	0.4		61.5	41.6	58.9	0.1		61.2	45.6	59.0	0.2		61.3	45	59.0	0.2		61.3
B4	15	54.8	60.4	1.4		62.7	48.4	59.4	0.4		61.7	41.9	59.1	0.1		61.4	45.7	59.2	0.2		61.5	45.2	59.2	0.2		61.5
B4	16	54.9	60.5	1.4		62.8	48.4	59.5	0.4		61.8	41.9	59.2	0.1		61.5	45.7	59.3	0.2		61.6	45.2	59.3	0.2		61.6
B5	1	47.6	56.3	0.6		58.6	47.5	56.3	0.6		58.6	37.1	55.7	0.1		58.0	44.9	56.0	0.4		58.3	44.4	55.9	0.3		58.2
B5	2	49.3	56.5	0.9		58.8	49.2	56.5	0.9		58.8	37.5	55.7	0.1		58.0	52.9	57.5	1.9		59.8	45	56.0	0.4		58.3
B5	3	49.3	56.5	0.9		58.8	49.3	56.5	0.9		58.8	37.6	55.7	0.1		58.0	52.9	57.5	1.9		59.8	52.8	57.5	1.8		59.8
B5	4	49.4	56.6	0.9		58.9	49.3	56.5	0.9		58.8	37.7	55.7	0.1		58.0	52.9	57.5	1.9		59.8	52.8	57.5	1.8		59.8
B5	5	49.4	57.0	0.8		59.3	49.3	57.0	0.8		59.3	37.8	56.3	0.1		58.6	52.9	57.9	1.7		60.2	52.8	57.8	1.6		60.1
B5	6	49.4	56.9	0.9		59.2	49.4	56.9	0.9		59.2	37.9	56.1	0.1		58.4	52.9	57.7	1.7		60.0	52.8	57.7	1.7		60.0
B5	7	49.5	57.7	0.7		60.0	49.4	57.7	0.7		60.0	38.0	57.1	0.1		59.4	52.9	58.4	1.4		60.7	52.8	58.4	1.4		60.7
B5	8	49.5	58.3	0.6		60.6	49.4	58.3	0.6		60.6	38.1	57.7	0.0		60.0	52.9	58.9	1.2		61.2	52.8	58.9	1.2		61.2
B5	9	49.5	58.7	0.5		61.0	49.4	58.7	0.5		61.0	38.2	58.2	0.0		60.5	52.8	59.3	1.1		61.6	52.8	59.3	1.1		61.6
B5	10	49.5	59.0	0.5		61.3	49.5	59.0	0.5		61.3	38.3	58.5	0.0		60.8	52.8	59.5	1.0		61.8	52.7	59.5	1.0		61.8
B5	11	49.6	59.3	0.5		61.6	49.5	59.3	0.5		61.6	38.4	58.8	0.0		61.1	52.8	59.8	1.0		62.1	52.7	59.8	1.0		62.1
B5	12	49.6	59.4	0.5		61.7	49.5	59.4	0.5		61.7	38.6	58.9	0.0		61.2	52.8	59.9	1.0		62.2	52.7	59.8	0.9		62.1
B5	13	49.6	59.4	0.5		61.7	49.5	59.4	0.5		61.7	38.7	58.9	0.0		61.2	52.7	59.8	0.9		62.1	52.7	59.8	0.9		62.1
B5	14	49.5	59.1	0.5		61.4	49.5	59.1	0.5		61.4	38.7	58.6	0.0		60.9	52.7	59.6	1.0		61.9	52.6	59.6	1.0		61.9
B5	15	49.5	58.8	0.5		61.1	49.4	58.8	0.5		61.1	38.7	58.3	0.0		60.6	52.7	59.4	1.1		61.7	52.6	59.3	1.0		61.6
B5	16	49.5	59.2	0.5		61.5	49.4	59.2	0.5		61.5	38.7	58.7	0.0		61.0	52.6	59.7	1.0		62.0	52.6	59.7	1.0		62.0
B6	1	54.0	57.9	2.3		60.2	53.9	57.9	2.2		60.2	37.4	55.7	0.1		58.0	57.4	59.6	4.0		61.9	51.5	57.1	1.4		59.4
B6	2	54.7	58.2	2.6		60.5	54.7	58.2	2.6		60.5	37.9	55.7	0.1		58.0	58.6	60.4	4.7		62.7	56.4	59.0	3.4		61.3
B6	3	55.0	58.3	2.7		60.6	55.0	58.3	2.7		60.6	38.0	55.7	0.1		58.0	58.9	60.6	4.9		62.9	56.8	59.3	3.6		61.6
B6	4	55.2	58.9	2.5		61.2	55.2	58.9	2.5		61.2	38.1	56.5	0.1		58.8	59.2	61.0	4.6		63.3	57.2	59.8	3.4		62.1
B6	5	55.4	59.4	2.2		61.7	55.3	59.4	2.2		61.7	38.3	57.3	0.1		59.6	59.4	61.4	4.2		63.7	57.6	60.4	3.2		62.7
B6	6	55.5	59.5	2.2		61.8	55.4	59.5	2.2		61.8	38.4	57.4	0.1		59.7	59.6	61.6	4.3		63.9	57.9	60.6	3.3		62.9
B6	7	55.7	59.9	2.1		62.2	55.6	59.8	2.0		62.1	38.6	57.9	0.1		60.2	59.8	61.9	4.1		64.2	58.2	61.0	3.2		63.3
B6	8	56.1	60.5	1.9		62.8	56.1	60.5	1.9		62.8	38.7	58.6	0.0		60.9	60.0	62.4	3.8		64.7	58.4	61.5	2.9		63.8
B6	9	56.9	61.3	2.0		63.6	56.9	61.3	2.0		63.6	38.9	59.3	0.0		61.6	60.4	62.9	3.6		65.2	63.1	64.6	5.3	YES	66.9
B6	10	57.6	61.8	2.1		64.1	57.6	61.8	2.1		64.1	39.0	59.7	0.0		62.0	61.3	63.6	3.9		65.9	58.8	62.3	2.6		64.6
B6	11	58.5	62.3	2.3		64.6	58.4	62.3	2.3		64.6	39.2	60.0	0.0		62.3	61.8	64.0	4.0		66.3	59	62.5	2.5		64.8

B6	12	60.2	62.5	70.0	70.4	10.2	YES	72.7	65.4	66.5	6.3	YES	68.8	61.5	63.9	3.7		66.2	61.3	63.8	3.6		66.1	59.1	62.7	2.5		65.0	59.1	62.7	2.5		65.0	40.4	60.2	0.0		62.5	61.9	64.1	3.9		66.4	59.4	62.8	2.6		65.1
B6	13	60.2	62.5	69.9	70.3	10.1	YES	72.6	65.3	66.5	6.3	YES	68.8	61.5	63.9	3.7		66.2	61.3	63.8	3.6		66.1	59.1	62.7	2.5		65.0	59.0	62.7	2.5		65.0	40.4	60.2	0.0		62.5	62.0	64.2	4.0		66.5	61.2	63.7	3.5		66.0
B6	14	59.9	62.2	69.8	70.2	10.3	YES	72.5	65.2	66.3	6.4	YES	68.6	61.4	63.7	3.8		66.0	61.2	63.6	3.7		65.9	59.0	62.5	2.6		64.8	59.0	62.5	2.6		64.8	40.4	59.9	0.0		62.2	62.3	64.3	4.4		66.6	62	64.1	4.2		66.4
B6	15	59.7	62.0	69.7	70.1	10.4	YES	72.4	65.0	66.1	6.4	YES	68.4	61.3	63.6	3.9		65.9	61.1	63.5	3.8		65.8	59.0	62.4	2.7		64.7	59.0	62.4	2.7		64.7	40.3	59.7	0.0		62.0	62.5	64.3	4.6		66.6	61.3	63.6	3.9		65.9
B6	16	59.5	61.8	69.6	70.0	10.5	YES	72.3	64.9	66.0	6.5	YES	68.3	61.3	63.5	4.0		65.8	61.0	63.3	3.8		65.6	59.0	62.3	2.8		64.6	59.0	62.3	2.8		64.6	40.3	59.6	0.1		61.9	62.9	64.5	5.0	YES	66.8	62.3	64.1	4.6		66.4
B7	1	55.6	57.9	64.9	65.4	9.8	YES	67.7	62.5	63.3	7.7	YES	65.6	73.3	73.4	17.7	YES	75.7	70.6	70.7	15.1	YES	73.0	55.1	58.4	2.8		60.7	55.1	58.4	2.8		60.7	41.2	55.8	0.2		58.1	56.1	58.9	3.2		61.2	53	57.5	1.9		59.8
B7	2	56.0	58.3	69.0	69.2	13.2	YES	71.5	67.6	67.9	11.9	YES	70.2	72.7	72.8	16.8	YES	75.1	70.1	70.3	14.3	YES	72.6	57.0	59.5	3.5		61.8	56.9	59.5	3.5		61.8	41.7	56.2	0.2		58.5	59.7	61.2	5.2	YES	63.5	57.4	59.8	3.8		62.1
B7	3	56.9	59.2	76.1	76.2	19.3	YES	78.5	71.6	71.7	14.8	YES	74.0	73.1	73.2	16.3	YES	75.5	70.8	71.0	14.1	YES	73.3	57.4	60.2	3.3		62.5	57.3	60.1	3.2		62.4	41.9	57.0	0.1		59.3	60.2	61.9	5.0		64.2	57.8	60.4	3.5		62.7
B7	4	57.6	59.9	76.6	76.7	19.1	YES	79.0	72.9	73.0	15.4	YES	75.3	73.1	73.2	15.6	YES	75.5	70.7	70.9	13.3	YES	73.2	57.5	60.6	3.0		62.9	57.5	60.6	3.0		62.9	41.9	57.7	0.1		60.0	60.5	62.3	4.7		64.6	58.3	61.0	3.4		63.3
B7	5	58.4	60.7	76.8	76.9	18.5	YES	79.2	73.5	73.6	15.2	YES	75.9	73.0	73.1	14.7	YES	75.4	70.7	70.9	12.5	YES	73.2	57.8	61.1	2.7		63.4	57.7	61.1	2.7		63.4	42.1	58.5	0.1		60.8	60.8	62.8	4.4		65.1	58.8	61.6	3.2		63.9
B7	6	58.6	60.9	77.1	77.2	18.6	YES	79.5	74.1	74.2	15.6	YES	76.5	72.8	73.0	14.4	YES	75.3	70.4	70.7	12.1	YES	73.0	57.9	61.3	2.7		63.6	57.9	61.3	2.7		63.6	42.3	58.7	0.1		61.0	61.0	63.0	4.4		65.3	59.2	61.9	3.3		64.2
B7	7	59.1	61.4	77.1	77.2	18.1	YES	79.5	74.2	74.3	15.2	YES	76.6	72.9	73.1	14.0	YES	75.4	70.5	70.8	11.7	YES	73.1	58.2	61.7	2.6		64.0	58.2	61.7	2.6		64.0	42.6	59.2	0.1		61.5	61.2	63.3	4.2		65.6	59.5	62.3	3.2		64.6
B7	8	59.7	62.0	76.9	77.0	17.3	YES	79.3	74.1	74.3	14.6	YES	76.6	73.1	73.3	13.6	YES	75.6	70.6	70.9	11.2	YES	73.2	58.6	62.2	2.5		64.5	58.6	62.2	2.5		64.5	42.8	59.8	0.1		62.1	61.5	63.7	4.0		66.0	59.7	62.7	3.0		65.0
B7	9	60.1	62.4	76.8	76.9	16.8	YES	79.2	74.0	74.2	14.1	YES	76.5	73.0	73.2	13.1	YES	75.5	70.5	70.9	10.8	YES	73.2	59.5	62.8	2.7		65.1	59.4	62.8	2.7		65.1	43.0	60.2	0.1		62.5	62.1	64.2	4.1		66.5	64.4	65.8	5.7	YES	68.1
B7	10	60.4	62.7	76.7	76.8	16.4	YES	79.1	74.0	74.2	13.8	YES	76.5	73.0	73.2	12.8	YES	75.5	70.5	70.9	10.5	YES	73.2	60.0	63.2	2.8		65.5	60.0	63.2	2.8		65.5	43.1	60.5	0.1		62.8	63.2	65.0	4.6	YES	67.3	60.1	63.3	2.9		65.6
B7	11	60.6	62.9	76.6	76.7	16.1	YES	79.0	74.0	74.2	13.6	YES	76.5	73.1	73.3	12.7	YES	75.6	70.6	71.0	10.4	YES	73.3	60.7	63.7	3.1		66.0	60.7	63.7	3.1		66.0	43.3	60.7	0.1		63.0	63.4	65.2	4.6	YES	67.5	60.4	63.5	2.9		65.8
B7	12	60.7	63.0	76.4	76.5	15.8	YES	78.8	73.9	74.1	13.4	YES	76.4	73.1	73.3	12.6	YES	75.6	70.6	71.0	10.3	YES	73.3	60.9	63.8	3.1		66.1	60.9	63.8	3.1		66.1	43.4	60.8	0.1		63.1	63.5	65.3	4.6	YES	67.6	60.9	63.8	3.1		66.1
B7	13	60.8	63.1	76.2	76.3	15.5	YES	78.6	73.7	73.9	13.1	YES	76.2	73.2	73.4	12.6	YES	75.7	70.5	70.9	10.1	YES	73.2	60.9	63.9	3.1		66.2	60.9	63.9	3.1		66.2	43.4	60.9	0.1		63.2	63.7	65.5	4.7	YES	67.8	62.8	64.9	4.1		67.2
B7	14	60.7	63.0	76.1	76.2	15.5	YES	78.5	73.6	73.8	13.1	YES	76.1	73.1	73.3	12.6	YES	75.6	70.4	70.8	10.1	YES	73.1	60.9	63.8	3.1		66.1	60.9	63.8	3.1		66.1	43.4	60.8	0.1		63.1	63.9	65.6	4.9	YES	67.9	63.8	65.5	4.8	YES	67.8
B7	15	60.5	62.8	76.1	76.2	15.7	YES	78.5	73.5	73.7	13.2	YES	76.0	73.1	73.3	12.8	YES	75.6	70.3	70.7	10.2	YES	73.0	60.9	63.7	3.2		66.0	60.8	63.7	3.2		66.0	43.4	60.6	0.1		62.9	64.2	65.7	5.2	YES	68.0	62.9	64.9	4.4		67.2
B7	16	60.5	62.8	76.0	76.1	15.6	YES	78.4	73.3	73.5	13.0	YES	75.8	73.2	73.4	12.9	YES	75.7	70.3	70.7	10.2	YES	73.0	60.8	63.7	3.2		66.0	60.8	63.7	3.2		66.0	43.4	60.6	0.1		62.9	64.5	66.0	5.5	YES	68.3	63.8	65.5	5.0	YES	67.8
C1	1	62.5	65.1	68.7	69.6	7.1	YES	72.2	68.4	69.4	6.9	YES	72.0	71.8	72.3	9.8	YES	74.9	67.7	68.8	6.3	YES	71.4	67.3	68.5	6.0	YES	71.1	67.3	68.5	6.0	YES	71.1	58.1	63.8	1.3		66.4	71.9	72.4	9.9	YES	75.0	68.1	69.2	6.7	YES	71.8
C1	2	64.4	67.0	73.6	74.1	9.7	YES	76.7	73.5	74.0	9.6	YES	76.6	74.2	74.6	10.2	YES	77.2	70.6	71.5	7.1	YES	74.1	69.2	70.4	6.0	YES	73.0	69.2	70.4	6.0	YES	73.0	59.7	65.7	1.3		68.3	73.5	74.0	9.6	YES	76.6	69.9	71.0	6.6	YES	73.6
C1	3	64.9	67.5	74.5	75.0	10.1	YES	77.6	74.4	74.9	10.0	YES	77.5	76.4	76.7	11.8	YES	79.3	71.6	72.4	7.5	YES	75.0	71.1	72.0	7.1	YES	74.6	71.1	72.0	7.1	YES	74.6	63.8	67.4	2.5		70.0	74.7	75.1	10.2	YES	77.7	72.9	73.5	8.6	YES	76.1
C1	4	65.1	67.7	75.8	76.2	11.1	YES	78.8	75.4	75.8	10.7	YES	78.4	76.6	76.9	11.8	YES	79.5	73.1	73.7	8.6	YES	76.3	73.2	73.8	8.7	YES	76.4	73.2	73.8	8.7	YES	76.4	63.8	67.5	2.4		70.1	76.5	76.8	11.7	YES	79.4	72.8	73.5	8.4	YES	76.1
C1	5	65.2	67.8	75.7	76.1	10.9	YES	78.7	75.3	75.7	10.5	YES	78.3	77.0	77.3	12.1	YES	79.9	73.3	73.9	8.7	YES	76.5	73.7	74.3	9.1	YES	76.9	73.7	74.3	9.1	YES	76.9	63.8	67.6	2.4		70.2	77.2	77.5	12.3	YES	80.1	75.8	76.2	11.0	YES	78.8
C1	6	65.2	67.8	76.5	76.8	11.6	YES	79.4	76.2	76.5	11.3	YES	79.1	77.1	77.4	12.2	YES	80.0	73.8	74.4	9.2	YES	77.0	73.7	74.3	9.1	YES	76.9	73.7	74.3	9.1	YES	76.9	63.7	67.5	2.3		70.1	78.1	78.3	13.1	YES	80.9	78.2	78.4	13.2	YES	81.0
C1	7	65.0	67.6	76.9	77.2	12.2	YES	79.8	76.6	76.9	11.9	YES	79.5	77.1	77.4	12.4	YES	80.0	74.1	74.6	9.6	YES	77.2	73.9	74.4	9.4	YES	77.0	73.9	74.4	9.4	YES	77.0	63.6	67.4	2.4		70.0	78.2	78.4	13.4	YES	81.0	76.1	76.4	11.4	YES	79.0
C1	8	64.9	67.5	76.5	76.8	11.9	YES	79.4	76.2	76.5	11.6	YES	79.1	77.2	77.4	12.5	YES	80.0	74.2	74.7	9.8	YES	77.3	73.8	74.3	9.4	YES	76.9	73.8	74.3	9.4	YES	76.9	63.4	67.2	2.3		69.8	78.2	78.4	13.5	YES	81.0	76.3	76.6	11.7	YES	79.2
C1	9	64.7	67.3	76.7	77.0	12.3	YES	79.6	76.4	76.7	12.0	YES	79.3	77.1	77.3	12.6	YES	79.9	74.0	74.5	9.8	YES	77.1	73.7	74.2	9.5	YES	76.8	73.7	74.2	9.5	YES	76.8	63.3	67.1	2.4		69.7	77.8	78.0	13.3	YES	80.6	77.4	77.6	12.9	YES	80.2
C1	10	64.5	67.1	76.5	76.8	12.3	YES	79.4	76.2	76.5	12.0	YES	79.1	76.8	77.0	12.5	YES	79.6	73.9	74.4	9.9	YES	77.0	73.5	74.0	9.5	YES	76.6	73.4	73.9	9.4	YES	76.5	63.1	66.9	2.4		69.5	77.6	77.8	13.3	YES	80.4	76.8	77.0	12.5	YES	79.6
C1	11	64.3	66.9	77.3	77.5	13.2	YES	80.1	77.0	77.2	12.9	YES	79.8	76.5	76.8	12.5	YES	79.4	73.6	74.1	9.8	YES	76.7	73.2	73.7	9.4	YES	76.3	73.2	73.7	9.4	YES	76.3	63.0	66.7	2.4		69.3	77.4	77.6	13.3	YES	80.2	76.6	76.8	12.5	YES	79.4
C1	12	64.1	66.7	77.3	77.5	13.4	YES	80.1	77.1	77.3	13.2	YES	79.9	76.3	76.6	12.5	YES	79.2	73.6	74.1	10.0	YES	76.7	72.9	73.4	9.3	YES	76.0	72.9	73.4	9.3	YES	76.0	62.8	66.5	2.4		69.1	77.2	77.4	13.3	YES	80.0	76.4	76.6	12.5	YES	79.2
C1	13	63.9	66.5	76.8	77.0	13.1	YES	79.6	76.6	76.8	12.9	YES	79.4	76.2	76.4	12.5	YES	79.0	73.2	73.7	9.8	YES	76.3	72.7	73.2	9.3	YES	75.8	72.7	73.2	9.3	YES	75.8	62.6	66.3	2.4		68.9	77.0	77.2	13.3	YES	79.8	76.4	76.6	12.7	YES	79.2
C1	14	63.6	66.2	76.7	76.9	13.3	YES	79.5	76.4	76.6	13.0	YES	79.2	75.9	76.1	12.5	YES	78.7	73.2	73.7	10.1	YES	76.3	72.4	72.9	9.3	YES	75.5	72.4	72.9	9.3	YES	75.5	62.4	66.1	2.5		68.7	76.6	76.8	13.2	YES	79.4	75.9	76.1	12.5	YES	78.7
C1	15	63.4	66.0	76.5	76.7	13.3	YES	79.3	76.2	76.4	13.0	YES	79.0	75.8	76.0	12.6	YES	78.6	73.1	73.5	10.1	YES	76.1	72.1	72.6	9.2	YES	75.2	72.1	72.6	9.2	YES	75.2	62.2	65.9	2.5		68.5	76.3	76.5	13.1	YES	79.1	75.6	75.9	12.5	YES	78.5
C1	16	63.1	65.7	76.3	76.5	13.4	YES	79.1	76.0	76.2	13.1	YES	78.8	75.5	75.7	12.6	YES	78.3	73.1	73.5	10.4	YES	76.1	71.9	72.4	9.3	YES	75.0	71.9	72.4	9.3	YES	75.0	62.0	65.6	2.5		68.2	76.0	76.2	13.1	YES	78.8	75.4	75.6	12.5	YES	78.2
C2	1	61.9	64.5	70.5	71.1	9.2	YES	73.7	70.3	70.9	9.0	YES	73.5	74.9	75.1	13.2	YES	77.7	72.5	72.9	11.0	YES	75.5	68.5	69.4	7.5	YES	72.0	68.5	69.4	7.5	YES	72.0	59.3	63.8	1.9		66.4	72.8	73.1	11.2	YES	75.7	69.1	69.9	8.0	YES	72.5
C2	2	63.8	66.4	76.6	76.8	13.0	YES	79.4	76.5	76.7	12.9	YES	79.3	77.2	77.4	13.6	YES	80.0	74.7	75.0	11.2	YES	77.6	72.1	72.7	8.9	YES	75.3	72.1	72.7	8.9	YES	75.3	62.1	66.0	2.2		68.6	75.5	75.8	12.0	YES	78.4	71.6	72.3	8.5	YES	74.9
C2	3	64.4	67.0	77.4	77.6	13.2	YES	80.2	77.0	77.2	12.8	YES	79.8	78.4	78.6	14.2	YES	81.2	75.5	75.8	11.4	YES	78.4	75.1	75.5	11.1	YES	78.1	75.1	75.5	11.1	YES	78.1	65.2	67.8	3.4	YES	70.4	78.1	78.3	13.9	YES	80.9	78.1	78.3	13.9	YES	80.9
C2	4	64.6	67.2	78.9	79.1	14.5	YES	81.7	77.7	77.9	13.3	YES	80.5	78.5	78.7	14.1	YES	81.3	75.7	76.0	11.4	YES	78.6	75.4	75.7	11.1	YES	78.3	75.4	75.7	11.1	YES	78.3	65.3	68.0	3.4	YES	70.6	79.5	79.6	15.0	YES	82.2	78.5	78.7	14.1	YES	81.3
C2	5	64.8	67.4	79.1	79.3	14.5	YES	81.9	77.9	78.1	13.3	YES	80.7	78.4	78.6	13.8	YES	81.2	75.2	75.6	10.8	YES	78.2	75.9	76.2	11.4	YES	78.8	75.9	76.2	11.4	YES	78.8	65.6	68.2	3.4	YES	70.8	79.9	80.0	15.2	YES	82.6	77.8	78.0	13.2	YES	80.6
C2	6	64.7	67.3	79.5	79.6	14.9	YES	82.2	78.5	78.7	14.0	YES	81.3	78.5	78.7	14.0	YES	81.3	75.5	75.8	11.1	YES	78.4	75.6	75.9	11.2	YES	78.5	75.6	75.9	11.2	YES	78.5	65.5	68.1	3.4	YES	70.7	79.5	79.6	14.9	YES	82.2	79	79.2	14.5	YES	81.8
C2	7	64.6	67.2	79.9	80.0	15.4	YES	82.6	79.1	79.3	14.7	YES	81.9	78.5	78.7	14.1	YES	81.3	75.6	75.9	11.3	YES	78.5	75.3	75.7	11.1	YES	78.3	75.3	75.7	11.1	YES	78.3	65.4	68.0	3.4	YES	70.6	79.1	79.3	14.7	YES	81.9	78.5	78.7	14.1	YES	81.3
C2	8	64.5	67.1	80.2	80.3	15.8	YES	82.9	79.2	79.3	14.8	YES	81.9	78.5	78.7	14.2	YES	81.3	75.6	75.9	11.4	YES	78.5	75.1	75.5	11.0	YES	78.1	75.1	75.5	11.0	YES	78.1	65.2	67.9	3.4	YES	70.5	78.8	79.0	14.5	YES	81.6	78.3	78.5	14.0	YES	81.1
C2	9	64.4	67.0	79.6	79.7	15.3	YES	82.3	78.5	78.7	14.3	YES	81.3	78.5	78.7	14.3	YES	81.3	75.6	75.9	11.5	YES	78.5	74.9	75.3	10.9	YES	77.9	74.9	75.3	10.9	YES	77.9	65.0	67.7	3.3	YES	70.3	78.6	78.8	14.4	YES	81.4	77.8	78.0	13.6	YES	80.6
C2	10	64.2	66.8	79.5	79.6	15.4	YES	82.2	78.4	78.6	14.4	YES	81.2	78.4	78.6	14.4	YES	81.2	75.4	75.7	11.5	YES	78.3	74.6	75.0	10.8	YES	77.6	74.6	75.0	10.8	YES	77.6	64.8	67.5	3.3	YES	70.1	78.2	78.4	14.2	YES	81.0	77.4	77.6	13.4	YES	80.2
C2	11	64.0	66.6	79.5	79.6	15.6	YES	82.2	78.4	78.6	14.6	YES	81.2	78.2	78.4	14.4	YES	81.0	75.2	75.5	11.5	YES	78.1	74.2	74.6	10.6	YES	77.2	74.2	74.6	10.6	YES	77.2	64.6	67.3	3.3	YES	69.9	77.8	78.0	14.0	YES	80.6	77	77.2	13.2	YES	79.8
C2	12	63.9	66.5	79.5	79.6	15.7	YES	82.2	78.4	78.6	14.7	YES	81.2	77.9	78.1	14.2	YES	80.7	75.1	75.4	11.5	YES	78.0	73.9	74.3	10.4	YES	76.9	73.9	74.3	10.4	YES	76.9	64.4	67.2	3.3	YES	69.8	77.5	77.7	13.8	YES	80.3	76.6	76.8	12.9	YES	79.4
C2	13	63.7	66.3	79.4	79.5	15.8	YES	82.1	78.4	78.5	14.8	YES	81.1	77.7	77.9	14.2	YES	80.5	75.0	75.3	11.6	YES	77.9	73.6	74.0	10.3	YES	76.6	73.6	74.0	10.3	YES	76.6	64.2	67.0	3.3	YES	69.6	77.1	77.3	13.6	YES	79.9	76.2	76.4	12.7	YES	79.0
C2	14	63.5	66.1	79.1	79.2	15.7	YES	81.8	78.0	78.2	14.7	YES	80.8	77.6	77.8	14.3	YES	80.4	74.7	75.0	11.5	YES	77.6	73.3	73.7	10.2	YES	76.3	73.3	73.7	10.2	YES	76.3	63.9	66.7	3.2	YES	69.3	76.6	76.8	13.3	YES	79.4	75.8	76.0	12.5	YES	78.6
C2	15	63.3	65.9	78.9	79.0	15.7	YES	81.6	77.8	78.0	14.7	YES	80.6	77.4	77.6	14.3	YES	80.2	74.5	74.8	11.5	YES	77.4	73.1	73.5	10.2	YES	76.1	73.1	73.5	10.2	YES	76.1	63.7	66.5	3.2	YES	69.1	76.2	76.4	13.1	YES	79.0	75.9	76.1	12.8	YES	78.7
C2	16	63.0	65.6	78.8	78.9	15.9	YES	81.5	77.8	77.9	14.9	YES	80.5	77.2	77.4	14.4	YES	80.0	74.3	74.6	11.6	YES	77.2	72.8	73.2	10.2	YES	75.8	72.8	73.2	10.2	YES	75.8	63.4	66.2	3.2	YES	68.8	75.8	76.0	13.0	YES	78.6	75	75.3	12.3	YES	77.9
C3	1	57.1	59.4	67.1	67.5	10.4	YES	69.8	64.6	65.3	8.2	YES	67.6	77.2	77.2	20.1	YES	79.5	74.2	74.3	17.2	YES	76.6	63.4	64.3	7.2	YES	66.6	63.4	64.3	7.2	YES	66.6	48.0	57.6	0.5		59.9	67.5	67.9	10.8	YES	70.2	64.8	65.5	8.4	YES	67.8
C3	2	57.8	60.1	70.2	70.4	12.6	YES	72.7	68.3	68.7	10.9	YES	71.0	77.4	77.4	19.6	YES	79.7	74.6	74.7	16.9	YES	77.0	66.8	67.3	9.5	YES	69.6	66.8	67.3	9.5	YES	69.6	50.2	58.5	0.7		60.8	71.4	71.6	13.8	YES	73.9	68	68.4	10.6	YES	70.7
C3	3	58.5	60.8	72.8	73.0	14.5	YES	75.3	70.2	70.5	12.0	YES	72.8	77.4	77.5	19.0	YES	79.8	74.4	74.5	16.0	YES	76.8	68.3	68.7	10.2	YES	71.0	68.3	68.7	10.2	YES	71.0	51.9	59.4	0.9		61.7	73.1	73.2	14.7	YES	75.5	70.4	70.7	12.2	YES	73.0
C3	4	59.3	61.6	77.2	77.3	18.0	YES	79.6	73.2	73.4	14.1	YES	75.7	76.6	76.7	17.4	YES	79.0	73.8	74.0	14.7	YES	76.3	68.8	69.3	10.0	YES	71.6	68.8	69.3	10.0	YES	71.6	52.2	60.1	0.8		62.4	73.5	73.7	14.4	YES	76.0	72.3	72.5	13.2	YES	74.8
C3	5	59.9	62.2	77.7	77.8	17.9	YES	80.1	74.5	74.6	14.7	YES	76.9	76.5	76.6	16.7	YES	78.9	73.5	73.7	13.8	YES	76.0	69.1	69.6	9.7	YES	71.9	69.1	69.6	9.7	YES	71.9	52.5	60.6	0.7		62.9	74.7	74.8	14.9	YES	77.1	72.5	72.7	12.8	YES	75.0
C3	6	60.2	62.5	78.2	78.3	18.1	YES	80.6	75.0	75.1	14.9	YES	77.4	76.5	76.6	16.4	YES	78.9	73.4	73.6	13.4	YES	75.9	70.1	70.5	10.3	YES	72.8	70.1	70.5	10.3	YES	72.8	52.7	60.9	0.7		63.2	75.0	75.1	14.9	YES	77.4	74	74.2	14.0	YES	76.5
C3	7	60.5	62.8	78.0	78.1	17.6	YES	80.4	74.8	75.0	14.5	YES	77.3	76.4	76.5	16.0	YES	78.8	73.6	73.8	13.3	YES	76.1	70.6	71.0	10.5	YES	73.3	70.6	71.0	10.5	YES	73.3	52.9	61.2	0.7		63.5	75.1	75.2	14.7	YES	77.5	74.3	74.5	14.0	YES	76.8
C3	8	60.8	63.1	77.9	78.0	17.2	YES	80.3	74.8	75.0	14.2	YES	77.3	76.4	76.5	15.7	YES	78.8	73.6	73.8	13.0	YES	76.1	70.7	71.1	10.3	YES	73.4	70.7	71.1	10.3	YES	73.4	53.4	61.5	0.7		63.8	75.0	75.2	14.4	YES	77.5	74.2	74.4	13.6	YES	76.7
C3	9	60.9	63.2	78.2	78.3	17.4	YES	80.6	75.4	75.6	14.7	YES	77.9	76.6	76.7	15.8	YES	79.0	73.7	73.9	13.0	YES	76.2	70.7	71.1	10.2	YES	73.4	70.7	71.1	10.2	YES	73.4	54.3	61.8	0.9		64.1	75.0	75.2	14.3	YES	77.5	74.6	74.8	13.9	YES	77.1
C3	10	61.0	63.3	77.8	77.9	16.9	YES	80.2	74.9	75.1	14.1	YES	77.4	76.1	76.2	15.2	YES	78.5	73.4	73.6	12.6	YES	75.9	70.6	71.1	10.1	YES	73.4	70.6	71.1	10.1	YES	73.4	54.4	61.9	0.9		64.2	75.1	75.3	14.3	YES	77.6	74.6	74.8	13.8	YES	77.1
C3	11	61.0	63.3	77.7	77.8	16.8	YES	80.1	74.9	75.1	14.1	YES	77.4	76.2	76.3	15.3	YES	78.6	73.2	73.5	12.5	YES	75.8	70.6	71.1	10.1	YES	73.4	70.6	71.1	10.1	YES	73.4	54.4	61.9	0.9		64.2	75.2	75.4	14.4	YES	77.7	74.5	74.7	13.7	YES	77.0
C3	12	61.0	63.3	77.8	77.9	16.9	YES	80.2	75.1	75.3	14.3	YES	77.6	75.7	75.8	14.8	YES	78.1	73.4	73.6	12.6	YES	75.9	70.7	71.1	10.1	YES	73.4	70.7	71.1	10.1	YES	73.4	54.5	61.9	0.9		64.2	75.1	75.3	14.3	YES	77.6	74.9	75.1	14.1	YES	77.4
C3	13	61.0	63.3	77.7	77.8	16.8	YES	80.1	75.3	75.5	14.5	YES	77.8	75.7	75.8	14.8	YES	78.1	73.1	73.4	12.4	YES	75.7	70.8	71.2	10.2	YES	73.5	70.8	71.2	10.2	YES	73.5	54.5	61.9	0.9		64.2	75.0	75.2	14.2	YES	77.5	74.1	74.3	13.3	YES	76.6
C3	14	61.0	63.3	77.7	77.8	16.8	YES	80.1	75.4	75.6	14.6	YES	77.9	75.9	76.0	15.0	YES	78.3	73.0	73.3	12.3	YES	75.6	70.7	71.1	10.1	YES	73.4	70.7	71.1	10.1	YES	73.4	54.6	61.9	0.9		64.2	74.8	75.0	14.0	YES	77.3	74	74.2	13.2	YES	76.5
C3	15	61.0	63.3	77.5	77.6	16.6	YES	79.9	75.5	75.7	14.7	YES	78.0	75.8	75.9	14.9	YES	78.2	73.0	73.3	12.3	YES	75.6	70.5	71.0	10.0	YES	73.3	70.5	71.0	10.0	YES	73.3	54.6	61.9	0.9		64.2	74.7	74.9	13.9	YES	77.2	73.8	74.0	13.0	YES	76.3
C3	16	60.9	63.2	77.4	77.5	16.6	YES	79.8	75.3	75.5	14.6	YES	77.8	75.7	75.8	14.9	YES	78.1	73.0	73.3	12.4	YES	75.6	70.4	70.9	10.0	YES	73.2	70.4	70.9	10.0	YES	73.2	54.6	61.8	0.9		64.1	74.5	74.7	13.8	YES	77.0	73.8	74.0	13.1	YES	76.3
C4	1	55.6	57.9	65.3	65.7	10.1	YES	68.0	62.6	63.4	7.8	YES	65.7	76.0	76.0	20.4	YES	78.3	72.6	72.7	17.1	YES	75.0	59.1	60.7	5.1	YES	63.0	59.1	60.7	5.1	YES	63.0	47.2	56.2	0.6		58.5	63.2	63.9	8.3	YES	66.2	61.3	62.3	6.7	YES	64.6
C4	2	55.6	57.9	68.7	68.9	13.3	YES	71.2	66.7	67.0	11.4	YES	69.3	75.5	75.5	19.9	YES	77.8	72.2	72.3	16.7	YES	74.6	63.0	63.7	8.1	YES	66.0	63.0	63.7	8.1	YES	66.0	49.7	56.6	1.0		58.9	68.7	68.9	13.3	YES	71.2	66.5	66.8	11.2	YES	69.1
C4	3	56.0	58.3	70.8	70.9	14.9	YES	73.2	68.1	68.4	12.4	YES	70.7	75.5	75.5	19.5	YES	77.8	72.1	72.2	16.2	YES	74.5	64.4	65.0	9.0	YES	67.3	64.4	65.0	9.0	YES	67.3	50.2	57.0	1.0		59.3	69.4	69.6	13.6	YES	71.9	66.9	67.2	11.2	YES	69.5
C4	4	56.6	58.9	72.8	72.9	16.3	YES	75.2	69.1	69.3	12.7	YES	71.6	75.0	75.1	18.5	YES	77.4	71.8	71.9	15.3	YES	74.2	64.0	64.7	8.1	YES	67.0	64.0	64.7	8.1	YES	67.0	50.4	57.5	0.9		59.8	70.2	70.4	13.8	YES	72.7	67.7	68.0	11.4	YES	70.3
C4	5	57.2	59.5	75.3	75.4	18.2	YES	77.7	71.8	71.9	14.7	YES	74.2	74.4	74.5	17.3	YES	76.8	71.4	71.6	14.4	YES	73.9	64.2	65.0	7.8	YES	67.3	64.2	65.0	7.8	YES	67.3	50.6	58.1	0.9		60.4	70.3	70.5	13.3	YES	72.8	69.3	69.6	12.4	YES	71.9
C4	6	57.6	59.9	76.1	76.2	18.6	YES	78.5	72.8	72.9	15.3	YES	75.2	73.9	74.0	16.4	YES	76.3	70.9	71.1	13.5	YES	73.4	65.0	65.7	8.1	YES	68.0	65.0	65.7	8.1	YES	68.0	51.1	58.5	0.9		60.8	70.4	70.6	13.0	YES	72.9	69.1	69.4	11.8	YES	71.7
C4	7	58.1	60.4	76.0	76.1	18.0	YES	78.4	72.7	72.8	14.7	YES	75.1	74.2	74.3	16.2	YES	76.6	71.1	71.3	13.2	YES	73.6	65.2	66.0	7.9	YES	68.3	65.1	65.9	7.8	YES	68.2	52.4	59.1	1.0		61.4	70.3	70.6	12.5	YES	72.9	69.9	70.2	12.1	YES	72.5
C4	8	58.5	60.8	76.2	76.3	17.8	YES	78.6	73.2	73.3	14.8	YES	75.6	74.4	74.5	16.0	YES	76.8	71.4	71.6	13.1	YES	73.9	65.6	66.4	7.9	YES	68.7	65.6	66.4	7.9	YES	68.7	54.0	59.8	1.3		62.1	70.4	70.7	12.2	YES	73.0	70	70.3	11.8	YES	72.6
C4	9	58.8	61.1	76.1	76.2	17.4	YES	78.5	73.2	73.4	14.6	YES	75.7	74.6	74.7	15.9	YES	77.0	71.4	71.6	12.8	YES	73.9	65.7	66.5	7.7	YES	68.8	65.7	66.5	7.7	YES	68.8	54.0	60.0	1.2		62.3	70.6	70.9	12.1	YES	73.2	70.4	70.7	11.9	YES	73.0
C4	10	59.2	61.5	75.9	76.0	16.8	YES	78.3	73.0	73.2	14.0	YES	75.5	74.2	74.3	15.1	YES	76.6	71.4	71.7	12.5	YES	74.0	65.7	66.6	7.4	YES	68.9	65.7	66.6	7.4	YES	68.9	54.0	60.3	1.1		62.6	70.9	71.2	12.0	YES	73.5	70	70.3	11.1	YES	72.6
C4	11	59.4	61.7	75.9	76.0	16.6	YES	78.3	73.1	73.3	13.9	YES	75.6	74.0	74.1	14.7	YES	76.4	71.1	71.4	12.0	YES	73.7	65.7	66.6	7.2	YES	68.9	65.7	66.6	7.2	YES	68.9	54.0	60.5	1.1		62.8	70.9	71.2	11.8	YES	73.5	70	70.4	11.0	YES	72.7
C4	12	59.6	61.9	75.8	75.9	16.3	YES	78.2	73.1	73.3	13.7	YES	75.6	74.1	74.3	14.7	YES	76.6	71.3	71.6	12.0	YES	73.9	65.7	66.7	7.1	YES	69.0	65.7	66.7	7.1	YES	69.0	54.0	60.7	1.1		63.0	70.9	71.2	11.6	YES	73.5	70.2	70.6	11.0	YES	72.9
C4	13	59.7	62.0	75.8	75.9	16.2	YES	78.2	73.2	73.4	13.7	YES	75.7	74.1	74.3	14.6	YES	76.6	71.0	71.3	11.6	YES	73.6	65.8	66.8	7.1	YES	69.1	65.8	66.8	7.1	YES	69.1	53.9	60.7	1.0		63.0	70.8	71.1	11.4	YES	73.4	70.3	70.7	11.0	YES	73.0
C4	14	59.7	62.0	75.7	75.8	16.1	YES	78.1	73.1	73.3	13.6	YES	75.6	74.2	74.4	14.7	YES	76.7	71.1	71.4	11.7	YES	73.7	66.0	66.9	7.2	YES	69.2	66.0	66.9	7.2	YES	69.2	53.9	60.7	1.0		63.0	70.8	71.1	11.4	YES	73.4	70.3	70.7	11.0	YES	73.0
C4	15	59.8	62.1	75.7	75.8	16.0	YES	78.1	73.1	73.3	13.5	YES	75.6	74.3	74.5	14.7	YES	76.8	71.0	71.3	11.5	YES	73.6	66.1	67.0	7.2	YES	69.3	66.1	67.0	7.2	YES	69.3	53.9	60.8	1.0		63.1	70.8	71.1	11.3	YES	73.4	70.2	70.6	10.8	YES	72.9
C4	16	59.8	62.1	75.6	75.7	15.9	YES	78.0	73.0	73.2	13.4	YES	75.5	73.6	73.8	14.0	YES	76.1	70.4	70.8	11.0	YES	73.1	66.2	67.1	7.3	YES	69.4	66.2	67.1	7.3	YES	69.4	53.9	60.8	1.0		63.1	70.8	71.1	11.3	YES	73.4	70.6	70.9	11.1	YES	73.2
C5	1	55.6	57.9	52.9	57.5	1.9		59.8	50.8	56.9	1.2		59.2	51.3	57.0	1.4		59.3	48.2	56.4	0.7		58.7	48.9	56.5	0.8		58.8	48.8	56.5	0.8		58.8	38.1	55.7	0.1		58.0	49.0	56.5	0.9		58.8	48.8	56.5	0.8		58.8
C5	2	55.6	57.9	53.0	57.5	1.9		59.8	50.9	56.9	1.3		59.2	51.5	57.1	1.4		59.4	48.6	56.4	0.8		58.7	49.0	56.5	0.9		58.8	48.8	56.5	0.8		58.8	38.1	55.7	0.1		58.0	49.3	56.5	0.9		58.8	48.9	56.5	0.8		58.8
C5	3	56.7	59.0	53.2	58.3	1.6		60.6	51.3	57.8	1.1		60.1	52.1	58.0	1.3		60.3	49.6	57.5	0.8		59.8	49.2	57.4	0.7		59.7	49.1	57.4	0.7		59.7	38.2	56.8	0.1		59.1	49.3	57.4	0.7		59.7	49	57.4	0.7		59.7
C5	4	58.6	60.9	53.4	59.7	1.1		62.0	51.5	59.4	0.8		61.7	52.2	59.5	0.9		61.8	49.8	59.1	0.5		61.4	49.4	59.1	0.5		61.4	49.3	59.1	0.5		61.4	38.3	58.6	0.0		60.9	49.3	59.1	0.5		61.4	49	59.1	0.5		61.4
C5	5	58.8	61.1	57.8	61.3	2.5		63.6	54.2	60.1	1.3		62.4	52.4	59.7	0.9		62.0	50.1	59.3	0.5		61.6	49.5	59.3	0.5		61.6	49.3	59.3	0.5		61.6	38.3	58.8	0.0		61.1	49.4	59.3	0.5		61.6	49	59.2	0.4		61.5
C5	6	60.1	62.4	58.0	62.2	2.1		64.5	54.5	61.2	1.1		63.5	52.7	60.8	0.7		63.1	50.6	60.6	0.5		62.9	49.5	60.5	0.4		62.8	49.4	60.5	0.4		62.8	38.4	60.1	0.0		62.4	49.4	60.5	0.4		62.8	49	60.4	0.3		62.7
C5	7	60.5	62.8	58.0	62.4	1.9		64.7	54.5	61.5	1.0		63.8	52.7	61.2	0.7		63.5	50.6	60.9	0.4		63.2	49.6	60.8	0.3		63.1	49.5	60.8	0.3		63.1	38.4	60.5	0.0		62.8	49.4	60.8	0.3		63.1	49.1	60.8	0.3		63.1
C5	8	60.8	63.1	58.1	62.7	1.9		65.0	54.9	61.8	1.0		64.1	52.7	61.4	0.6		63.7	50.6	61.2	0.4		63.5	49.6	61.1	0.3		63.4	49.5	61.1	0.3		63.4	38.5	60.8	0.0		63.1	49.4	61.1	0.3		63.4	49	61.1	0.3		63.4
C5	9	61.0	63.3	58.0	62.8	1.8		65.1	54.8	61.9	0.9		64.2	52.7	61.6	0.6		63.9	50.6	61.4	0.4		63.7	49.7	61.3	0.3		63.6	49.5	61.3	0.3		63.6	38.5	61.0	0.0		63.3	49.3	61.3	0.3		63.6	49	61.3	0.3		63.6
C5	10	60.8	63.1	57.9	62.6	1.8		64.9	54.7	61.8	1.0		64.1	53.0	61.5	0.7		63.8	50.6	61.2	0.4		63.5	49.7	61.1	0.3		63.4	49.6	61.1	0.3		63.4	38.5	60.8	0.0		63.1	49.3	61.1	0.3		63.4	48.9	61.1	0.3		63.4
C5	11	61.2	63.5	57.8	62.8	1.6		65.1	54.6	62.1	0.9		64.4	53.0	61.8	0.6		64.1	50.5	61.6	0.4		63.9	49.7	61.5	0.3		63.8	49.6	61.5	0.3		63.8	38.5	61.2	0.0		63.5	49.2	61.5	0.3		63.8	48.9	61.4	0.2		63.7
C5	12	60.9	63.2	58.2	62.8	1.9		65.1	55.5	62.0	1.1		64.3	53.4	61.6	0.7		63.9	51.3	61.4	0.5		63.7	49.7	61.2	0.3		63.5	49.6	61.2	0.3		63.5	38.6	60.9	0.0		63.2	49.1	61.2	0.3		63.5	48.9	61.2	0.3		63.5
C5	13	60.9	63.2	58.2	62.8	1.9		65.1	55.5	62.0	1.1		64.3	53.9	61.7	0.8		64.0	52.1	61.4	0.5		63.7	49.7	61.2	0.3		63.5	49.6	61.2	0.3		63.5	38.6	60.9	0.0		63.2	49.1	61.2	0.3		63.5	48.8	61.2	0.3		63.5
C5	14	60.9	63.2	58.1	62.7	1.8		65.0	55.4	62.0	1.1		64.3	53.9	61.7	0.8		64.0	52.0	61.4	0.5		63.7	49.7	61.2	0.3		63.5	49.5	61.2	0.3		63.5	38.6	60.9	0.0		63.2	49.0	61.2	0.3		63.5	48.7	61.2	0.3		63.5
C5	15	60.8	63.1	57.9	62.6	1.8		64.9	55.3	61.9	1.1		64.2	53.8	61.6	0.8		63.9	51.9	61.3	0.5		63.6	49.6	61.1	0.3		63.4	49.5	61.1	0.3		63.4	38.6	60.8	0.0		63.1	48.9	61.1	0.3		63.4	48.6	61.1	0.3		63.4
C5	16	60.8	63.1	57.8	62.6	1.8		64.9	55.1	61.8	1.0		64.1	53.7	61.6	0.8		63.9	51.8	61.3	0.5		63.6	49.6	61.1	0.3		63.4	49.4	61.1	0.3		63.4	38.6	60.8	0.0		63.1	48.9	61.1	0.3		63.4	48.5	61.0	0.2		63.3
C6	1	61.8	64.4	67.2	68.3	6.5	YES	70.9	67.1	68.2	6.4	YES	70.8	65.9	67.3	5.5	YES	69.9	62.2	65.0	3.2	YES	67.6	62.3	65.1	3.3	YES	67.7	62.3	65.1	3.3	YES	67.7	53.0	62.3	0.5		64.9	64.5	66.4	4.6	YES	69.0	61.9	64.9	3.1		67.5
C6	2	63.8	66.4	73.5	73.9	10.1	YES	76.5	73.5	73.9	10.1	YES	76.5	69.2	70.3	6.5	YES	72.9	66.9	68.6	4.8	YES	71.2	67.0	68.7	4.9	YES	71.3	67.0	68.7	4.9	YES	71.3	54.5	64.3	0.5		66.9	66.8	68.6	4.8	YES	71.2	64.9	67.4	3.6	YES	70.0
C6	3	64.5	67.1	73.6	74.1	9.6	YES	76.7	73.6	74.1	9.6	YES	76.7	70.8	71.7	7.2	YES	74.3	68.3	69.8	5.3	YES	72.4	68.5	70.0	5.5	YES	72.6	68.5	70.0	5.5	YES	72.6	58.7	65.5	1.0		68.1	67.7	69.4	4.9	YES	72.0	65.5	68.0	3.5	YES	70.6
C6	4	64.9	67.5	73.7	74.2	9.3	YES	76.8	73.7	74.2	9.3	YES	76.8	71.0	72.0	7.1	YES	74.6	68.5	70.1	5.2	YES	72.7	69.4	70.7	5.8	YES	73.3	69.4	70.7	5.8	YES	73.3	58.8	65.9	1.0		68.5	70.0	71.2	6.3	YES	73.8	66.3	68.7	3.8	YES	71.3
C6	5	65.1	67.7	74.1	74.6	9.5	YES	77.2	74.0	74.5	9.4	YES	77.1	71.1	72.1	7.0	YES	74.7	68.6	70.2	5.1	YES	72.8	69.5	70.8	5.7	YES	73.4	69.5	70.8	5.7	YES	73.4	58.8	66.0	0.9		68.6	71.6	72.5	7.4	YES	75.1	69.1	70.6	5.5	YES	73.2
C6	6	65.0	67.6	74.6	75.1	10.1	YES	77.7	74.5	75.0	10.0	YES	77.6	71.4	72.3	7.3	YES	74.9	68.7	70.2	5.2	YES	72.8	70.0	71.2	6.2	YES	73.8	70.0	71.2	6.2	YES	73.8	58.8	65.9	0.9		68.5	71.7	72.5	7.5	YES	75.1	69.6	70.9	5.9	YES	73.5
C6	7	64.9	67.5	74.6	75.0	10.1	YES	77.6	74.5	75.0	10.1	YES	77.6	71.5	72.4	7.5	YES	75.0	69.1	70.5	5.6	YES	73.1	69.8	71.0	6.1	YES	73.6	69.8	71.0	6.1	YES	73.6	58.7	65.8	0.9		68.4	72.0	72.8	7.9	YES	75.4	70.2	71.3	6.4	YES	73.9
C6	8	64.8	67.4	74.6	75.0	10.2	YES	77.6	74.5	74.9	10.1	YES	77.5	71.7	72.5	7.7	YES	75.1	69.2	70.5	5.7	YES	73.1	69.8	71.0	6.2	YES	73.6	69.8	71.0	6.2	YES	73.6	58.7	65.8	1.0		68.4	72.4	73.1	8.3	YES	75.7	72.4	73.1	8.3	YES	75.7
C6	9	64.7	67.3	74.6	75.0	10.3	YES	77.6	74.5	74.9	10.2	YES	77.5	72.0	72.7	8.0	YES	75.3	69.2	70.5	5.8	YES	73.1	70.0	71.1	6.4	YES	73.7	70.0	71.1	6.4	YES	73.7	58.6	65.7	1.0		68.3	72.5	73.2	8.5	YES	75.8	71	71.9	7.2	YES	74.5
C6	10	64.4	67.0	74.5	74.9	10.5	YES	77.5	74.5	74.9	10.5	YES	77.5	72.1	72.8	8.4	YES	75.4	69.1	70.4	6.0	YES	73.0	69.7	70.8	6.4	YES	73.4	69.7	70.8	6.4	YES	73.4	58.6	65.4	1.0		68.0	72.6	73.2	8.8	YES	75.8	71.2	72.0	7.6	YES	74.6
C6	11	64.2	66.8	74.5	74.9	10.7	YES	77.5	74.4	74.8	10.6	YES	77.4	72.0	72.7	8.5	YES	75.3	69.2	70.4	6.2	YES	73.0	69.6	70.7	6.5	YES	73.3	69.6	70.7	6.5	YES	73.3	58.5	65.2	1.0		67.8	72.5	73.1	8.9	YES	75.7	71.4	72.2	8.0	YES	74.8
C6	12	64.0	66.6	74.6	75.0	11.0	YES	77.6	74.5	74.9	10.9	YES	77.5	72.1	72.7	8.7	YES	75.3	69.5	70.6	6.6	YES	73.2	69.5	70.6	6.6	YES	73.2	69.5	70.6	6.6	YES	73.2	58.4	65.1	1.1		67.7	72.6	73.2	9.2	YES	75.8	71.5	72.2	8.2	YES	74.8
C6	13	63.7	66.3	74.7	75.0	11.3	YES	77.6	74.7	75.0	11.3	YES	77.6	72.0	72.6	8.9	YES	75.2	69.5	70.5	6.8	YES	73.1	69.3	70.4	6.7	YES	73.0	69.3	70.4	6.7	YES	73.0	58.4	64.8	1.1		67.4	72.6	73.1	9.4	YES	75.7	71.5	72.2	8.5	YES	74.8
C6	14	63.5	66.1	74.6	74.9	11.4	YES	77.5	74.6	74.9	11.4	YES	77.5	71.8	72.4	8.9	YES	75.0	69.0	70.1	6.6	YES	72.7	69.0	70.1	6.6	YES	72.7	69.0	70.1	6.6	YES	72.7	58.3	64.6	1.1		67.2	72.1	72.7	9.2	YES	75.3	71	71.7	8.2	YES	74.3
C6	15	63.3	65.9	74.5	74.8	11.5	YES	77.4	74.5	74.8	11.5	YES	77.4	72.0	72.5	9.2	YES	75.1	68.9	70.0	6.7	YES	72.6	68.6	69.7	6.4	YES	72.3	68.6	69.7	6.4	YES	72.3	58.2	64.5	1.2		67.1	71.9	72.5	9.2	YES	75.1	71	71.7	8.4	YES	74.3

C6	16	63.0	65.6	74.4	74.7	11.7	YES	77.3	74.4	74.7	11.7	YES	77.3	72.1	72.6	9.6	YES	75.2	68.9	69.9	6.9	YES	72.5	67.6	68.9	5.9	YES	71.5	67.6	68.9	5.9	YES	71.5	58.1	64.2	1.2		66.8	70.9	71.6	8.6	YES	74.2	70.5	71.2	8.2	YES	73.8
C7	1	55.6	57.9	54.3	58.0	2.4		60.3	53.3	57.6	2.0		59.9	53.0	57.5	1.9		59.8	51.9	57.2	1.5		59.5	52.6	57.4	1.8		59.7	52.5	57.4	1.7		59.7	37.8	55.7	0.1		58.0	54.5	58.1	2.5		60.4	52.9	57.5	1.9		59.8
C7	2	56.2	58.5	54.9	58.6	2.4		60.9	54.1	58.3	2.1		60.6	52.6	57.8	1.6		60.1	51.4	57.4	1.2		59.7	55.3	58.8	2.6		61.1	55.3	58.8	2.6		61.1	37.7	56.3	0.1		58.6	55.3	58.8	2.6		61.1	53.2	58.0	1.8		60.3
C7	3	58.9	61.2	55.1	60.4	1.5		62.7	54.3	60.2	1.3		62.5	52.4	59.8	0.9		62.1	51.1	59.6	0.7		61.9	56.2	60.8	1.9		63.1	56.2	60.8	1.9		63.1	37.8	58.9	0.0		61.2	56.6	60.9	2.0		63.2	55.7	60.6	1.7		62.9
C7	4	60.0	62.3	55.2	61.2	1.2		63.5	54.4	61.1	1.1		63.4	52.4	60.7	0.7		63.0	51.2	60.5	0.5		62.8	56.1	61.5	1.5		63.8	56.1	61.5	1.5		63.8	37.9	60.0	0.0		62.3	56.7	61.7	1.7		64.0	55.8	61.4	1.4		63.7
C7	5	61.9	64.2	55.8	62.9	1.0		65.2	54.6	62.6	0.7		64.9	52.5	62.4	0.5		64.7	51.2	62.3	0.4		64.6	56.1	62.9	1.0		65.2	56.1	62.9	1.0		65.2	37.9	61.9	0.0		64.2	56.7	63.0	1.1		65.3	56	62.9	1.0		65.2
C7	6	62.5	64.8	56.2	63.4	0.9		65.7	54.9	63.2	0.7		65.5	52.5	62.9	0.4		65.2	51.3	62.8	0.3		65.1	56.1	63.4	0.9		65.7	56.1	63.4	0.9		65.7	38.0	62.5	0.0		64.8	56.8	63.5	1.0		65.8	56.1	63.4	0.9		65.7
C7	7	62.8	65.1	56.3	63.7	0.9		66.0	55.0	63.5	0.7		65.8	52.5	63.2	0.4		65.5	51.4	63.1	0.3		65.4	56.2	63.7	0.9		66.0	56.1	63.6	0.8		65.9	38.0	62.8	0.0		65.1	56.8	63.8	1.0		66.1	56.1	63.6	0.8		65.9
C7	8	63.0	65.3	57.3	64.0	1.0		66.3	55.4	63.7	0.7		66.0	52.6	63.4	0.4		65.7	51.4	63.3	0.3		65.6	56.2	63.8	0.8		66.1	56.2	63.8	0.8		66.1	38.0	63.0	0.0		65.3	56.9	64.0	1.0		66.3	56.2	63.8	0.8		66.1
C7	9	63.3	65.6	57.6	64.3	1.0		66.6	55.8	64.0	0.7		66.3	52.5	63.6	0.3		65.9	51.2	63.6	0.3		65.9	56.3	64.1	0.8		66.4	56.2	64.1	0.8		66.4	38.0	63.3	0.0		65.6	57.0	64.2	0.9		66.5	56.2	64.1	0.8		66.4
C7	10	63.1	65.4	58.2	64.3	1.2		66.6	56.5	64.0	0.9		66.3	52.4	63.5	0.4		65.8	51.2	63.4	0.3		65.7	56.4	63.9	0.8		66.2	56.3	63.9	0.8		66.2	38.0	63.1	0.0		65.4	57.3	64.1	1.0		66.4	56.2	63.9	0.8		66.2
C7	11	63.0	65.3	59.2	64.5	1.5		66.8	57.8	64.1	1.1		66.4	52.5	63.4	0.4		65.7	51.2	63.3	0.3		65.6	56.5	63.9	0.9		66.2	56.5	63.9	0.9		66.2	38.0	63.0	0.0		65.3	57.7	64.1	1.1		66.4	56.2	63.8	0.8		66.1
C7	12	62.8	65.1	59.2	64.4	1.6		66.7	57.8	64.0	1.2		66.3	52.5	63.2	0.4		65.5	51.2	63.1	0.3		65.4	56.9	63.8	1.0		66.1	56.8	63.8	1.0		66.1	38.0	62.8	0.0		65.1	57.9	64.0	1.2		66.3	56.3	63.7	0.9		66.0
C7	13	62.7	65.0	59.3	64.3	1.6		66.6	57.8	63.9	1.2		66.2	52.5	63.1	0.4		65.4	51.3	63.0	0.3		65.3	57.1	63.8	1.1		66.1	57.1	63.8	1.1		66.1	37.9	62.7	0.0		65.0	58.3	64.0	1.3		66.3	56.4	63.6	0.9		65.9
C7	14	55.6	57.9	54.3	58.0	2.4		60.3	53.3	57.6	2.0		59.9	53.0	57.5	1.9		59.8	51.9	57.2	1.5		59.5	52.6	57.4	1.8		59.7	52.5	57.4	1.7		59.7	37.8	55.7	0.1		58.0	54.5	58.1	2.5		60.4	52.9	57.5	1.9		59.8
C7	15	56.2	58.5	54.9	58.6	2.4		60.9	54.1	58.3	2.1		60.6	52.6	57.8	1.6		60.1	51.4	57.4	1.2		59.7	55.3	58.8	2.6		61.1	55.3	58.8	2.6		61.1	37.7	56.3	0.1		58.6	55.3	58.8	2.6		61.1	53.2	58.0	1.8		60.3
C7	16	58.9	61.2	55.1	60.4	1.5		62.7	54.3	60.2	1.3		62.5	52.4	59.8	0.9		62.1	51.1	59.6	0.7		61.9	56.2	60.8	1.9		63.1	56.2	60.8	1.9		63.1	37.8	58.9	0.0		61.2	56.6	60.9	2.0		63.2	55.7	60.6	1.7		62.9
D1	1	66.7	69.3	82.2	82.3	15.6	YES	84.9	82.0	82.1	15.4	YES	84.7	78.4	78.7	12.0	YES	81.3	76.5	76.9	10.2	YES	79.5	75.9	76.4	9.7	YES	79.0	75.9	76.4	9.7	YES	79.0	67.5	70.1	3.4	YES	72.7	77.8	78.1	11.4	YES	80.7	76.2	76.7	10.0	YES	79.3
D1	2	67.3	69.9	82.2	82.3	15.0	YES	84.9	82.0	82.1	14.8	YES	84.7	79.0	79.3	12.0	YES	81.9	76.9	77.4	10.1	YES	80.0	76.3	76.8	9.5	YES	79.4	76.3	76.8	9.5	YES	79.4	67.6	70.5	3.2	YES	73.1	78.6	78.9	11.6	YES	81.5	77.4	77.8	10.5	YES	80.4
D1	3	67.0	69.6	82.4	82.5	15.5	YES	85.1	82.1	82.2	15.2	YES	84.8	80.0	80.2	13.2	YES	82.8	77.2	77.6	10.6	YES	80.2	76.8	77.2	10.2	YES	79.8	76.8	77.2	10.2	YES	79.8	67.7	70.4	3.4	YES	73.0	79.9	80.1	13.1	YES	82.7	78.1	78.4	11.4	YES	81.0
D1	4	66.5	69.1	82.9	83.0	16.5	YES	85.6	82.0	82.1	15.6	YES	84.7	80.2	80.4	13.9	YES	83.0	77.4	77.7	11.2	YES	80.3	77.7	78.0	11.5	YES	80.6	77.7	78.0	11.5	YES	80.6	68.0	70.3	3.8	YES	72.9	80.0	80.2	13.7	YES	82.8	79.2	79.4	12.9	YES	82.0
D1	5	66.1	68.7	82.8	82.9	16.8	YES	85.5	82.0	82.1	16.0	YES	84.7	80.0	80.2	14.1	YES	82.8	77.4	77.7	11.6	YES	80.3	77.3	77.6	11.5	YES	80.2	77.3	77.6	11.5	YES	80.2	68.3	70.3	4.2	YES	72.9	80.6	80.8	14.7	YES	83.4	79	79.2	13.1	YES	81.8
D1	6	65.6	68.2	82.6	82.7	17.1	YES	85.3	81.8	81.9	16.3	YES	84.5	80.0	80.2	14.6	YES	82.8	77.7	78.0	12.4	YES	80.6	77.3	77.6	12.0	YES	80.2	77.3	77.6	12.0	YES	80.2	68.7	70.4	4.8	YES	73.0	80.4	80.5	14.9	YES	83.1	79.2	79.4	13.8	YES	82.0
D1	7	65.2	67.8	82.4	82.5	17.3	YES	85.1	81.5	81.6	16.4	YES	84.2	79.8	79.9	14.7	YES	82.5	77.5	77.7	12.5	YES	80.3	77.1	77.4	12.2	YES	80.0	77.1	77.4	12.2	YES	80.0	67.4	69.4	4.2	YES	72.0	80.1	80.2	15.0	YES	82.8	79.1	79.3	14.1	YES	81.9
D1	8	64.8	67.4	82.3	82.4	17.6	YES	85.0	81.5	81.6	16.8	YES	84.2	79.6	79.7	14.9	YES	82.3	77.4	77.6	12.8	YES	80.2	76.8	77.1	12.3	YES	79.7	76.8	77.1	12.3	YES	79.7	67.3	69.2	4.4	YES	71.8	79.9	80.0	15.2	YES	82.6	79.6	79.7	14.9	YES	82.3
D1	9	64.4	67.0	82.0	82.1	17.7	YES	84.7	81.1	81.2	16.8	YES	83.8	79.3	79.4	15.0	YES	82.0	77.2	77.4	13.0	YES	80.0	76.5	76.8	12.4	YES	79.4	76.5	76.8	12.4	YES	79.4	67.3	69.1	4.7	YES	71.7	79.6	79.7	15.3	YES	82.3	79	79.1	14.7	YES	81.7
D1	10	64.0	66.6	81.8	81.9	17.9	YES	84.5	80.9	81.0	17.0	YES	83.6	79.0	79.1	15.1	YES	81.7	76.7	76.9	12.9	YES	79.5	76.2	76.5	12.5	YES	79.1	76.2	76.5	12.5	YES	79.1	67.8	69.3	5.3	YES	71.9	79.3	79.4	15.4	YES	82.0	78.7	78.8	14.8	YES	81.4
D1	11	63.7	66.3	81.5	81.6	17.9	YES	84.2	80.6	80.7	17.0	YES	83.3	78.4	78.5	14.8	YES	81.1	76.3	76.5	12.8	YES	79.1	75.9	76.2	12.5	YES	78.8	75.9	76.2	12.5	YES	78.8	67.7	69.2	5.5	YES	71.8	79.0	79.1	15.4	YES	81.7	78.4	78.5	14.8	YES	81.1
D1	12	63.5	66.1	81.3	81.4	17.9	YES	84.0	80.4	80.5	17.0	YES	83.1	78.1	78.2	14.7	YES	80.8	76.1	76.3	12.8	YES	78.9	75.6	75.9	12.4	YES	78.5	75.6	75.9	12.4	YES	78.5	67.4	68.9	5.4	YES	71.5	78.7	78.8	15.3	YES	81.4	78.1	78.2	14.7	YES	80.8
D1	13	63.2	65.8	81.0	81.1	17.9	YES	83.7	80.0	80.1	16.9	YES	82.7	77.8	77.9	14.7	YES	80.5	75.8	76.0	12.8	YES	78.6	75.2	75.5	12.3	YES	78.1	75.2	75.5	12.3	YES	78.1	67.2	68.7	5.5	YES	71.3	78.4	78.5	15.3	YES	81.1	77.8	77.9	14.7	YES	80.5
D2	1	66.8	69.4	88.4	88.4	21.6	YES	91.0	88.4	88.4	21.6	YES	91.0	83.2	83.3	16.5	YES	85.9	81.9	82.0	15.2	YES	84.6	71.6	72.8	6.0	YES	75.4	71.6	72.8	6.0	YES	75.4	62.9	68.3	1.5		70.9	76.2	76.7	9.9	YES	79.3	73.3	74.2	7.4	YES	76.8
D2	2	67.3	69.9	88.3	88.3	21.0	YES	90.9	88.3	88.3	21.0	YES	90.9	83.6	83.7	16.4	YES	86.3	82.0	82.1	14.8	YES	84.7	73.8	74.7	7.4	YES	77.3	73.8	74.7	7.4	YES	77.3	64.7	69.2	1.9		71.8	77.8	78.2	10.9	YES	80.8	75.4	76.0	8.7	YES	78.6
D2	3	66.9	69.5	88.1	88.1	21.2	YES	90.7	88.0	88.0	21.1	YES	90.6	84.1	84.2	17.3	YES	86.8	82.0	82.1	15.2	YES	84.7	76.3	76.8	9.9	YES	79.4	76.3	76.8	9.9	YES	79.4	67.4	70.2	3.3	YES	72.8	79.8	80.0	13.1	YES	82.6	77.4	77.8	10.9	YES	80.4
D2	4	66.4	69.0	87.8	87.8	21.4	YES	90.4	87.6	87.6	21.2	YES	90.2	84.5	84.6	18.2	YES	87.2	82.0	82.1	15.7	YES	84.7	78.4	78.7	12.3	YES	81.3	78.4	78.7	12.3	YES	81.3	67.7	70.1	3.7	YES	72.7	81.0	81.1	14.7	YES	83.7	79.1	79.3	12.9	YES	81.9
D2	5	65.9	68.5	87.3	87.3	21.4	YES	89.9	87.1	87.1	21.2	YES	89.7	84.1	84.2	18.3	YES	86.8	81.9	82.0	16.1	YES	84.6	77.8	78.1	12.2	YES	80.7	77.8	78.1	12.2	YES	80.7	68.0	70.1	4.2	YES	72.7	81.5	81.6	15.7	YES	84.2	79.5	79.7	13.8	YES	82.3
D2	6	65.4	68.0	86.7	86.7	21.3	YES	89.3	86.5	86.5	21.1	YES	89.1	84.0	84.1	18.7	YES	86.7	81.6	81.7	16.3	YES	84.3	78.1	78.3	12.9	YES	80.9	78.1	78.3	12.9	YES	80.9	68.2	70.0	4.6	YES	72.6	81.3	81.4	16.0	YES	84.0	79.9	80.1	14.7	YES	82.7
D2	7	64.9	67.5	86.1	86.1	21.2	YES	88.7	85.8	85.8	20.9	YES	88.4	83.6	83.7	18.8	YES	86.3	81.2	81.3	16.4	YES	83.9	77.9	78.1	13.2	YES	80.7	77.8	78.0	13.1	YES	80.6	67.9	69.7	4.8	YES	72.3	81.1	81.2	16.3	YES	83.8	79.8	79.9	15.0	YES	82.5
D2	8	64.4	67.0	85.5	85.5	21.1	YES	88.1	85.2	85.2	20.8	YES	87.8	83.1	83.2	18.8	YES	85.8	80.8	80.9	16.5	YES	83.5	77.5	77.7	13.3	YES	80.3	77.5	77.7	13.3	YES	80.3	67.7	69.4	5.0	YES	72.0	80.8	80.9	16.5	YES	83.5	80.1	80.2	15.8	YES	82.8
D2	9	64.0	66.6	84.9	84.9	20.9	YES	87.5	84.5	84.5	20.5	YES	87.1	82.7	82.8	18.8	YES	85.4	80.4	80.5	16.5	YES	83.1	77.2	77.4	13.4	YES	80.0	77.2	77.4	13.4	YES	80.0	67.8	69.3	5.3	YES	71.9	80.6	80.7	16.7	YES	83.3	79.8	79.9	15.9	YES	82.5
D2	10	63.6	66.2	84.3	84.3	20.7	YES	86.9	83.9	83.9	20.3	YES	86.5	82.1	82.2	18.6	YES	84.8	79.7	79.8	16.2	YES	82.4	76.8	77.0	13.4	YES	79.6	76.8	77.0	13.4	YES	79.6	68.3	69.6	6.0	YES	72.2	80.4	80.5	16.9	YES	83.1	79.4	79.5	15.9	YES	82.1
D2	11	63.3	65.9	83.8	83.8	20.5	YES	86.4	83.3	83.3	20.0	YES	85.9	81.3	81.4	18.1	YES	84.0	79.1	79.2	15.9	YES	81.8	76.5	76.7	13.4	YES	79.3	76.5	76.7	13.4	YES	79.3	68.5	69.6	6.3	YES	72.2	80.1	80.2	16.9	YES	82.8	79.1	79.2	15.9	YES	81.8
D2	12	62.9	65.5	83.2	83.2	20.3	YES	85.8	82.8	82.8	19.9	YES	85.4	80.8	80.9	18.0	YES	83.5	78.6	78.7	15.8	YES	81.3	76.2	76.4	13.5	YES	79.0	76.2	76.4	13.5	YES	79.0	68.1	69.2	6.3	YES	71.8	79.9	80.0	17.1	YES	82.6	78.8	78.9	16.0	YES	81.5
D2	13	62.6	65.2	82.7	82.7	20.1	YES	85.3	82.2	82.2	19.6	YES	84.8	80.3	80.4	17.8	YES	83.0	78.1	78.2	15.6	YES	80.8	75.9	76.1	13.5	YES	78.7	75.9	76.1	13.5	YES	78.7	67.7	68.9	6.3	YES	71.5	79.6	79.7	17.1	YES	82.3	78.5	78.6	16.0	YES	81.2
D3	1	66.9	69.5	82.3	82.4	15.5	YES	85.0	82.2	82.3	15.4	YES	84.9	82.4	82.5	15.6	YES	85.1	80.4	80.6	13.7	YES	83.2	70.7	72.2	5.3	YES	74.8	70.3	71.9	5.0	YES	74.5	61.8	68.1	1.2		70.7	74.7	75.4	8.5	YES	78.0	71.7	72.9	6.0	YES	75.5
D3	2	67.3	69.9	83.7	83.8	16.5	YES	86.4	83.6	83.7	16.4	YES	86.3	82.7	82.8	15.5	YES	85.4	80.5	80.7	13.4	YES	83.3	71.9	73.2	5.9	YES	75.8	71.6	73.0	5.7	YES	75.6	63.0	68.7	1.4		71.3	75.5	76.1	8.8	YES	78.7	73.3	74.3	7.0	YES	76.9
D3	3	67.0	69.6	83.8	83.9	16.9	YES	86.5	83.5	83.6	16.6	YES	86.2	83.2	83.3	16.3	YES	85.9	80.6	80.8	13.8	YES	83.4	73.6	74.5	7.5	YES	77.1	73.4	74.3	7.3	YES	76.9	65.4	69.3	2.3		71.9	77.5	77.9	10.9	YES	80.5	74.8	75.5	8.5	YES	78.1
D3	4	66.5	69.1	83.7	83.8	17.3	YES	86.4	83.4	83.5	17.0	YES	86.1	83.7	83.8	17.3	YES	86.4	80.7	80.9	14.4	YES	83.5	75.0	75.6	9.1	YES	78.2	74.9	75.5	9.0	YES	78.1	66.2	69.4	2.9		72.0	78.1	78.4	11.9	YES	81.0	76.3	76.7	10.2	YES	79.3
D3	5	66.0	68.6	83.7	83.8	17.8	YES	86.4	83.3	83.4	17.4	YES	86.0	83.2	83.3	17.3	YES	85.9	80.6	80.7	14.7	YES	83.3	75.0	75.5	9.5	YES	78.1	74.8	75.3	9.3	YES	77.9	66.9	69.5	3.5	YES	72.1	78.4	78.6	12.6	YES	81.2	76.9	77.2	11.2	YES	79.8
D3	6	65.5	68.1	83.5	83.6	18.1	YES	86.2	83.0	83.1	17.6	YES	85.7	83.1	83.2	17.7	YES	85.8	80.5	80.6	15.1	YES	83.2	75.0	75.5	10.0	YES	78.1	74.8	75.3	9.8	YES	77.9	67.7	69.7	4.2	YES	72.3	78.5	78.7	13.2	YES	81.3	76.7	77.0	11.5	YES	79.6
D3	7	64.9	67.5	83.2	83.3	18.4	YES	85.9	82.7	82.8	17.9	YES	85.4	82.8	82.9	18.0	YES	85.5	80.3	80.4	15.5	YES	83.0	75.1	75.5	10.6	YES	78.1	74.9	75.3	10.4	YES	77.9	65.9	68.4	3.5	YES	71.0	78.5	78.7	13.8	YES	81.3	76.8	77.1	12.2	YES	79.7
D3	8	64.3	66.9	82.9	83.0	18.7	YES	85.6	82.5	82.6	18.3	YES	85.2	82.5	82.6	18.3	YES	85.2	80.0	80.1	15.8	YES	82.7	74.9	75.3	11.0	YES	77.9	74.7	75.1	10.8	YES	77.7	65.8	68.1	3.8	YES	70.7	78.4	78.6	14.3	YES	81.2	76.9	77.1	12.8	YES	79.7
D3	9	63.9	66.5	82.6	82.7	18.8	YES	85.3	82.1	82.2	18.3	YES	84.8	82.2	82.3	18.4	YES	84.9	79.7	79.8	15.9	YES	82.4	74.7	75.0	11.1	YES	77.6	74.5	74.9	11.0	YES	77.5	66.0	68.1	4.2	YES	70.7	78.3	78.5	14.6	YES	81.1	77	77.2	13.3	YES	79.8
D3	10	63.5	66.1	82.3	82.4	18.9	YES	85.0	81.8	81.9	18.4	YES	84.5	81.7	81.8	18.3	YES	84.4	79.2	79.3	15.8	YES	81.9	74.6	74.9	11.4	YES	77.5	74.3	74.6	11.1	YES	77.2	66.8	68.5	5.0	YES	71.1	78.2	78.3	14.8	YES	80.9	76.9	77.1	13.6	YES	79.7
D3	11	63.1	65.7	82.0	82.1	19.0	YES	84.7	81.5	81.6	18.5	YES	84.2	81.0	81.1	18.0	YES	83.7	78.6	78.7	15.6	YES	81.3	74.4	74.7	11.6	YES	77.3	74.2	74.5	11.4	YES	77.1	66.8	68.3	5.2	YES	70.9	78.0	78.1	15.0	YES	80.7	76.7	76.9	13.8	YES	79.5
D3	12	62.8	65.4	81.7	81.8	19.0	YES	84.4	81.1	81.2	18.4	YES	83.8	80.6	80.7	17.9	YES	83.3	78.2	78.3	15.5	YES	80.9	74.3	74.6	11.8	YES	77.2	74.0	74.3	11.5	YES	76.9	66.5	68.0	5.2	YES	70.6	77.9	78.0	15.2	YES	80.6	76.5	76.7	13.9	YES	79.3
D3	13	62.5	65.1	81.3	81.4	18.9	YES	84.0	80.7	80.8	18.3	YES	83.4	80.2	80.3	17.8	YES	82.9	77.8	77.9	15.4	YES	80.5	74.1	74.4	11.9	YES	77.0	73.7	74.0	11.5	YES	76.6	66.2	67.7	5.2	YES	70.3	77.8	77.9	15.4	YES	80.5	76.4	76.6	14.1	YES	79.2
D4	1	66.9	69.5	76.5	77.0	10.1	YES	79.6	76.4	76.9	10.0	YES	79.5	77.9	78.2	11.3	YES	80.8	74.6	75.3	8.4	YES	77.9	68.6	70.8	3.9	YES	73.4	68.0	70.5	3.6	YES	73.1	60.4	67.8	0.9		70.4	71.2	72.6	5.7	YES	75.2	69.6	71.5	4.6	YES	74.1
D4	2	67.3	69.9	77.9	78.3	11.0	YES	80.9	77.8	78.2	10.9	YES	80.8	78.2	78.5	11.2	YES	81.1	74.7	75.4	8.1	YES	78.0	69.2	71.4	4.1	YES	74.0	68.7	71.1	3.8	YES	73.7	60.9	68.2	0.9		70.8	71.6	73.0	5.7	YES	75.6	70.3	72.1	4.8	YES	74.7
D4	3	67.1	69.7	78.0	78.3	11.2	YES	80.9	77.8	78.2	11.1	YES	80.8	78.1	78.4	11.3	YES	81.0	74.8	75.5	8.4	YES	78.1	69.0	71.2	4.1	YES	73.8	68.4	70.8	3.7	YES	73.4	61.3	68.1	1.0		70.7	72.0	73.2	6.1	YES	75.8	71	72.5	5.4	YES	75.1
D4	4	66.6	69.2	78.0	78.3	11.7	YES	80.9	77.8	78.1	11.5	YES	80.7	78.3	78.6	12.0	YES	81.2	74.9	75.5	8.9	YES	78.1	70.6	72.1	5.5	YES	74.7	70.2	71.8	5.2	YES	74.4	62.3	68.0	1.4		70.6	73.1	74.0	7.4	YES	76.6	72	73.1	6.5	YES	75.7
D4	5	66.2	68.8	77.9	78.2	12.0	YES	80.8	77.6	77.9	11.7	YES	80.5	78.2	78.5	12.3	YES	81.1	75.1	75.6	9.4	YES	78.2	70.8	72.1	5.9	YES	74.7	70.4	71.8	5.6	YES	74.4	63.6	68.1	1.9		70.7	73.5	74.2	8.0	YES	76.8	71.9	72.9	6.7	YES	75.5
D4	6	65.7	68.3	78.1	78.3	12.6	YES	80.9	77.7	78.0	12.3	YES	80.6	78.4	78.6	12.9	YES	81.2	75.4	75.8	10.1	YES	78.4	71.0	72.1	6.4	YES	74.7	70.6	71.8	6.1	YES	74.4	63.8	67.9	2.2		70.5	73.8	74.4	8.7	YES	77.0	72.6	73.4	7.7	YES	76.0
D4	7	65.1	67.7	78.0	78.2	13.1	YES	80.8	77.6	77.8	12.7	YES	80.4	78.4	78.6	13.5	YES	81.2	75.3	75.7	10.6	YES	78.3	71.3	72.2	7.1	YES	74.8	70.9	71.9	6.8	YES	74.5	62.1	66.9	1.8		69.5	74.1	74.6	9.5	YES	77.2	72.7	73.4	8.3	YES	76.0
D4	8	64.4	67.0	78.0	78.2	13.8	YES	80.8	77.6	77.8	13.4	YES	80.4	78.3	78.5	14.1	YES	81.1	75.3	75.6	11.2	YES	78.2	71.3	72.1	7.7	YES	74.7	70.9	71.8	7.4	YES	74.4	62.0	66.4	2.0		69.0	74.0	74.5	10.1	YES	77.1	72.8	73.4	9.0	YES	76.0
D4	9	64.0	66.6	78.3	78.5	14.5	YES	81.1	77.5	77.7	13.7	YES	80.3	78.2	78.4	14.4	YES	81.0	75.2	75.5	11.5	YES	78.1	71.2	72.0	8.0	YES	74.6	70.8	71.6	7.6	YES	74.2	62.1	66.2	2.2		68.8	73.9	74.3	10.3	YES	76.9	73	73.5	9.5	YES	76.1
D4	10	63.6	66.2	78.3	78.4	14.8	YES	81.0	77.4	77.6	14.0	YES	80.2	77.8	78.0	14.4	YES	80.6	74.9	75.2	11.6	YES	77.8	71.1	71.8	8.2	YES	74.4	70.7	71.5	7.9	YES	74.1	62.5	66.1	2.5		68.7	73.8	74.2	10.6	YES	76.8	72.9	73.4	9.8	YES	76.0
D4	11	63.2	65.8	78.2	78.3	15.1	YES	80.9	77.3	77.5	14.3	YES	80.1	77.3	77.5	14.3	YES	80.1	74.6	74.9	11.7	YES	77.5	71.0	71.7	8.5	YES	74.3	70.5	71.2	8.0	YES	73.8	63.1	66.2	3.0		68.8	73.8	74.2	11.0	YES	76.8	72.8	73.3	10.1	YES	75.9
D4	12	62.8	65.4	78.1	78.2	15.4	YES	80.8	77.2	77.4	14.6	YES	80.0	77.2	77.4	14.6	YES	80.0	74.5	74.8	12.0	YES	77.4	70.9	71.5	8.7	YES	74.1	70.4	71.1	8.3	YES	73.7	62.9	65.9	3.1	YES	68.5	73.7	74.0	11.2	YES	76.6	72.7	73.1	10.3	YES	75.7
D4	13	62.5	65.1	77.9	78.0	15.5	YES	80.6	77.1	77.2	14.7	YES	79.8	77.0	77.2	14.7	YES	79.8	74.3	74.6	12.1	YES	77.2	70.8	71.4	8.9	YES	74.0	70.3	71.0	8.5	YES	73.6	62.8	65.7	3.2	YES	68.3	73.6	73.9	11.4	YES	76.5	72.6	73.0	10.5	YES	75.6
D5	1	67.0	69.6	75.3	75.9	8.9	YES	78.5	75.2	75.8	8.8	YES	78.4	73.9	74.7	7.7	YES	77.3	71.7	73.0	6.0	YES	75.6	67.3	70.2	3.2	YES	72.8	66.7	69.9	2.9		72.5	59.5	67.7	0.7		70.3	70.0	71.8	4.8	YES	74.4	68.7	70.9	3.9	YES	73.5
D5	2	67.5	70.1	74.7	75.5	8.0	YES	78.1	74.6	75.4	7.9	YES	78.0	73.6	74.6	7.1	YES	77.2	71.4	72.9	5.4	YES	75.5	67.4	70.5	3.0		73.1	66.8	70.2	2.7		72.8	59.6	68.2	0.7		70.8	70.0	71.9	4.4	YES	74.5	68.9	71.3	3.8	YES	73.9
D5	3	67.2	69.8	74.7	75.4	8.2	YES	78.0	74.6	75.3	8.1	YES	77.9	73.4	74.3	7.1	YES	76.9	71.4	72.8	5.6	YES	75.4	67.0	70.1	2.9		72.7	66.3	69.8	2.6		72.4	59.5	67.9	0.7		70.5	69.4	71.4	4.2	YES	74.0	68.5	70.9	3.7	YES	73.5
D5	4	66.9	69.5	74.8	75.5	8.6	YES	78.1	74.7	75.4	8.5	YES	78.0	74.1	74.9	8.0	YES	77.5	71.9	73.1	6.2	YES	75.7	67.3	70.1	3.2	YES	72.7	66.7	69.8	2.9		72.4	59.3	67.6	0.7		70.2	69.9	71.7	4.8	YES	74.3	68.6	70.8	3.9	YES	73.4
D5	5	66.5	69.1	74.8	75.4	8.9	YES	78.0	74.6	75.2	8.7	YES	77.8	74.0	74.7	8.2	YES	77.3	71.9	73.0	6.5	YES	75.6	68.0	70.3	3.8	YES	72.9	67.5	70.0	3.5	YES	72.6	59.7	67.3	0.8		69.9	70.8	72.2	5.7	YES	74.8	69.6	71.3	4.8	YES	73.9
D5	6	66.1	68.7	74.8	75.3	9.2	YES	77.9	74.5	75.1	9.0	YES	77.7	74.0	74.7	8.6	YES	77.3	71.9	72.9	6.8	YES	75.5	68.3	70.3	4.2	YES	72.9	67.7	70.0	3.9	YES	72.6	59.9	67.0	0.9		69.6	71.2	72.4	6.3	YES	75.0	70.1	71.6	5.5	YES	74.2
D5	7	65.6	68.2	74.8	75.3	9.7	YES	77.9	74.5	75.0	9.4	YES	77.6	73.5	74.2	8.6	YES	76.8	71.8	72.7	7.1	YES	75.3	68.6	70.4	4.8	YES	73.0	68.1	70.0	4.4	YES	72.6	57.6	66.2	0.6		68.8	71.1	72.2	6.6	YES	74.8	70.2	71.5	5.9	YES	74.1
D5	8	65.1	67.7	74.9	75.3	10.2	YES	77.9	74.4	74.9	9.8	YES	77.5	73.6	74.2	9.1	YES	76.8	71.7	72.6	7.5	YES	75.2	68.7	70.3	5.2	YES	72.9	68.2	69.9	4.8	YES	72.5	57.3	65.8	0.7		68.4	71.2	72.2	7.1	YES	74.8	70.4	71.5	6.4	YES	74.1
D5	9	64.7	67.3	74.9	75.3	10.6	YES	77.9	74.4	74.8	10.1	YES	77.4	73.7	74.2	9.5	YES	76.8	71.8	72.6	7.9	YES	75.2	68.8	70.2	5.5	YES	72.8	68.2	69.8	5.1	YES	72.4	57.4	65.4	0.7		68.0	71.2	72.1	7.4	YES	74.7	70.7	71.7	7.0	YES	74.3
D5	10	64.3	66.9	75.0	75.4	11.1	YES	78.0	74.3	74.7	10.4	YES	77.3	73.7	74.2	9.9	YES	76.8	71.7	72.4	8.1	YES	75.0	68.8	70.1	5.8	YES	72.7	68.2	69.7	5.4	YES	72.3	57.8	65.2	0.9		67.8	71.2	72.0	7.7	YES	74.6	70.6	71.5	7.2	YES	74.1
D5	11	64.0	66.6	74.9	75.2	11.2	YES	77.8	74.3	74.7	10.7	YES	77.3	73.7	74.1	10.1	YES	76.7	71.5	72.2	8.2	YES	74.8	68.7	70.0	6.0	YES	72.6	68.1	69.5	5.5	YES	72.1	59.0	65.2	1.2		67.8	71.2	72.0	8.0	YES	74.6	70.6	71.5	7.5	YES	74.1
D5	12	63.7	66.3	75.0	75.3	11.6	YES	77.9	74.4	74.8	11.1	YES	77.4	73.6	74.0	10.3	YES	76.6	71.5	72.2	8.5	YES	74.8	68.7	69.9	6.2	YES	72.5	68.1	69.4	5.7	YES	72.0	58.8	64.9	1.2		67.5	71.2	71.9	8.2	YES	74.5	70.5	71.3	7.6	YES	73.9
D5	13	63.4	66.0	75.0	75.3	11.9	YES	77.9	74.2	74.5	11.1	YES	77.1	73.5	73.9	10.5	YES	76.5	71.3	72.0	8.6	YES	74.6	68.6	69.7	6.3	YES	72.3	68.0	69.3	5.9	YES	71.9	58.7	64.7	1.3		67.3	71.1	71.8	8.4	YES	74.4	70.4	71.2	7.8	YES	73.8
D6	1	68.1	70.7	72.1	73.6	5.5	YES	76.2	72.0	73.5	5.4	YES	76.1	73.1	74.3	6.2	YES	76.9	70.7	72.6	4.5	YES	75.2	65.8	70.1	2.0		72.7	65.1	69.9	1.8		72.5	59.8	68.7	0.6		71.3	68.8	71.5	3.4	YES	74.1	67.7	70.9	2.8		73.5
D6	2	68.5	71.1	73.1	74.4	5.9	YES	77.0	73.0	74.3	5.8	YES	76.9	72.8	74.2	5.7	YES	76.8	70.1	72.4	3.9	YES	75.0	65.8	70.4	1.9		73.0	65.1	70.1	1.6		72.7	59.6	69.0	0.5		71.6	68.8	71.7	3.2	YES	74.3	67.8	71.2	2.7		73.8
D6	3	68.1	70.7	73.1	74.3	6.2	YES	76.9	73.0	74.2	6.1	YES	76.8	72.8	74.1	6.0	YES	76.7	70.1	72.2	4.1	YES	74.8	65.3	69.9	1.8		72.5	64.4	69.6	1.5		72.2	59.3	68.6	0.5		71.2	68.5	71.3	3.2	YES	73.9	67.8	71.0	2.9		73.6
D6	4	67.6	70.2	73.2	74.3	6.7	YES	76.9	73.0	74.1	6.5	YES	76.7	72.9	74.0	6.4	YES	76.6	70.5	72.3	4.7	YES	74.9	65.0	69.5	1.9		72.1	64.1	69.2	1.6		71.8	59.0	68.2	0.6		70.8	67.5	70.6	3.0		73.2	66.6	70.1	2.5		72.7
D6	5	67.1	69.7	73.2	74.2	7.1	YES	76.8	73.0	74.0	6.9	YES	76.6	73.1	74.1	7.0	YES	76.7	70.5	72.1	5.0	YES	74.7	65.3	69.3	2.2		71.9	64.5	69.0	1.9		71.6	58.7	67.7	0.6		70.3	68.2	70.7	3.6	YES	73.3	67.6	70.4	3.3	YES	73.0
D6	6	66.6	69.2	73.2	74.1	7.5	YES	76.7	73.0	73.9	7.3	YES	76.5	72.9	73.8	7.2	YES	76.4	70.5	72.0	5.4	YES	74.6	66.4	69.5	2.9		72.1	65.6	69.1	2.5		71.7	58.7	67.3	0.7		69.9	69.7	71.4	4.8	YES	74.0	68.8	70.8	4.2	YES	73.4
D6	7	66.1	68.7	73.1	73.9	7.8	YES	76.5	72.8	73.6	7.5	YES	76.2	72.4	73.3	7.2	YES	75.9	69.9	71.4	5.3	YES	74.0	66.8	69.5	3.4	YES	72.1	66.1	69.1	3.0	YES	71.7	56.7	66.6	0.5		69.2	69.8	71.3	5.2	YES	73.9	68.8	70.7	4.6	YES	73.3
D6	8	65.6	68.2	73.1	73.8	8.2	YES	76.4	72.7	73.5	7.9	YES	76.1	72.1	73.0	7.4	YES	75.6	69.9	71.3	5.7	YES	73.9	67.1	69.4	3.8	YES	72.0	66.4	69.0	3.4	YES	71.6	56.5	66.1	0.5		68.7	69.8	71.2	5.6	YES	73.8	69	70.6	5.0	YES	73.2
D6	9	65.1	67.7	73.2	73.8	8.7	YES	76.4	72.8	73.5	8.4	YES	76.1	72.1	72.9	7.8	YES	75.5	70.0	71.2	6.1	YES	73.8	67.2	69.3	4.2	YES	71.9	66.6	68.9	3.8	YES	71.5	56.4	65.6	0.5		68.2	69.8	71.1	6.0	YES	73.7	69.3	70.7	5.6	YES	73.3
D6	10	64.8	67.4	73.4	74.0	9.2	YES	76.6	72.8	73.4	8.6	YES	76.0	72.2	72.9	8.1	YES	75.5	69.9	71.1	6.3	YES	73.7	67.2	69.2	4.4	YES	71.8	66.5	68.7	3.9	YES	71.3	56.9	65.5	0.7		68.1	69.8	71.0	6.2	YES	73.6	69.2	70.5	5.7	YES	73.1
D6	11	64.4	67.0	73.4	73.9	9.5	YES	76.5	72.9	73.5	9.1	YES	76.1	72.2	72.9	8.5	YES	75.5	69.9	71.0	6.6	YES	73.6	67.2	69.0	4.6	YES	71.6	66.6	68.6	4.2	YES	71.2	57.7	65.2	0.8		67.8	69.7	70.8	6.4	YES	73.4	69.2	70.4	6.0	YES	73.0
D6	12	64.0	66.6	73.4	73.9	9.9	YES	76.5	72.8	73.3	9.3	YES	75.9	72.1	72.7	8.7	YES	75.3	69.7	70.7	6.7	YES	73.3	67.2	68.9	4.9	YES	71.5	66.6	68.5	4.5	YES	71.1	57.6	64.9	0.9		67.5	69.7	70.7	6.7	YES	73.3	69.1	70.3	6.3	YES	72.9
D6	13	63.7	66.3	73.8	74.2	10.5	YES	76.8	72.8	73.3	9.6	YES	75.9	72.0	72.6	8.9	YES	75.2	69.7	70.7	7.0	YES	73.3	67.2	68.8	5.1	YES	71.4	66.5	68.3	4.6	YES	70.9	57.5	64.6	0.9		67.2	69.7	70.7	7.0	YES	73.3	69.1	70.2	6.5	YES	72.8
E1	1	59.9	62.5	67.9	68.5	8.6	YES	71.1	67.8	68.5	8.6	YES	71.1	67.8	68.5	8.6	YES	71.1	65.0	66.2	6.3	YES	68.8	62.1	64.1	4.2		66.7	59.5	62.7	2.8		65.3	53.5	60.8	0.9		63.4	63.3	64.9	5.0	YES	67.5	62.3	64.3	4.4		66.9
E1	2	61.6	64.2	67.9	68.8	7.2	YES	71.4	67.6	68.6	7.0	YES	71.2	68.9	69.6	8.0	YES	72.2	65.3	66.8	5.2	YES	69.4	62.7	65.2	3.6	YES	67.8	60.5	64.1	2.5		66.7	54.6	62.4	0.8		65.0	64.0	66.0	4.4	YES	68.6	62.8	65.3	3.7	YES	67.9
E1	3	62.2	64.8	68.5	69.4	7.2	YES	72.0	68.0	69.0	6.8	YES	71.6	69.6	70.3	8.1	YES	72.9	65.8	67.4	5.2	YES	70.0	63.0	65.6	3.4	YES	68.2	60.7	64.5	2.3		67.1	55.3	63.0	0.8		65.6	64.1	66.3	4.1	YES	68.9	62.9	65.6	3.4	YES	68.2
E1	4	62.4	65.0	69.4	70.2	7.8	YES	72.8	68.8	69.7	7.3	YES	72.3	70.5	71.1	8.7	YES	73.7	67.5	68.7	6.3	YES	71.3	63.3	65.9	3.5	YES	68.5	61.1	64.8	2.4		67.4	55.3	63.2	0.8		65.8	64.5	66.6	4.2	YES	69.2	63.6	66.1	3.7	YES	68.7
E1	5	62.4	65.0	68.9	69.8	7.4	YES	72.4	68.0	69.1	6.7	YES	71.7	70.9	71.5	9.1	YES	74.1	68.2	69.2	6.8	YES	71.8	64.2	66.4	4.0	YES	69.0	62.5	65.5	3.1	YES	68.1	55.4	63.2	0.8		65.8	66.4	67.9	5.5	YES	70.5	66.5	67.9	5.5	YES	70.5
E1	6	62.2	64.8	69.7	70.4	8.2	YES	73.0	68.8	69.7	7.5	YES	72.3	70.9	71.4	9.2	YES	74.0	68.1	69.1	6.9	YES	71.7	65.4	67.1	4.9	YES	69.7	64.2	66.3	4.1	YES	68.9	56.0	63.1	0.9		65.7	67.6	68.7	6.5	YES	71.3	66.9	68.2	6.0	YES	70.8
E1	7	62.0	64.6	70.4	71.0	9.0	YES	73.6	69.5	70.2	8.2	YES	72.8	71.5	72.0	10.0	YES	74.6	68.4	69.3	7.3	YES	71.9	65.6	67.2	5.2	YES	69.8	64.3	66.3	4.3	YES	68.9	57.9	63.4	1.4		66.0	67.6	68.7	6.7	YES	71.3	66.9	68.1	6.1	YES	70.7
E1	8	61.9	64.5	70.2	70.8	8.9	YES	73.4	68.9	69.7	7.8	YES	72.3	71.9	72.3	10.4	YES	74.9	68.7	69.5	7.6	YES	72.1	65.8	67.3	5.4	YES	69.9	64.6	66.5	4.6	YES	69.1	57.8	63.3	1.4		65.9	67.6	68.6	6.7	YES	71.2	67	68.2	6.3	YES	70.8
E1	9	61.6	64.2	71.0	71.5	9.9	YES	74.1	69.6	70.2	8.6	YES	72.8	72.5	72.8	11.2	YES	75.4	68.9	69.6	8.0	YES	72.2	65.9	67.3	5.7	YES	69.9	64.6	66.4	4.8	YES	69.0	57.7	63.1	1.5		65.7	67.7	68.7	7.1	YES	71.3	67.1	68.2	6.6	YES	70.8
E1	10	61.4	64.0	71.3	71.7	10.3	YES	74.3	69.7	70.3	8.9	YES	72.9	72.4	72.7	11.3	YES	75.3	69.2	69.9	8.5	YES	72.5	66.0	67.3	5.9	YES	69.9	64.7	66.4	5.0	YES	69.0	57.6	62.9	1.5		65.5	67.7	68.6	7.2	YES	71.2	67	68.1	6.7	YES	70.7
E1	11	61.2	63.8	71.7	72.1	10.9	YES	74.7	70.0	70.5	9.3	YES	73.1	72.3	72.6	11.4	YES	75.2	69.3	69.9	8.7	YES	72.5	66.2	67.4	6.2	YES	70.0	65.0	66.5	5.3	YES	69.1	57.5	62.7	1.5		65.3	67.7	68.6	7.4	YES	71.2	67	68.0	6.8	YES	70.6
E1	12	61.0	63.6	72.3	72.6	11.6	YES	75.2	70.4	70.9	9.9	YES	73.5	72.2	72.5	11.5	YES	75.1	69.2	69.8	8.8	YES	72.4	66.2	67.3	6.3	YES	69.9	64.9	66.4	5.4	YES	69.0	57.4	62.6	1.6		65.2	67.8	68.6	7.6	YES	71.2	66.9	67.9	6.9	YES	70.5
E1	13	60.7	63.3	72.7	73.0	12.3	YES	75.6	70.7	71.1	10.4	YES	73.7	72.2	72.5	11.8	YES	75.1	69.3	69.9	9.2	YES	72.5	66.2	67.3	6.6	YES	69.9	64.9	66.3	5.6	YES	68.9	57.3	62.3	1.6		64.9	67.9	68.7	8.0	YES	71.3	66.9	67.8	7.1	YES	70.4
E1	14	60.5	63.1	72.7	73.0	12.5	YES	75.6	70.9	71.3	10.8	YES	73.9	72.0	72.3	11.8	YES	74.9	69.0	69.6	9.1	YES	72.2	66.1	67.2	6.7	YES	69.8	64.8	66.2	5.7	YES	68.8	57.2	62.2	1.7		64.8	67.9	68.6	8.1	YES	71.2	66.8	67.7	7.2	YES	70.3
E2	1	55.6	58.2	59.0	60.6	5.0	YES	63.2	55.6	58.6	3.0		61.2	60.7	61.9	6.2	YES	64.5	55.6	58.6	3.0		61.2	59.4	60.9	5.3	YES	63.5	50.1	56.7	1.1		59.3	44.8	56.0	0.3		58.6	52.2	57.3	1.6		59.9	49.9	56.7	1.0		59.3
E2	2	55.6	58.2	60.0	61.4	5.7	YES	64.0	56.8	59.3	3.6		61.9	62.2	63.1	7.4	YES	65.7	57.2	59.5	3.9		62.1	59.6	61.1	5.4	YES	63.7	50.5	56.8	1.2		59.4	46.1	56.1	0.5		58.7	52.6	57.4	1.8		60.0	50.4	56.8	1.1		59.4
E2	3	56.3	58.9	61.2	62.4	6.1	YES	65.0	58.2	60.4	4.1		63.0	64.3	64.9	8.6	YES	67.5	58.9	60.8	4.5		63.4	59.9	61.5	5.2	YES	64.1	51.3	57.5	1.2		60.1	49.9	57.2	0.9		59.8	54.3	58.4	2.1		61.0	52.3	57.8	1.5		60.4
E2	4	57.3	59.9	63.1	64.1	6.8	YES	66.7	60.9	62.5	5.2	YES	65.1	67.7	68.1	10.8	YES	70.7	65.4	66.0	8.7	YES	68.6	60.3	62.1	4.8		64.7	53.3	58.8	1.5		61.4	51.7	58.4	1.1		61.0	56.4	59.9	2.6		62.5	54.7	59.2	1.9		61.8
E2	5	57.8	60.4	65.6	66.3	8.5	YES	68.9	64.4	65.3	7.5	YES	67.9	68.3	68.7	10.9	YES	71.3	66.2	66.8	9.0	YES	69.4	60.9	62.6	4.8		65.2	55.4	59.8	2.0		62.4	52.6	58.9	1.1		61.5	58.2	61.0	3.2		63.6	57	60.4	2.6		63.0
E2	6	58.3	60.9	67.1	67.6	9.3	YES	70.2	66.2	66.9	8.6	YES	69.5	69.3	69.6	11.3	YES	72.2	67.0	67.5	9.2	YES	70.1	62.2	63.7	5.4	YES	66.3	58.8	61.6	3.3		64.2	53.1	59.4	1.1		62.0	60.2	62.4	4.1		65.0	59.3	61.8	3.5		64.4
E2	7	58.3	60.9	68.2	68.6	10.3	YES	71.2	67.4	67.9	9.6	YES	70.5	70.1	70.4	12.1	YES	73.0	67.3	67.8	9.5	YES	70.4	62.6	64.0	5.7	YES	66.6	59.4	61.9	3.6		64.5	56.4	60.5	2.2		63.1	60.4	62.5	4.2		65.1	59.3	61.8	3.5		64.4

E2	8	58.4	61.0	68.0	68.5	10.1	YES	71.1	67.0	67.6	9.2	YES	70.2	70.5	70.8	12.4	YES	73.4	67.7	68.2	9.8	YES	70.8	62.7	64.1	5.7	YES	66.7	59.4	61.9	3.5		64.5	56.4	60.5	2.1		63.1	60.7	62.7	4.3		65.3	59.8	62.2	3.8		64.8
E2	9	58.4	61.0	67.7	68.2	9.8	YES	70.8	66.3	67.0	8.6	YES	69.6	70.8	71.0	12.6	YES	73.6	67.8	68.3	9.9	YES	70.9	62.8	64.1	5.7	YES	66.7	59.5	62.0	3.6		64.6	56.4	60.5	2.1		63.1	61.3	63.1	4.7		65.7	60.4	62.5	4.1		65.1
E2	10	58.4	61.0	68.7	69.1	10.7	YES	71.7	67.4	67.9	9.5	YES	70.5	70.9	71.1	12.7	YES	73.7	67.9	68.4	10.0	YES	71.0	63.0	64.3	5.9	YES	66.9	59.7	62.1	3.7		64.7	56.3	60.5	2.1		63.1	61.4	63.2	4.8		65.8	60.4	62.5	4.1		65.1
E2	11	58.3	60.9	69.4	69.7	11.4	YES	72.3	68.0	68.4	10.1	YES	71.0	71.0	71.2	12.9	YES	73.8	68.0	68.4	10.1	YES	71.0	63.3	64.5	6.2	YES	67.1	60.2	62.4	4.1		65.0	56.3	60.4	2.1		63.0	61.6	63.3	5.0		65.9	60.3	62.4	4.1		65.0
E2	12	58.3	60.9	69.8	70.1	11.8	YES	72.7	68.3	68.7	10.4	YES	71.3	70.9	71.1	12.8	YES	73.7	68.0	68.4	10.1	YES	71.0	63.3	64.5	6.2	YES	67.1	60.1	62.3	4.0		64.9	56.2	60.4	2.1		63.0	62.3	63.8	5.5	YES	66.4	60.3	62.4	4.1		65.0
E2	13	58.2	60.8	70.4	70.7	12.5	YES	73.3	68.8	69.2	11.0	YES	71.8	71.0	71.2	13.0	YES	73.8	68.2	68.6	10.4	YES	71.2	63.3	64.5	6.3	YES	67.1	60.1	62.3	4.1		64.9	56.2	60.3	2.1		62.9	62.5	63.9	5.7	YES	66.5	60.3	62.4	4.2		65.0
E2	14	58.1	60.7	71.0	71.2	13.1	YES	73.8	69.5	69.8	11.7	YES	72.4	71.0	71.2	13.1	YES	73.8	68.2	68.6	10.5	YES	71.2	63.4	64.5	6.4	YES	67.1	60.0	62.2	4.1		64.8	56.1	60.2	2.1		62.8	62.6	63.9	5.8	YES	66.5	60.3	62.3	4.2		64.9
E3	1	55.6	58.2	57.8	59.9	4.2		62.5	52.4	57.3	1.7		59.9	59.3	60.9	5.2	YES	63.5	51.1	56.9	1.3		59.5	59.1	60.7	5.1	YES	63.3	49.2	56.5	0.9		59.1	39.5	55.7	0.1		58.3	50.0	56.7	1.0		59.3	48.7	56.4	0.8		59.0
E3	2	55.6	58.2	58.4	60.2	4.6		62.8	54.4	58.1	2.4		60.7	60.2	61.5	5.9	YES	64.1	53.3	57.6	2.0		60.2	59.3	60.9	5.2	YES	63.5	50.0	56.7	1.0		59.3	39.9	55.7	0.1		58.3	52.2	57.3	1.6		59.9	50.7	56.8	1.2		59.4
E3	3	55.6	58.2	61.3	62.3	6.7	YES	64.9	58.7	60.4	4.8		63.0	64.2	64.8	9.1	YES	67.4	60.1	61.4	5.8	YES	64.0	59.7	61.1	5.5	YES	63.7	51.7	57.1	1.5		59.7	40.8	55.8	0.1		58.4	56.1	58.9	3.2		61.5	53.9	57.9	2.2		60.5
E3	4	55.6	58.2	62.2	63.1	7.4	YES	65.7	60.2	61.5	5.9	YES	64.1	69.5	69.7	14.0	YES	72.3	65.8	66.2	10.6	YES	68.8	60.1	61.4	5.8	YES	64.0	53.4	57.7	2.0		60.3	41.7	55.8	0.2		58.4	58.7	60.4	4.8		63.0	56	58.8	3.2		61.4
E3	5	55.6	58.2	63.0	63.7	8.1	YES	66.3	61.0	62.1	6.5	YES	64.7	69.6	69.8	14.1	YES	72.4	66.1	66.5	10.8	YES	69.1	60.6	61.8	6.2	YES	64.4	55.0	58.3	2.7		60.9	42.8	55.9	0.2		58.5	59.8	61.2	5.6	YES	63.8	58.3	60.2	4.5		62.8
E3	6	55.6	58.2	64.5	65.0	9.4	YES	67.6	63.0	63.7	8.1	YES	66.3	69.8	70.0	14.3	YES	72.6	66.3	66.7	11.0	YES	69.3	60.8	62.0	6.3	YES	64.6	55.3	58.5	2.8		61.1	45.3	56.0	0.4		58.6	60.0	61.4	5.7	YES	64.0	58.7	60.4	4.8		63.0
E3	7	55.6	58.2	67.2	67.5	11.9	YES	70.1	66.4	66.7	11.1	YES	69.3	70.0	70.2	14.5	YES	72.8	66.7	67.0	11.4	YES	69.6	61.1	62.2	6.6	YES	64.8	55.9	58.8	3.1		61.4	49.0	56.5	0.9		59.1	60.7	61.9	6.2	YES	64.5	59.3	60.9	5.2	YES	63.5
E3	8	55.6	58.2	67.7	68.0	12.3	YES	70.6	66.8	67.1	11.5	YES	69.7	70.5	70.6	15.0	YES	73.2	67.2	67.5	11.9	YES	70.1	61.3	62.3	6.7	YES	64.9	56.3	59.0	3.4		61.6	50.8	56.9	1.2		59.5	61.3	62.3	6.7	YES	64.9	59.5	61.0	5.4	YES	63.6
E3	9	55.6	58.2	68.1	68.3	12.7	YES	70.9	67.0	67.3	11.7	YES	69.9	70.4	70.5	14.9	YES	73.1	67.0	67.3	11.7	YES	69.9	61.6	62.6	6.9	YES	65.2	57.0	59.4	3.7		62.0	51.0	56.9	1.3		59.5	62.3	63.1	7.5	YES	65.7	59.9	61.3	5.6	YES	63.9
E3	10	55.6	58.2	68.7	68.9	13.3	YES	71.5	67.5	67.8	12.1	YES	70.4	70.7	70.8	15.2	YES	73.4	67.3	67.6	12.0	YES	70.2	61.8	62.7	7.1	YES	65.3	57.3	59.6	3.9		62.2	51.0	56.9	1.3		59.5	62.8	63.6	7.9	YES	66.2	60.5	61.7	6.1	YES	64.3
E3	11	55.6	58.2	69.3	69.5	13.8	YES	72.1	68.0	68.2	12.6	YES	70.8	71.0	71.1	15.5	YES	73.7	67.4	67.7	12.0	YES	70.3	62.0	62.9	7.3	YES	65.5	57.7	59.8	4.2		62.4	51.0	56.9	1.3		59.5	63.2	63.9	8.3	YES	66.5	61.2	62.3	6.6	YES	64.9
E3	12	55.6	58.2	69.9	70.1	14.4	YES	72.7	68.5	68.7	13.1	YES	71.3	71.0	71.1	15.5	YES	73.7	67.4	67.7	12.0	YES	70.3	62.1	63.0	7.4	YES	65.6	57.9	59.9	4.3		62.5	51.0	56.9	1.3		59.5	63.6	64.2	8.6	YES	66.8	61.7	62.7	7.0	YES	65.3
E3	13	55.6	58.2	69.8	70.0	14.3	YES	72.6	68.2	68.4	12.8	YES	71.0	71.1	71.2	15.6	YES	73.8	67.5	67.8	12.1	YES	70.4	62.3	63.1	7.5	YES	65.7	58.2	60.1	4.5		62.7	51.0	56.9	1.3		59.5	63.7	64.3	8.7	YES	66.9	61.8	62.7	7.1	YES	65.3
E3	14	55.6	58.2	70.4	70.5	14.9	YES	73.1	68.6	68.8	13.2	YES	71.4	70.6	70.7	15.1	YES	73.3	67.4	67.7	12.0	YES	70.3	62.6	63.4	7.8	YES	66.0	58.8	60.5	4.9		63.1	50.9	56.9	1.3		59.5	64.0	64.6	9.0	YES	67.2	61.9	62.8	7.2	YES	65.4
F1	2	68.3	70.9	75.7	76.4	8.1	YES	79.0	75.5	76.3	8.0	YES	78.9	75.2	76.0	7.7	YES	78.6	72.7	74.0	5.7	YES	76.6	70.9	72.8	4.5	YES	75.4	70.9	72.8	4.5	YES	75.4	61.6	69.1	0.8		71.7	73.3	74.5	6.2	YES	77.1	70.7	72.7	4.4	YES	75.3
F1	3	67.9	70.5	78.6	79.0	11.1	YES	81.6	78.4	78.8	10.9	YES	81.4	77.1	77.6	9.7	YES	80.2	74.4	75.3	7.4	YES	77.9	72.1	73.5	5.6	YES	76.1	72.1	73.5	5.6	YES	76.1	62.7	69.0	1.1		71.6	74.0	75.0	7.1	YES	77.6	71.5	73.1	5.2	YES	75.7
F1	4	67.3	69.9	78.7	79.0	11.7	YES	81.6	78.4	78.7	11.4	YES	81.3	77.4	77.8	10.5	YES	80.4	74.7	75.4	8.1	YES	78.0	72.8	73.9	6.6	YES	76.5	72.8	73.9	6.6	YES	76.5	64.2	69.0	1.7		71.6	74.5	75.3	8.0	YES	77.9	72.6	73.7	6.4	YES	76.3
F1	5	66.7	69.3	78.7	79.0	12.3	YES	81.6	78.3	78.6	11.9	YES	81.2	77.5	77.8	11.1	YES	80.4	74.8	75.4	8.7	YES	78.0	73.7	74.5	7.8	YES	77.1	73.7	74.5	7.8	YES	77.1	64.7	68.8	2.1		71.4	74.9	75.5	8.8	YES	78.1	72.8	73.8	7.1	YES	76.4
F1	6	66.2	68.8	79.0	79.2	13.0	YES	81.8	78.3	78.6	12.4	YES	81.2	77.4	77.7	11.5	YES	80.3	75.1	75.6	9.4	YES	78.2	73.5	74.2	8.0	YES	76.8	73.5	74.2	8.0	YES	76.8	64.9	68.6	2.4		71.2	75.4	75.9	9.7	YES	78.5	74.3	74.9	8.7	YES	77.5
F1	7	65.8	68.4	79.1	79.3	13.5	YES	81.9	78.3	78.5	12.7	YES	81.1	77.3	77.6	11.8	YES	80.2	75.1	75.6	9.8	YES	78.2	73.5	74.2	8.4	YES	76.8	73.5	74.2	8.4	YES	76.8	63.2	67.7	1.9		70.3	75.8	76.2	10.4	YES	78.8	75.2	75.7	9.9	YES	78.3
F1	8	65.3	67.9	79.0	79.2	13.9	YES	81.8	78.2	78.4	13.1	YES	81.0	77.2	77.5	12.2	YES	80.1	75.1	75.5	10.2	YES	78.1	73.5	74.1	8.8	YES	76.7	73.5	74.1	8.8	YES	76.7	63.2	67.4	2.1		70.0	75.8	76.2	10.9	YES	78.8	74	74.5	9.2	YES	77.1
F1	9	65.0	67.6	78.9	79.1	14.1	YES	81.7	78.1	78.3	13.3	YES	80.9	76.7	77.0	12.0	YES	79.6	74.6	75.1	10.1	YES	77.7	73.3	73.9	8.9	YES	76.5	73.3	73.9	8.9	YES	76.5	63.5	67.3	2.3		69.9	75.8	76.1	11.1	YES	78.7	74.6	75.1	10.1	YES	77.7
F1	10	64.6	67.2	78.8	79.0	14.4	YES	81.6	78.0	78.2	13.6	YES	80.8	76.5	76.8	12.2	YES	79.4	74.3	74.7	10.1	YES	77.3	73.1	73.7	9.1	YES	76.3	73.1	73.7	9.1	YES	76.3	64.3	67.5	2.9		70.1	75.4	75.7	11.1	YES	78.3	75	75.4	10.8	YES	78.0
F1	11	64.2	66.8	78.6	78.8	14.6	YES	81.4	77.8	78.0	13.8	YES	80.6	76.1	76.4	12.2	YES	79.0	74.2	74.6	10.4	YES	77.2	72.9	73.4	9.2	YES	76.0	72.9	73.4	9.2	YES	76.0	64.1	67.2	3.0		69.8	75.2	75.5	11.3	YES	78.1	74.3	74.7	10.5	YES	77.3
F1	12	63.9	66.5	78.7	78.8	14.9	YES	81.4	77.9	78.1	14.2	YES	80.7	76.0	76.3	12.4	YES	78.9	74.0	74.4	10.5	YES	77.0	72.7	73.2	9.3	YES	75.8	72.7	73.2	9.3	YES	75.8	63.9	66.9	3.0	YES	69.5	75.0	75.3	11.4	YES	77.9	74.1	74.5	10.6	YES	77.1
F2	1	69.3	71.9	68.0	71.7	2.4		74.3	67.7	71.6	2.3		74.2	71.4	73.5	4.2	YES	76.1	68.2	71.8	2.5		74.4	64.6	70.6	1.3		73.2	64.6	70.6	1.3		73.2	60.0	69.8	0.5		72.4	66.8	71.2	1.9		73.8	63.9	70.4	1.1		73.0
F2	2	69.3	71.9	73.8	75.1	5.8	YES	77.7	73.7	75.0	5.7	YES	77.6	72.8	74.4	5.1	YES	77.0	70.3	72.8	3.5	YES	75.4	64.8	70.6	1.3		73.2	64.8	70.6	1.3		73.2	59.8	69.8	0.5		72.4	67.0	71.3	2.0		73.9	64	70.4	1.1		73.0
F2	3	68.7	71.3	73.8	75.0	6.3	YES	77.6	73.6	74.8	6.1	YES	77.4	72.3	73.9	5.2	YES	76.5	70.4	72.6	3.9	YES	75.2	64.2	70.0	1.3		72.6	64.2	70.0	1.3		72.6	59.3	69.2	0.5		71.8	66.8	70.9	2.2		73.5	64.2	70.0	1.3		72.6
F2	4	68.0	70.6	73.8	74.8	6.8	YES	77.4	73.6	74.7	6.7	YES	77.3	72.7	74.0	6.0	YES	76.6	70.0	72.1	4.1	YES	74.7	64.4	69.6	1.6		72.2	64.4	69.6	1.6		72.2	59.0	68.5	0.5		71.1	67.2	70.6	2.6		73.2	64.2	69.5	1.5		72.1
F2	5	67.4	70.0	73.8	74.7	7.3	YES	77.3	73.6	74.5	7.1	YES	77.1	73.2	74.2	6.8	YES	76.8	70.1	72.0	4.6	YES	74.6	65.1	69.4	2.0		72.0	65.1	69.4	2.0		72.0	59.2	68.0	0.6		70.6	67.6	70.5	3.1	YES	73.1	64.6	69.2	1.8		71.8
F2	6	66.8	69.4	73.9	74.7	7.9	YES	77.3	73.6	74.4	7.6	YES	77.0	73.1	74.0	7.2	YES	76.6	70.9	72.3	5.5	YES	74.9	65.9	69.4	2.6		72.0	65.9	69.4	2.6		72.0	59.3	67.5	0.7		70.1	67.8	70.3	3.5	YES	72.9	65.2	69.1	2.3		71.7
F2	7	66.3	68.9	73.9	74.6	8.3	YES	77.2	73.6	74.3	8.0	YES	76.9	73.1	73.9	7.6	YES	76.5	70.9	72.2	5.9	YES	74.8	66.5	69.4	3.1	YES	72.0	66.5	69.4	3.1	YES	72.0	57.3	66.8	0.5		69.4	68.3	70.4	4.1	YES	73.0	69.2	71.0	4.7	YES	73.6
F2	8	65.9	68.5	74.4	75.0	9.1	YES	77.6	73.5	74.2	8.3	YES	76.8	73.1	73.9	8.0	YES	76.5	70.8	72.0	6.1	YES	74.6	66.8	69.4	3.5	YES	72.0	66.8	69.4	3.5	YES	72.0	57.2	66.4	0.5		69.0	69.1	70.8	4.9	YES	73.4	65.3	68.6	2.7		71.2
F2	9	65.5	68.1	74.1	74.7	9.2	YES	77.3	73.7	74.3	8.8	YES	76.9	72.7	73.5	8.0	YES	76.1	70.6	71.8	6.3	YES	74.4	67.2	69.4	3.9	YES	72.0	67.2	69.4	3.9	YES	72.0	57.3	66.1	0.6		68.7	69.2	70.7	5.2	YES	73.3	65.9	68.7	3.2	YES	71.3
F2	10	65.1	67.7	74.3	74.8	9.7	YES	77.4	73.6	74.2	9.1	YES	76.8	72.2	73.0	7.9	YES	75.6	70.3	71.4	6.3	YES	74.0	67.1	69.2	4.1	YES	71.8	67.1	69.2	4.1	YES	71.8	58.0	65.9	0.8		68.5	69.3	70.7	5.6	YES	73.3	67.4	69.4	4.3	YES	72.0
F2	11	64.7	67.3	74.4	74.8	10.1	YES	77.4	73.5	74.0	9.3	YES	76.6	72.2	72.9	8.2	YES	75.5	70.3	71.4	6.7	YES	74.0	67.0	69.0	4.3	YES	71.6	67.0	69.0	4.3	YES	71.6	58.6	65.7	1.0		68.3	69.4	70.7	6.0	YES	73.3	68.5	70.0	5.3	YES	72.6
F2	12	64.4	67.0	74.4	74.8	10.4	YES	77.4	73.5	74.0	9.6	YES	76.6	72.2	72.9	8.5	YES	75.5	70.2	71.2	6.8	YES	73.8	66.9	68.8	4.4	YES	71.4	66.9	68.8	4.4	YES	71.4	58.5	65.4	1.0		68.0	69.7	70.8	6.4	YES	73.4	68.9	70.2	5.8	YES	72.8

Jewish Home Life

Noise Receptor Sites	Elevation (floor)	Governing Measurement Loc	dBA							
			ExAM L_{eq} at Meas	ExAM L_{10} at Meas	Cadna ExAM L_{eq}	Adjustment Factor at Meas Loc	Min Level (avg Meas L_{90})	Existing L_{eq}	L_{10} Difference	Existing L_{10}
Site 1	1	1	61.3	63.9	60.8	0.5	55.6	61.3	2.6	63.9
Site 2	1	2	58.5	60.8	55.4	3.1	55.6	58.5	2.3	60.8
A1	1	1	[redacted]		55.4	0.5	55.6	55.9	2.6	58.5
A1	2	1	[redacted]		56.4	0.5	55.6	56.9	2.6	59.5
A1	3	1	[redacted]		57.8	0.5	55.6	58.3	2.6	60.9
A2	1	2	[redacted]		51.3	3.1	55.6	55.6	2.3	57.9
A2	2	2	[redacted]		52.2	3.1	55.6	55.6	2.3	57.9
A2	3	2	[redacted]		52.8	3.1	55.6	55.9	2.3	58.2
A2	4	2	[redacted]		53.7	3.1	55.6	56.8	2.3	59.1
A3	1	2	[redacted]		50.3	3.1	55.6	55.6	2.3	57.9
A3	2	2	[redacted]		50.9	3.1	55.6	55.6	2.3	57.9
A3	3	2	[redacted]		51.3	3.1	55.6	55.6	2.3	57.9
A3	4	2	[redacted]		52.0	3.1	55.6	55.6	2.3	57.9
A4	1	2	[redacted]		48.4	3.1	55.6	55.6	2.3	57.9
A4	2	2	[redacted]		48.6	3.1	55.6	55.6	2.3	57.9
A4	3	2	[redacted]		49.2	3.1	55.6	55.6	2.3	57.9
A4	4	2	[redacted]		50.0	3.1	55.6	55.6	2.3	57.9
A5	1	1	[redacted]		61.7	0.5	55.6	62.2	2.6	64.8
A5	2	1	[redacted]		63.4	0.5	55.6	63.9	2.6	66.5
A5	3	1	[redacted]		64.0	0.5	55.6	64.5	2.6	67.1
B1	1	2	[redacted]		53.0	3.1	55.6	56.1	2.3	58.4
B1	2	2	[redacted]		53.7	3.1	55.6	56.8	2.3	59.1
B1	3	2	[redacted]		54.4	3.1	55.6	57.5	2.3	59.8
B1	4	2	[redacted]		55.1	3.1	55.6	58.2	2.3	60.5
B1	5	2	[redacted]		55.7	3.1	55.6	58.8	2.3	61.1
B1	6	2	[redacted]		56.3	3.1	55.6	59.4	2.3	61.7
B1	7	2	[redacted]		56.8	3.1	55.6	59.9	2.3	62.2
B1	8	2	[redacted]		57.3	3.1	55.6	60.4	2.3	62.7
B1	9	2	[redacted]		57.8	3.1	55.6	60.9	2.3	63.2
B1	10	2	[redacted]		58.1	3.1	55.6	61.2	2.3	63.5
B1	11	2	[redacted]		58.2	3.1	55.6	61.3	2.3	63.6
B1	12	2	[redacted]		58.2	3.1	55.6	61.3	2.3	63.6
B1	13	2	[redacted]		58.3	3.1	55.6	61.4	2.3	63.7
B1	14	2	[redacted]		58.3	3.1	55.6	61.4	2.3	63.7
B1	15	2	[redacted]		58.2	3.1	55.6	61.3	2.3	63.6
B1	16	2	[redacted]		58.2	3.1	55.6	61.3	2.3	63.6
B2	1	2	[redacted]		50.7	3.1	55.6	55.6	2.3	57.9
B2	2	2	[redacted]		51.3	3.1	55.6	55.6	2.3	57.9
B2	3	2	[redacted]		52.1	3.1	55.6	55.6	2.3	57.9
B2	4	2	[redacted]		53.0	3.1	55.6	56.1	2.3	58.4
B2	5	2	[redacted]		54.3	3.1	55.6	57.4	2.3	59.7
B2	6	2	[redacted]		55.1	3.1	55.6	58.2	2.3	60.5
B2	7	2	[redacted]		56.1	3.1	55.6	59.2	2.3	61.5
B2	8	2	[redacted]		56.6	3.1	55.6	59.7	2.3	62.0
B2	9	2	[redacted]		57.1	3.1	55.6	60.2	2.3	62.5
B2	10	2	[redacted]		57.4	3.1	55.6	60.5	2.3	62.8
B2	11	2	[redacted]		57.7	3.1	55.6	60.8	2.3	63.1
B2	12	2	[redacted]		57.8	3.1	55.6	60.9	2.3	63.2
B2	13	2	[redacted]		57.9	3.1	55.6	61.0	2.3	63.3
B2	14	2	[redacted]		57.9	3.1	55.6	61.0	2.3	63.3
B2	15	2	[redacted]		58.0	3.1	55.6	61.1	2.3	63.4
B2	16	2	[redacted]		58.0	3.1	55.6	61.1	2.3	63.4
B3	1	2	[redacted]		47.2	3.1	55.6	55.6	2.3	57.9
B3	2	2	[redacted]		47.8	3.1	55.6	55.6	2.3	57.9
B3	3	2	[redacted]		48.5	3.1	55.6	55.6	2.3	57.9
B3	4	2	[redacted]		49.7	3.1	55.6	55.6	2.3	57.9

B3	5	2	[redacted]	51.2	3.1	55.6	55.6	2.3	57.9
B3	6	2	[redacted]	52.3	3.1	55.6	55.6	2.3	57.9
B3	7	2	[redacted]	53.2	3.1	55.6	56.3	2.3	58.6
B3	8	2	[redacted]	53.8	3.1	55.6	56.9	2.3	59.2
B3	9	2	[redacted]	54.2	3.1	55.6	57.3	2.3	59.6
B3	10	2	[redacted]	54.7	3.1	55.6	57.8	2.3	60.1
B3	11	2	[redacted]	55.2	3.1	55.6	58.3	2.3	60.6
B3	12	2	[redacted]	55.6	3.1	55.6	58.7	2.3	61.0
B3	13	2	[redacted]	56.0	3.1	55.6	59.1	2.3	61.4
B3	14	2	[redacted]	56.2	3.1	55.6	59.3	2.3	61.6
B3	15	2	[redacted]	56.3	3.1	55.6	59.4	2.3	61.7
B3	16	2	[redacted]	56.4	3.1	55.6	59.5	2.3	61.8
B4	1	2	[redacted]	47.4	3.1	55.6	55.6	2.3	57.9
B4	2	2	[redacted]	49.4	3.1	55.6	55.6	2.3	57.9
B4	3	2	[redacted]	50.1	3.1	55.6	55.6	2.3	57.9
B4	4	2	[redacted]	50.7	3.1	55.6	55.6	2.3	57.9
B4	5	2	[redacted]	51.7	3.1	55.6	55.6	2.3	57.9
B4	6	2	[redacted]	52.1	3.1	55.6	55.6	2.3	57.9
B4	7	2	[redacted]	52.5	3.1	55.6	55.6	2.3	57.9
B4	8	2	[redacted]	52.9	3.1	55.6	56.0	2.3	58.3
B4	9	2	[redacted]	53.4	3.1	55.6	56.5	2.3	58.8
B4	10	2	[redacted]	53.9	3.1	55.6	57.0	2.3	59.3
B4	11	2	[redacted]	54.5	3.1	55.6	57.6	2.3	59.9
B4	12	2	[redacted]	54.9	3.1	55.6	58.0	2.3	60.3
B4	13	2	[redacted]	55.4	3.1	55.6	58.5	2.3	60.8
B4	14	2	[redacted]	55.7	3.1	55.6	58.8	2.3	61.1
B4	15	2	[redacted]	55.9	3.1	55.6	59.0	2.3	61.3
B4	16	2	[redacted]	56.0	3.1	55.6	59.1	2.3	61.4
B5	1	2	[redacted]	49.2	3.1	55.6	55.6	2.3	57.9
B5	2	2	[redacted]	50.5	3.1	55.6	55.6	2.3	57.9
B5	3	2	[redacted]	51.5	3.1	55.6	55.6	2.3	57.9
B5	4	2	[redacted]	52.5	3.1	55.6	55.6	2.3	57.9
B5	5	2	[redacted]	53.1	3.1	55.6	56.2	2.3	58.5
B5	6	2	[redacted]	52.9	3.1	55.6	56.0	2.3	58.3
B5	7	2	[redacted]	53.9	3.1	55.6	57.0	2.3	59.3
B5	8	2	[redacted]	54.6	3.1	55.6	57.7	2.3	60.0
B5	9	2	[redacted]	55.1	3.1	55.6	58.2	2.3	60.5
B5	10	2	[redacted]	55.4	3.1	55.6	58.5	2.3	60.8
B5	11	2	[redacted]	55.7	3.1	55.6	58.8	2.3	61.1
B5	12	2	[redacted]	55.8	3.1	55.6	58.9	2.3	61.2
B5	13	2	[redacted]	55.8	3.1	55.6	58.9	2.3	61.2
B5	14	2	[redacted]	55.5	3.1	55.6	58.6	2.3	60.9
B5	15	2	[redacted]	55.2	3.1	55.6	58.3	2.3	60.6
B5	16	2	[redacted]	55.6	3.1	55.6	58.7	2.3	61.0
B6	1	2	[redacted]	49.8	3.1	55.6	55.6	2.3	57.9
B6	2	2	[redacted]	51.3	3.1	55.6	55.6	2.3	57.9
B6	3	2	[redacted]	52.4	3.1	55.6	55.6	2.3	57.9
B6	4	2	[redacted]	53.3	3.1	55.6	56.4	2.3	58.7
B6	5	2	[redacted]	54.1	3.1	55.6	57.2	2.3	59.5
B6	6	2	[redacted]	54.2	3.1	55.6	57.3	2.3	59.6
B6	7	2	[redacted]	54.7	3.1	55.6	57.8	2.3	60.1
B6	8	2	[redacted]	55.5	3.1	55.6	58.6	2.3	60.9
B6	9	2	[redacted]	56.2	3.1	55.6	59.3	2.3	61.6
B6	10	2	[redacted]	56.6	3.1	55.6	59.7	2.3	62.0
B6	11	2	[redacted]	56.9	3.1	55.6	60.0	2.3	62.3
B6	12	2	[redacted]	57.1	3.1	55.6	60.2	2.3	62.5
B6	13	2	[redacted]	57.1	3.1	55.6	60.2	2.3	62.5
B6	14	2	[redacted]	56.8	3.1	55.6	59.9	2.3	62.2
B6	15	2	[redacted]	56.6	3.1	55.6	59.7	2.3	62.0
B6	16	2	[redacted]	56.4	3.1	55.6	59.5	2.3	61.8
B7	1	2	[redacted]	51.9	3.1	55.6	55.6	2.3	57.9

B7	2	2	[redacted]	52.9	3.1	55.6	56.0	2.3	58.3
B7	3	2		53.8	3.1	55.6	56.9	2.3	59.2
B7	4	2		54.5	3.1	55.6	57.6	2.3	59.9
B7	5	2		55.3	3.1	55.6	58.4	2.3	60.7
B7	6	2		55.5	3.1	55.6	58.6	2.3	60.9
B7	7	2		56.0	3.1	55.6	59.1	2.3	61.4
B7	8	2		56.6	3.1	55.6	59.7	2.3	62.0
B7	9	2		57.0	3.1	55.6	60.1	2.3	62.4
B7	10	2		57.3	3.1	55.6	60.4	2.3	62.7
B7	11	2		57.5	3.1	55.6	60.6	2.3	62.9
B7	12	2		57.6	3.1	55.6	60.7	2.3	63.0
B7	13	2		57.7	3.1	55.6	60.8	2.3	63.1
B7	14	2		57.6	3.1	55.6	60.7	2.3	63.0
B7	15	2		57.4	3.1	55.6	60.5	2.3	62.8
B7	16	2		57.4	3.1	55.6	60.5	2.3	62.8
C1	1	1		62.0	0.5	55.6	62.5	2.6	65.1
C1	2	1		63.9	0.5	55.6	64.4	2.6	67.0
C1	3	1		64.4	0.5	55.6	64.9	2.6	67.5
C1	4	1		64.6	0.5	55.6	65.1	2.6	67.7
C1	5	1		64.7	0.5	55.6	65.2	2.6	67.8
C1	6	1		64.7	0.5	55.6	65.2	2.6	67.8
C1	7	1		64.5	0.5	55.6	65.0	2.6	67.6
C1	8	1		64.4	0.5	55.6	64.9	2.6	67.5
C1	9	1		64.2	0.5	55.6	64.7	2.6	67.3
C1	10	1		64.0	0.5	55.6	64.5	2.6	67.1
C1	11	1		63.8	0.5	55.6	64.3	2.6	66.9
C1	12	1		63.6	0.5	55.6	64.1	2.6	66.7
C1	13	1		63.4	0.5	55.6	63.9	2.6	66.5
C1	14	1		63.1	0.5	55.6	63.6	2.6	66.2
C1	15	1		62.9	0.5	55.6	63.4	2.6	66.0
C1	16	1		62.6	0.5	55.6	63.1	2.6	65.7
C2	1	1		61.4	0.5	55.6	61.9	2.6	64.5
C2	2	1		63.3	0.5	55.6	63.8	2.6	66.4
C2	3	1		63.9	0.5	55.6	64.4	2.6	67.0
C2	4	1		64.1	0.5	55.6	64.6	2.6	67.2
C2	5	1		64.3	0.5	55.6	64.8	2.6	67.4
C2	6	1		64.2	0.5	55.6	64.7	2.6	67.3
C2	7	1		64.1	0.5	55.6	64.6	2.6	67.2
C2	8	1		64.0	0.5	55.6	64.5	2.6	67.1
C2	9	1		63.9	0.5	55.6	64.4	2.6	67.0
C2	10	1		63.7	0.5	55.6	64.2	2.6	66.8
C2	11	1		63.5	0.5	55.6	64.0	2.6	66.6
C2	12	1		63.4	0.5	55.6	63.9	2.6	66.5
C2	13	1		63.2	0.5	55.6	63.7	2.6	66.3
C2	14	1		63.0	0.5	55.6	63.5	2.6	66.1
C2	15	1		62.8	0.5	55.6	63.3	2.6	65.9
C2	16	1		62.5	0.5	55.6	63.0	2.6	65.6
C3	1	2		54.0	3.1	55.6	57.1	2.3	59.4
C3	2	2		54.7	3.1	55.6	57.8	2.3	60.1
C3	3	2		55.4	3.1	55.6	58.5	2.3	60.8
C3	4	2		56.2	3.1	55.6	59.3	2.3	61.6
C3	5	2		56.8	3.1	55.6	59.9	2.3	62.2
C3	6	2		57.1	3.1	55.6	60.2	2.3	62.5
C3	7	2		57.4	3.1	55.6	60.5	2.3	62.8
C3	8	2		57.7	3.1	55.6	60.8	2.3	63.1
C3	9	2		57.8	3.1	55.6	60.9	2.3	63.2
C3	10	2		57.9	3.1	55.6	61.0	2.3	63.3
C3	11	2		57.9	3.1	55.6	61.0	2.3	63.3
C3	12	2		57.9	3.1	55.6	61.0	2.3	63.3
C3	13	2		57.9	3.1	55.6	61.0	2.3	63.3
C3	14	2		57.9	3.1	55.6	61.0	2.3	63.3

C3	15	2	[redacted]	57.9	3.1	55.6	61.0	2.3	63.3
C3	16	2		57.8	3.1	55.6	60.9	2.3	63.2
C4	1	2		51.7	3.1	55.6	55.6	2.3	57.9
C4	2	2		52.2	3.1	55.6	55.6	2.3	57.9
C4	3	2		52.9	3.1	55.6	56.0	2.3	58.3
C4	4	2		53.5	3.1	55.6	56.6	2.3	58.9
C4	5	2		54.1	3.1	55.6	57.2	2.3	59.5
C4	6	2		54.5	3.1	55.6	57.6	2.3	59.9
C4	7	2		55.0	3.1	55.6	58.1	2.3	60.4
C4	8	2		55.4	3.1	55.6	58.5	2.3	60.8
C4	9	2		55.7	3.1	55.6	58.8	2.3	61.1
C4	10	2		56.1	3.1	55.6	59.2	2.3	61.5
C4	11	2		56.3	3.1	55.6	59.4	2.3	61.7
C4	12	2		56.5	3.1	55.6	59.6	2.3	61.9
C4	13	2		56.6	3.1	55.6	59.7	2.3	62.0
C4	14	2		56.6	3.1	55.6	59.7	2.3	62.0
C4	15	2		56.7	3.1	55.6	59.8	2.3	62.1
C4	16	2		56.7	3.1	55.6	59.8	2.3	62.1
C5	1	2		47.8	3.1	55.6	55.6	2.3	57.9
C5	2	2		51.5	3.1	55.6	55.6	2.3	57.9
C5	3	2		53.6	3.1	55.6	56.7	2.3	59.0
C5	4	2		55.5	3.1	55.6	58.6	2.3	60.9
C5	5	2		55.7	3.1	55.6	58.8	2.3	61.1
C5	6	2		57.0	3.1	55.6	60.1	2.3	62.4
C5	7	2		57.4	3.1	55.6	60.5	2.3	62.8
C5	8	2		57.7	3.1	55.6	60.8	2.3	63.1
C5	9	2		57.9	3.1	55.6	61.0	2.3	63.3
C5	10	2		57.7	3.1	55.6	60.8	2.3	63.1
C5	11	2		58.1	3.1	55.6	61.2	2.3	63.5
C5	12	2		57.8	3.1	55.6	60.9	2.3	63.2
C5	13	2		57.8	3.1	55.6	60.9	2.3	63.2
C5	14	2		57.8	3.1	55.6	60.9	2.3	63.2
C5	15	2		57.7	3.1	55.6	60.8	2.3	63.1
C5	16	2		57.7	3.1	55.6	60.8	2.3	63.1
C6	1	1		61.3	0.5	55.6	61.8	2.6	64.4
C6	2	1		63.3	0.5	55.6	63.8	2.6	66.4
C6	3	1		64.0	0.5	55.6	64.5	2.6	67.1
C6	4	1		64.4	0.5	55.6	64.9	2.6	67.5
C6	5	1		64.6	0.5	55.6	65.1	2.6	67.7
C6	6	1		64.5	0.5	55.6	65.0	2.6	67.6
C6	7	1		64.4	0.5	55.6	64.9	2.6	67.5
C6	8	1		64.3	0.5	55.6	64.8	2.6	67.4
C6	9	1		64.2	0.5	55.6	64.7	2.6	67.3
C6	10	1		63.9	0.5	55.6	64.4	2.6	67.0
C6	11	1		63.7	0.5	55.6	64.2	2.6	66.8
C6	12	1		63.5	0.5	55.6	64.0	2.6	66.6
C6	13	1		63.2	0.5	55.6	63.7	2.6	66.3
C6	14	1		63.0	0.5	55.6	63.5	2.6	66.1
C6	15	1		62.8	0.5	55.6	63.3	2.6	65.9
C6	16	1		62.5	0.5	55.6	63.0	2.6	65.6
C7	1	2		48.2	3.1	55.6	55.6	2.3	57.9
C7	2	2		53.1	3.1	55.6	56.2	2.3	58.5
C7	3	2		55.8	3.1	55.6	58.9	2.3	61.2
C7	4	2		56.9	3.1	55.6	60.0	2.3	62.3
C7	5	2		58.8	3.1	55.6	61.9	2.3	64.2
C7	6	2		59.4	3.1	55.6	62.5	2.3	64.8
C7	7	2		59.7	3.1	55.6	62.8	2.3	65.1
C7	8	2		59.9	3.1	55.6	63.0	2.3	65.3
C7	9	2		60.2	3.1	55.6	63.3	2.3	65.6
C7	10	2		60.0	3.1	55.6	63.1	2.3	65.4
C7	11	2		59.9	3.1	55.6	63.0	2.3	65.3

C7	12	2	[redacted]	59.7	3.1	55.6	62.8	2.3	65.1
C7	13	2	[redacted]	59.6	3.1	55.6	62.7	2.3	65.0
C7	14	2	[redacted]	48.2	3.1	55.6	55.6	2.3	57.9
C7	15	2	[redacted]	53.1	3.1	55.6	56.2	2.3	58.5
C7	16	2	[redacted]	55.8	3.1	55.6	58.9	2.3	61.2
D1	1	1	[redacted]	66.2	0.5	55.6	66.7	2.6	69.3
D1	2	1	[redacted]	66.8	0.5	55.6	67.3	2.6	69.9
D1	3	1	[redacted]	66.5	0.5	55.6	67.0	2.6	69.6
D1	4	1	[redacted]	66.0	0.5	55.6	66.5	2.6	69.1
D1	5	1	[redacted]	65.6	0.5	55.6	66.1	2.6	68.7
D1	6	1	[redacted]	65.1	0.5	55.6	65.6	2.6	68.2
D1	7	1	[redacted]	64.7	0.5	55.6	65.2	2.6	67.8
D1	8	1	[redacted]	64.3	0.5	55.6	64.8	2.6	67.4
D1	9	1	[redacted]	63.9	0.5	55.6	64.4	2.6	67.0
D1	10	1	[redacted]	63.5	0.5	55.6	64.0	2.6	66.6
D1	11	1	[redacted]	63.2	0.5	55.6	63.7	2.6	66.3
D1	12	1	[redacted]	63.0	0.5	55.6	63.5	2.6	66.1
D1	13	1	[redacted]	62.7	0.5	55.6	63.2	2.6	65.8
D2	1	1	[redacted]	66.3	0.5	55.6	66.8	2.6	69.4
D2	2	1	[redacted]	66.8	0.5	55.6	67.3	2.6	69.9
D2	3	1	[redacted]	66.4	0.5	55.6	66.9	2.6	69.5
D2	4	1	[redacted]	65.9	0.5	55.6	66.4	2.6	69.0
D2	5	1	[redacted]	65.4	0.5	55.6	65.9	2.6	68.5
D2	6	1	[redacted]	64.9	0.5	55.6	65.4	2.6	68.0
D2	7	1	[redacted]	64.4	0.5	55.6	64.9	2.6	67.5
D2	8	1	[redacted]	63.9	0.5	55.6	64.4	2.6	67.0
D2	9	1	[redacted]	63.5	0.5	55.6	64.0	2.6	66.6
D2	10	1	[redacted]	63.1	0.5	55.6	63.6	2.6	66.2
D2	11	1	[redacted]	62.8	0.5	55.6	63.3	2.6	65.9
D2	12	1	[redacted]	62.4	0.5	55.6	62.9	2.6	65.5
D2	13	1	[redacted]	62.1	0.5	55.6	62.6	2.6	65.2
D3	1	1	[redacted]	66.4	0.5	55.6	66.9	2.6	69.5
D3	2	1	[redacted]	66.8	0.5	55.6	67.3	2.6	69.9
D3	3	1	[redacted]	66.5	0.5	55.6	67.0	2.6	69.6
D3	4	1	[redacted]	66.0	0.5	55.6	66.5	2.6	69.1
D3	5	1	[redacted]	65.5	0.5	55.6	66.0	2.6	68.6
D3	6	1	[redacted]	65.0	0.5	55.6	65.5	2.6	68.1
D3	7	1	[redacted]	64.4	0.5	55.6	64.9	2.6	67.5
D3	8	1	[redacted]	63.8	0.5	55.6	64.3	2.6	66.9
D3	9	1	[redacted]	63.4	0.5	55.6	63.9	2.6	66.5
D3	10	1	[redacted]	63.0	0.5	55.6	63.5	2.6	66.1
D3	11	1	[redacted]	62.6	0.5	55.6	63.1	2.6	65.7
D3	12	1	[redacted]	62.3	0.5	55.6	62.8	2.6	65.4
D3	13	1	[redacted]	62.0	0.5	55.6	62.5	2.6	65.1
D4	1	1	[redacted]	66.4	0.5	55.6	66.9	2.6	69.5
D4	2	1	[redacted]	66.8	0.5	55.6	67.3	2.6	69.9
D4	3	1	[redacted]	66.6	0.5	55.6	67.1	2.6	69.7
D4	4	1	[redacted]	66.1	0.5	55.6	66.6	2.6	69.2
D4	5	1	[redacted]	65.7	0.5	55.6	66.2	2.6	68.8
D4	6	1	[redacted]	65.2	0.5	55.6	65.7	2.6	68.3
D4	7	1	[redacted]	64.6	0.5	55.6	65.1	2.6	67.7
D4	8	1	[redacted]	63.9	0.5	55.6	64.4	2.6	67.0
D4	9	1	[redacted]	63.5	0.5	55.6	64.0	2.6	66.6
D4	10	1	[redacted]	63.1	0.5	55.6	63.6	2.6	66.2
D4	11	1	[redacted]	62.7	0.5	55.6	63.2	2.6	65.8
D4	12	1	[redacted]	62.3	0.5	55.6	62.8	2.6	65.4
D4	13	1	[redacted]	62.0	0.5	55.6	62.5	2.6	65.1
D5	1	1	[redacted]	66.5	0.5	55.6	67.0	2.6	69.6
D5	2	1	[redacted]	67.0	0.5	55.6	67.5	2.6	70.1
D5	3	1	[redacted]	66.7	0.5	55.6	67.2	2.6	69.8
D5	4	1	[redacted]	66.4	0.5	55.6	66.9	2.6	69.5

D5	5	1	[redacted]	66.0	0.5	55.6	66.5	2.6	69.1
D5	6	1		65.6	0.5	55.6	66.1	2.6	68.7
D5	7	1		65.1	0.5	55.6	65.6	2.6	68.2
D5	8	1		64.6	0.5	55.6	65.1	2.6	67.7
D5	9	1		64.2	0.5	55.6	64.7	2.6	67.3
D5	10	1		63.8	0.5	55.6	64.3	2.6	66.9
D5	11	1		63.5	0.5	55.6	64.0	2.6	66.6
D5	12	1		63.2	0.5	55.6	63.7	2.6	66.3
D5	13	1		62.9	0.5	55.6	63.4	2.6	66.0
D6	1	1		67.6	0.5	55.6	68.1	2.6	70.7
D6	2	1		68.0	0.5	55.6	68.5	2.6	71.1
D6	3	1		67.6	0.5	55.6	68.1	2.6	70.7
D6	4	1		67.1	0.5	55.6	67.6	2.6	70.2
D6	5	1		66.6	0.5	55.6	67.1	2.6	69.7
D6	6	1		66.1	0.5	55.6	66.6	2.6	69.2
D6	7	1		65.6	0.5	55.6	66.1	2.6	68.7
D6	8	1		65.1	0.5	55.6	65.6	2.6	68.2
D6	9	1		64.6	0.5	55.6	65.1	2.6	67.7
D6	10	1		64.3	0.5	55.6	64.8	2.6	67.4
D6	11	1		63.9	0.5	55.6	64.4	2.6	67.0
D6	12	1		63.5	0.5	55.6	64.0	2.6	66.6
D6	13	1		63.2	0.5	55.6	63.7	2.6	66.3
E1	1	1		59.4	0.5	55.6	59.9	2.6	62.5
E1	2	1		61.1	0.5	55.6	61.6	2.6	64.2
E1	3	1		61.7	0.5	55.6	62.2	2.6	64.8
E1	4	1		61.9	0.5	55.6	62.4	2.6	65.0
E1	5	1		61.9	0.5	55.6	62.4	2.6	65.0
E1	6	1		61.7	0.5	55.6	62.2	2.6	64.8
E1	7	1		61.5	0.5	55.6	62.0	2.6	64.6
E1	8	1		61.4	0.5	55.6	61.9	2.6	64.5
E1	9	1		61.1	0.5	55.6	61.6	2.6	64.2
E1	10	1		60.9	0.5	55.6	61.4	2.6	64.0
E1	11	1		60.7	0.5	55.6	61.2	2.6	63.8
E1	12	1		60.5	0.5	55.6	61.0	2.6	63.6
E1	13	1		60.2	0.5	55.6	60.7	2.6	63.3
E1	14	1		60.0	0.5	55.6	60.5	2.6	63.1
E2	1	1		53.5	0.5	55.6	55.6	2.6	58.2
E2	2	1		54.5	0.5	55.6	55.6	2.6	58.2
E2	3	1		55.8	0.5	55.6	56.3	2.6	58.9
E2	4	1		56.8	0.5	55.6	57.3	2.6	59.9
E2	5	1		57.3	0.5	55.6	57.8	2.6	60.4
E2	6	1		57.8	0.5	55.6	58.3	2.6	60.9
E2	7	1		57.8	0.5	55.6	58.3	2.6	60.9
E2	8	1		57.9	0.5	55.6	58.4	2.6	61.0
E2	9	1		57.9	0.5	55.6	58.4	2.6	61.0
E2	10	1		57.9	0.5	55.6	58.4	2.6	61.0
E2	11	1		57.8	0.5	55.6	58.3	2.6	60.9
E2	12	1		57.8	0.5	55.6	58.3	2.6	60.9
E2	13	1		57.7	0.5	55.6	58.2	2.6	60.8
E2	14	1		57.6	0.5	55.6	58.1	2.6	60.7
E3	1	1		49.1	0.5	55.6	55.6	2.6	58.2
E3	2	1		49.9	0.5	55.6	55.6	2.6	58.2
E3	3	1		51.2	0.5	55.6	55.6	2.6	58.2
E3	4	1		52.0	0.5	55.6	55.6	2.6	58.2
E3	5	1		52.5	0.5	55.6	55.6	2.6	58.2
E3	6	1		53.1	0.5	55.6	55.6	2.6	58.2
E3	7	1		53.2	0.5	55.6	55.6	2.6	58.2
E3	8	1		53.7	0.5	55.6	55.6	2.6	58.2
E3	9	1		54.5	0.5	55.6	55.6	2.6	58.2
E3	10	1		54.7	0.5	55.6	55.6	2.6	58.2
E3	11	1		54.8	0.5	55.6	55.6	2.6	58.2

E3	12	1	[redacted]	54.9	0.5	55.6	55.6	2.6	58.2
E3	13	1		55.0	0.5	55.6	55.6	2.6	58.2
E3	14	1		55.1	0.5	55.6	55.6	2.6	58.2
F1	2	1		67.8	0.5	55.6	68.3	2.6	70.9
F1	3	1		67.4	0.5	55.6	67.9	2.6	70.5
F1	4	1		66.8	0.5	55.6	67.3	2.6	69.9
F1	5	1		66.2	0.5	55.6	66.7	2.6	69.3
F1	6	1		65.7	0.5	55.6	66.2	2.6	68.8
F1	7	1		65.3	0.5	55.6	65.8	2.6	68.4
F1	8	1		64.8	0.5	55.6	65.3	2.6	67.9
F1	9	1		64.5	0.5	55.6	65.0	2.6	67.6
F1	10	1		64.1	0.5	55.6	64.6	2.6	67.2
F1	11	1		63.7	0.5	55.6	64.2	2.6	66.8
F1	12	1		63.4	0.5	55.6	63.9	2.6	66.5
F2	1	1		68.8	0.5	55.6	69.3	2.6	71.9
F2	2	1		68.8	0.5	55.6	69.3	2.6	71.9
F2	3	1		68.2	0.5	55.6	68.7	2.6	71.3
F2	4	1		67.5	0.5	55.6	68.0	2.6	70.6
F2	5	1		66.9	0.5	55.6	67.4	2.6	70.0
F2	6	1		66.3	0.5	55.6	66.8	2.6	69.4
F2	7	1		65.8	0.5	55.6	66.3	2.6	68.9
F2	8	1		65.4	0.5	55.6	65.9	2.6	68.5
F2	9	1		65.0	0.5	55.6	65.5	2.6	68.1
F2	10	1		64.6	0.5	55.6	65.1	2.6	67.7
F2	11	1		64.2	0.5	55.6	64.7	2.6	67.3
F2	12	1		63.9	0.5	55.6	64.4	2.6	67.0

Jewish Home Life
11743
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SiteID	Location		L_{eq}	L_1	L_{10}	L_{50}	L_{90}	L_{Min}	L_{Max}
1	South Side of Parking Lot on West 97th Street	AM	61.3	68.4	63.9	59.7	56.7	54.1	74.7
		MD	62.4	72.5	63.3	59.9	57.7	56.0	84.8
		PM	59.9	65.3	61.6	59.1	57.3	55.2	76.4
2	North Side of Parking Lot on West 97th Street	AM	58.5	63.7	60.8	57.3	55.1	53.4	61.2
		MD	59.6	67.7	60.2	57.5	56.1	55.2	71.3
		PM	57.1	60.5	58.5	56.7	55.7	54.5	62.9