SCA P.S. 320

Final Environmental Impact Statement

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New York City School Construction Authority

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A. INTRODUCTION

The New York City School Construction Authority (SCA) proposes the site selection, acquisition, acceptance of construction funding, and construction of a new Primary School (P.S.) facility with the capacity of approximately 472 seats in the Ridgewood section of Queens. The proposed school would serve Community School District (CSD) 24 and would accommodate children in pre-kindergarten through fifth grades. The project site, an approximately 29,000-square-foot (sf) lot located at located on the southwest side of Seneca Avenue between DeKalb Avenue and Stockholm Street (Block 3425, Lot 7), currently contains a two-story former parochial school that is now occasionally used for parish activities.

Although design plans for the new building have not been finalized, it is expected that the proposed school building would contain approximately 65,930 gross square feet (gsf) and would be four stories and approximately 69 feet in height (up to 82 feet to the top of the mechanical space). It is anticipated that the main entrance to the school would be located on Seneca Avenue. At the rear of the building there would be two outdoor playground areas: a 12,000-sf outdoor playground area located near Stockholm Street; and a 3,000-sf early childhood center (ECC) outdoor playground area near DeKalb Avenue.

The site is located in a mixed-use area that is predominantly residential with institutional uses nearby, including P.S. 305, which is located across Stockholm Street from the project site. The proposed project is located within an R6B residential zoning district, with a C1-3 commercial overlay. While the design of the school is not yet final, preliminary plans show that the project would result in zoning bulk non-compliances, including permitted floor area and requirements related to maximum building height. Therefore, SCA would seek zoning bulk overrides from the Deputy Mayor for Economic Development. Funding for design and construction of this project would be provided in the New York City Department of Education's (DOE) Capital Plan for Fiscal Years 2010 to 2014.

B. PURPOSE AND NEED

Construction of the new school facility has been proposed to provide additional public school capacity at the primary school level in CSD 24. According to the latest DOE school utilization profile for 2011 to 2012, Primary schools in CSD 24 are operating at 104 percent capacity, with a district-wide capacity of 20,830 and a district-wide enrollment of 21,726. The primary school located in closest proximity to the project site is the P.S. 305/Learners and Leaders, located across Stockholm Street from the project site. P.S. 305, which opened in 2008, is currently operating at 131 percent capacity, with 392 seats. P.S. 81/Jean Paul Richter School is located approximately 0.4 miles from the project site at 559 Cypress Avenue. P.S. 81 (Q081) is operating at 104 percent capacity, with 729 seats. The P.S. 81 Annex, Q848, is operating at 104 percent capacity with 160 seats and the P.S. 81 transportable unit, Q917, is operating at 70 percent capacity with 141 seats.

C. ANALYSIS FRAMEWORK

For the purpose of this environmental review, it is assumed that construction of the proposed project would begin in 2013 and the student occupancy would begin in September 2015. Accordingly, 2015 has been selected as the Build Year for which the environmental assessment areas have been analyzed. It is assumed that if the proposed project does not proceed, the project site would remain in its current underutilized state (the "No Action" scenario).

D. PROBABLE IMPACTS OF THE PROPOSED PROJECT

LAND USE, ZONING, AND PUBLIC POLICY

LAND USE

With the proposed project, the existing two-story building on the project site would be demolished and a new four-story primary school building (up to approximately 69 feet high) would be constructed on the site. The new school would have its main entrance on Seneca Avenue and two outdoor playground areas at the rear of the building. The proposed project would be compatible with land uses in the study area, most notably P.S. 305, which is located southeast of the project site on the adjacent block. The proposed project would improve land use conditions in the study area by redeveloping a site now occupied by an underutilized building. The proposed project would be consistent with the height of other structures in the study area, compatible with the mix of uses, and supportive of existing land uses and ongoing land use trends in the study area. Therefore, the proposed project is not expected to significantly and adversely affect adjacent land uses.

ZONING AND PUBLIC POLICY

The proposed project is located within an R6B residential zoning district, in which schools are allowed as-of-right. While the design of the school is not yet final, preliminary plans show that the project would result in zoning bulk non-compliances, including permitted floor area and requirements related to maximum building height. Therefore, the SCA would seek zoning bulk overrides from the Deputy Mayor for Economic Development. If the zoning waivers are granted, they would only apply to the project site and would have no impact on the surrounding zoning. Therefore, the proposed project would have no significant adverse impacts on zoning in the study area.

COMMUNITY CHARACTER

The proposed project would replace an underutilized building with a new primary school facility that would be similar in scale to existing buildings and compatible with surrounding land uses as well as the former educational use on the project site. The increase in traffic volumes expected to result from the proposed project is not expected to result in any significant adverse impacts to community character.

COMMUNITY FACILITIES

Police and fire services would be adjusted as deemed necessary by the New York City Police Department (NYPD) and the New York City Fire Department (FDNY), and no significant adverse impacts to police or fire services are expected to result from the proposed project.

HISTORIC RESOURCES

ARCHAEOLOGICAL RESOURCES

The July 2012 disturbance memorandum and preliminary archaeological assessment prepared for the site concluded that the project site is not sensitive for archaeological resources dating to either the precontact or historic periods.[1] The memorandum was submitted to the New York State Office of Parks, Recreation, and Historic Preservation (OPRHP) for review and comment on July 27, 2012. Therefore, the proposed project is not expected to adversely and significantly affect archaeological resources.

ARCHITECTURAL RESOURCES

With the proposed project, the existing building on the project site would be demolished and a new primary school building would be constructed on the site. The existing building on the project site does not appear to meet the eligibility criteria for State and/or National Register listing. In addition, the proposed project would not have direct or indirect adverse impacts on the two historic resources in the study area. Neither St. Aloysius Roman Catholic Church (S/NR-eligible) nor the portion of the Cypress Avenue West Historic District (S/NR) within the study area is located close enough to the proposed construction activities to potentially experience inadvertent construction damage. For the most part, there is no visual relationship between the project site and the church and historic district due to intervening buildings. Therefore, the proposed school would not adversely affect the setting or context of those historic resources. Although the proposed building would partially obscure limited views of the towers of the church as seen over the project site from Cypress Avenue, there are other, better views of the church throughout the study area, especially in the view corridors along Onderdonk Avenue and Stockholm and Stanhope Streets. Therefore, the proposed project would not affect the church's visual prominence. Overall, the proposed project would not result in any visual or contextual impacts on surrounding historic resources.

URBAN DESIGN AND VISUAL RESOURCES

PROJECT SITE

Plans for the proposed project are not yet finalized; however, as currently anticipated, the proposed project would result in the demolition of the existing two-story, underutilized building and the development of a new, approximately 65,930-gsf school building. At four stories and up to 69 feet in height, the proposed building would be approximately 32,428 sf larger and 45 feet taller than the building currently on the site. The proposed building would occupy 50.2 percent of the lot, as compared with the 38.7 percent lot coverage of the existing building. The proposed building would be set back from the Seneca Avenue sidewalk by an 8-ft landscaped area, with similar setbacks along Stockholm Street and DeKalb Avenue.

As currently contemplated, the proposed project would require zoning overrides for bulk as well as height related to the street walls. The proposed project would not require any changes to streets or street patterns, open spaces, or natural features on the project site. With the proposed

[1] AKRF, Inc. Disturbance Memorandum and Preliminary Archaeological Assessment: Proposed Public School Q320; 360 Seneca Avenue, Queens, New York. July 2012.

project, the use on the site would change from an underutilized building to a school. Although the proposed project would result in changes to use, bulk, and height on the project site, the proposed building would be similar in orientation and lot coverage to the existing building and would reflect the height and bulk of nearby P.S. 305. These changes would therefore not be considered adverse, and the proposed project would fit with the varied building types, heights, sizes, and uses in the study area. The anticipated changes to the pedestrian experience would not be considered likely to disturb the vitality, walkability, or visual character of the project site. Instead, the proposed project would reactivate a site that is currently underutilized.

There are no visual resources on the project site. The proposed building would not disturb the view corridor looking northwest on Seneca Avenue or the view of St. Aloysius Church from the project site. The open space component of the proposed project would create an amenity and improve the pedestrian experience of the project site.

STUDY AREA

The proposed building would be constructed on an existing block and would not alter streets, street patterns, or block shapes in the study area. The proposed school would be consistent with existing uses in the study area.

As currently contemplated, the proposed building would reflect the shape, form, lot coverage, and setbacks of nearby P.S. 305. The proposed building would be taller than the surrounding residential and commercial uses in the study area, but would be consistent with the height of the P.S. 305 building. It would have minimal setbacks from Seneca Avenue, Stockholm Street, and DeKalb Avenue. These would be similar to setbacks in the study area and represent only a slight change to the streetwall created by P.S. 305. As a result, the proposed building would not seem out-of-scale with the surrounding buildings from the pedestrian perspective, but would instead represent a continuation of the streetwall created by P.S. 305 along Seneca Avenue. The proposed playground area in the southwestern portion of the project site would also reflect the similarly aligned playground on P.S. 320.

The proposed project would add a compatible institutional use to a site that is currently underutilized but surrounded by other institutional uses and compatible residential and commercial uses. The proposed building and playground areas would enliven the streetscape and be consistent with the height of the adjacent school building. The proposed school would be noticeable from views from the immediately surrounding streets. However, the proposed building would not significantly alter the more significant view corridors along surrounding streets. The proposed building would not disturb the view corridor looking northwest on Seneca Avenue or views of St. Aloysius Church from throughout the study area.

Overall, the proposed project would not be expected to result in any significant adverse impacts to urban design and visual resources on the project site or in the study area.

SHADOWS

The *CEQR Technical Manual* requires a shadow assessment if a proposed structure is 50 feet or greater in height, or adjacent to a sunlight-sensitive resource regardless of height. The proposed school, as currently contemplated, would be four stories and approximately 69 feet (up to approximately 82 feet to the top of the mechanical space) in height. Additionally, the project site is located across the street from the Grover Cleveland Athletic Field.

According to CEQR methodology, the longest shadow that a structure can cast occurs on December 21, the winter solstice, at the very start of the analysis day, and is equal to 4.3 times the height of the structure. Therefore, the longest shadow that the proposed school could cast would be 297 feet (and the shadow from the mechanical space could reach up to 353 feet), and would extend into portions of the Grover Cleveland Athletic Field.

According to the *CEQR Technical Manual*, sunlight-sensitive resources of concern include publicly-accessible open spaces, architectural resources that depend on direct sunlight for their enjoyment by the public, or important natural resources. The Grover Cleveland Athletic Field contains outdoor recreational facilities for nearby Grover Cleveland High School, including a track surrounding two baseball fields and a soccer field, and tennis courts. The facility also includes a building containing locker rooms and a surface parking area along DeKalb Avenue, across from the project site. The Grover Cleveland Athletic Field is used only by the students of the school and for school-sponsored athletic events. The Athletic Field is surrounded by a locked fence and is not publicly accessible. Therefore, it is not considered a sunlight-sensitive resource of concern as defined by the *CEQR Technical Manual*. As no sunlight-sensitive resources of concern were identified within the longest shadow study area, the proposed project would not result in any significant adverse shadow impacts, and no further analysis is necessary.

TRANSPORTATION

TRAFFIC

For the intersections bordering the project site, capacities at majority of the approaches would be sufficient to accommodate volume increases resulting from the proposed project. Based on the CEQR impact criteria, the proposed project would however result in significant adverse traffic impacts at two intersections during the peak periods analyzed:

- The northbound approach of Seneca Avenue and Stockholm Street during the weekday AM and PM peak hours; and
- The northbound approach of Cypress Avenue and Stockholm Street during the weekday AM peak hour.

Measures that can be implemented to mitigate these potential significant adverse traffic impacts are discussed in "Mitigation."

TRANSIT OPERATIONS

The project site is served by the L and M subway lines; and the B13, B38, and B57 bus routes. Based on the travel demand estimates and the availability and service frequencies of the three bus routes in the study area, it was determined that no individual bus route would experience 50 or more peak hour bus trips in one direction, and no individual station element would experience 200 or more peak hour subway trips, which is the CEQR-recommended threshold for undertaking quantified bus and subway analysis; therefore, a quantitative analysis of bus and subway operations is not warranted.

PEDESTRIAN OPERATIONS

Pedestrian trips associated with the proposed project would result in increased volumes at the analysis locations. Based on the analysis results, all sidewalk analysis locations would however continue to operate at acceptable levels (maximum pedestrians per minute per foot (PMF)

platoon flows for sidewalks) during both the weekday AM and PM peak 15-minute periods and would not result in any significant adverse pedestrian impacts as part of the proposed project.

PARKING

All of the additional parking demand generated as part of the proposed school would be accommodated by the available on-street parking spaces in the vicinity of the project site. With the additional parking demand generated by the proposed project, the overall on-street parking utilization rate in the study area with the proposed project would increase to approximately 93 percent, with 169 available on-street spaces during the weekday morning peak period. Thus, the proposed project would not result in significant adverse impacts to the supply and demand of on-street parking in the study area.

PEDESTRIAN SAFETY

Accident data for the study area intersections were obtained from the New York State Department of Transportation (NYSDOT) for the time period between January 1, 2009 and December 31, 2011. The data obtained quantify the total number of reportable accidents (involving fatality, injury, or more than $1,000 in property damage) during the study period, as well as a yearly breakdown of pedestrian and bicycle-related accidents at each location. According to the *CEQR Technical Manual*, a high accident location is one where there were five or more pedestrian/bicyclist-related accidents or 48 or more total reportable and non-reportable accidents in any consecutive 12 months within the most recent 3-year period for which data are available.

During the January 2009 to December 2011 3-year period, a total of 136 reportable and non-reportable accidents (including 31 pedestrian/bicyclist-related accidents), no fatalities, and 121 injuries occurred at the study area intersections. However, a rolling total of accident data identifies none of the study area intersections as high pedestrian accident location in the 2009 to 2011 period.

AIR QUALITY

MOBILE SOURCES

The intersection of Seneca Avenue and Stockholm Street was selected for microscale analysis because it is the location where the greatest number of peak hour trips would be generated by the proposed school. Particulate matter concentrations were predicted for the 2015 Build Year. The results indicated that the vehicle trips generated by the proposed school would not result in PM_{10} (particles with an aerodynamic diameter of less than or equal to 10 micrometers) concentrations that would exceed the NAAQS.

Future maximum predicted 24-hour and annual average $PM_{2.5}$ concentration increments were also calculated for comparison with the interim guidance criteria. The results show that the annual and daily (24-hour) $PM_{2.5}$ increments are predicted to be well below the interim guidance criteria and, therefore, the emissions from vehicle trips generated by the proposed school would not result in a significant adverse impact on air quality.

HEATING AND HOT WATER SYSTEM SCREENING ANALYSIS

A screening analysis was performed to assess the potential for air quality impacts from the proposed school's heating and hot water systems. The analysis was based on the total proposed

school floor area of 65,930 gross square feet, with an exhaust height of approximately 82 feet. Based on this height, the nearest building of a similar or greater height was determined to be beyond 400 feet; therefore, this distance was chosen for the analysis in accordance with the guidance provided in the *CEQR Technical Manual*. The use of natural gas would not result in a significant adverse impact on air quality because the proposed school would be below the maximum permitted size recommended in the *CEQR Technical Manual.*

NOISE

With the proposed site plan, the change in noise levels at the school at 378 Seneca Avenue and residences at 1763 DeKalb Avenue during those portions of the school day when the playground is in use would not exceed the SCA impact threshold of 5 dBA. However, when the playground is in use, the change in noise levels at the residence at 1760 DeKalb Avenue would range from 8.1 dBA to 8.7 dBA. These noise-level increases would constitute a readily noticeable increase and would be considered significant under SCA criteria. The change in noise levels at the residence at 459 Stockholm Street would range from 11.9 dBA to 12.6 dBA during those portions of the school day when the playground is being used. These noise level increases would constitute a perceived doubling of loudness and would be considered significant under SCA criteria.

The significant noise level increases predicted to occur at 1760 DeKalb Avenue and 459 Stockholm Street during the hours that the proposed playground is being used are primarily a result of the difference between the low, existing noise levels at these residences compared with the future predicted playground noise levels from the new school. The resultant noise levels at these properties during the hours that the proposed playground is being used would be expected to be in the low 70s of dBA. These levels do constitute significant increases in noise level; however, they are moderate for locations in New York City near heavily trafficked roadways. Furthermore, the times when these elevated noise levels occur would be limited to the daytime school hours when the playground is in use, and would not occur during nighttime hours when people are generally sleeping and most sensitive to noise.

The proposed project would nonetheless result in significant adverse noise impacts at 1760 DeKalb Avenue and 459 Stockholm Street. Possible mitigation measures are described in "Mitigation."

INFRASTRUCTURE

WATER SUPPLY

The proposed project would generate a total demand for 15,928 gallons per day (gpd) of water. Compared with the future without the proposed project, the proposed project would create an incremental demand for 15,928 gpd. Overall, the proposed school's incremental demand for water would represent an insignificant increase in the total demand in Queens, and would not overburden the City's water supply system. The proposed project would also comply with the City's water conservation measures as mandated by Local Law 19. Therefore, the proposed project would not result in a significant adverse impact on the water supply system's ability to adequately deliver water to Queens or New York City.

WASTEWATER CONVEYANCE AND TREATMENT

The proposed development is assumed to generate wastewater at a rate commensurate with domestic water consumption, or about 4,720 gpd.[1] This amount of wastewater would not place such a demand on the Newtown Creek Waste Water Treatment Plant (WWTP) that it would exceed its design capacity or State Pollutant Discharge Elimination System (SPDES) permit flow limit. Therefore, the proposed project would not result in a significant adverse impact on wastewater conveyance and treatment.

STORM WATER MANAGEMENT

While the majority of the project site would be occupied by the proposed school building or paved, the proposed project would not result in an increase in the amount of impervious surface on the project site. The proposed project would utilize roof detention and new detention tanks to comply with current New York City Department of Environmental Protection (DEP) regulations. Stormwater runoff would be stored on site and discharged into the City's sewer system at a rate permitted by DEP. Therefore, there would be no significant adverse impacts on stormwater conveyance or treatment.

SOLID WASTE

Using a solid waste generation rate of 3 pounds per week per student, based on the solid waste generation rate for public elementary schools provided in the *CEQR Technical Manual*, the proposed school would be expected to generate approximately 1,416 pounds of solid waste per week during the school year. To comply with the City's recycling plan, which is mandated by the Solid Waste Management Plan (SWMP), the proposed school would be required to accommodate the source separation of recyclable materials. The proposed school's disposable wastes and recyclable materials would be collected by the New York City Department of Sanitation (DSNY). The total waste generated would be negligible compared with the 16,500 tons per day currently handled by DSNY. Therefore, the proposed project would not have a significant effect on New York City's solid waste disposal system and would be consistent with the SWMP.

ENERGY

Based on the rate provided in the *CEQR Technical Manual* for an institutional use, the proposed school is expected to result in annual energy use of 16,529 million British thermal units (BTUs) over the future without the proposed project. The electrical demand generated by the proposed project would be minimal and would require no special appurtenances. Con Edison would be able to meet this demand.

SOIL AND GROUNDWATER CONDITIONS

A Phase I Environmental Site Assessment (ESA) and a Phase II Environmental Site Investigation (ESI) were completed between February 2011 and July 2012 to evaluate the environmental conditions of the project site.

[1] This amount does not include water used for air conditioning.

The Phase I ESA identified on-site Recognized Environmental Conditions (RECs) related to a 10,000-gallon fuel oil underground storage tank (UST) with a closed, leaking tank incident, and suspect buried structures and construction debris associated with a former on-site building. Off-site RECs include open and closed spill cases at adjoining and surrounding properties; historical clothing manufacturing, knitting mills, and transit company facilities with repair operations at adjoining and surrounding properties; and petroleum bulk storage at surrounding properties. The Phase I ESA also revealed environmental concerns associated with suspect asbestos-containing materials (ACM), suspect interior and exterior lead-based paint (LBP), and suspect polychlorinated biphenyl (PCB)-containing light ballasts and caulking material.

A Phase II ESI was completed to assess whether the RECs identified in the Phase I ESA have affected the suitability of the project site for construction of a public school facility. Phase II ESI field activities consisted of a geophysical survey, the advancement of soil borings, and the collection and analysis of soil vapor and soil samples.

The results of the geophysical survey confirmed the presence of the 10,000-gallon UST under the paved area on the project site. No visual or olfactory indications of contamination were observed in any of the soil samples collected. Additionally, no elevated photoionization detector (PID) readings were detected during field screening of the soil. Soil samples did not contain concentrations of organic or inorganic constituents above regulatory criteria for unrestricted use with the exception of semi-volatile organic compounds (SVOCs) in one sample. The concentrations of SVOCs can be attributed to the characteristics of fill material at the project site since there was no evidence of contamination observed in the soil samples collected from this soil boring. The results of the analyses of the soil vapor samples revealed the presence of petroleum and chlorinated solvent related volatile organic compounds at concentrations exceeding published background indoor air levels. However, there were no compounds detected in soil vapor at concentrations greater than the corresponding New York State Department of Health (NYSDOH) Air Guideline Values (AGVs). The specific compounds detected in soil vapor above published background indoor air levels were not detected at concentrations exceeding their respective regulatory standards in soil samples collected at the project site. Therefore, the compounds detected in soil vapor are attributed to an off-site source in the surrounding area.

The proposed project would not result in impacts from contaminated media and building materials. As a preventative measure, a soil vapor barrier would be installed beneath the proposed school building. Any suspect ACM, LBP, and PCB-containing materials affected by the preparation of the project site for use as a public school would be identified prior to construction and properly managed during construction activities. The 10,000-gallon UST, access vault, all associated piping and petroleum-contaminated soil (if any) would be excavated, decommissioned, and/or disposed of in accordance with all federal, state, and local regulations, and the NYSDEC Petroleum Bulk Storage (PBS) registration would be updated to reflect the closed status of the tank. All soil excavated during building construction would be properly managed in accordance with all applicable local, State and Federal regulations. For areas of the project site where exposed soil may exist after building construction (i.e., landscaped areas), a two-foot thick layer of environmentally clean fill would be placed over the soil in these areas. In addition, to minimize the potential for exposure by construction workers and the surrounding public, standard industry practices, including appropriate health and safety measures, would be utilized.

GREENHOUSE GAS EMISSIONS

Vehicle use associated with the proposed school, operation of the natural gas backup hot water boiler, use of grid electricity to supplement on-site renewable electricity production, construction activities, production of materials used in the construction of the school building, and generation of waste would result in greenhouse gas (GHG) emissions. With the sustainable design elements that would be included as part of the project, energy efficiency and the use of renewable energy would be maximized, and GHG emissions would be reduced to the extent practicable. Therefore, the proposed school would be consistent with the City's GHG reduction goals.

CONSTRUCTION

It is anticipated that construction of the proposed project would require a total of approximately 29 months to complete, although the major external construction activities are expected to be completed within less than 24 months. Based on current plans, construction would begin in 2013 and be completed in 2015.

The estimated average number of workers on site by phase would be: 40 workers for mobilization, demolition, excavation and foundation; 60 workers for superstructure and exterior work; 100 workers for interior construction and fit-out; and 40 workers for exterior finishing and landscaping. The majority of construction activities would take place Monday through Friday, although if necessary, the delivery or installation of certain equipment could occur on weekend days. Hours of construction are regulated by the New York City Department of Buildings (DOB) and apply in all areas of the City.

Typical equipment used for demolition, site clearing, excavation, and foundation work would include excavators, bulldozers, backhoes, chainsaws and tree stump grinders (for tree removal), compaction equipment, tractors, jackhammers, and concrete pumping trucks. Other equipment that would be used include hoist complexes, dump trucks and loaders, concrete trucks, and back hoes. Trucks would deliver concrete and other building materials, and remove excavated material as well as demolition and construction debris. The construction equipment likely to be used during erection of the superstructure would include compressors, cranes, derricks, hoists, bending jigs, and welding machines. During façade and roof construction, hoists may continue to be used. Trucks would remain in use for material supply and construction waste removal. Interior and finishing work would employ a large number of construction workers, and a wide variety of fixtures and supplies would have to be delivered to the site.

Much of the proposed project's construction staging would occur within the project site, thereby limiting any effects on surrounding roadways and pedestrian elements. However, certain construction activities may require the temporary closing, narrowing, or otherwise impeding of the streets and sidewalks adjacent to the site.

As with most development in New York City, construction of the proposed project may be disruptive to the surrounding area for limited periods of time throughout the construction period. Analyses were undertaken to describe the proposed project's temporary effects on transportation systems, air quality, noise, historic resources, hazardous materials, land use and neighborhood character, socioeconomic conditions, community facilities, open space, and infrastructure, as well as the economic benefits associated with the construction.

The analyses concluded that the proposed project would not result in extensive construction-related effects with respect to any of the analyses areas of concern. Therefore, no significant adverse impacts are expected to occur as a result of construction.

PUBLIC HEALTH

A screening assessment was performed to examine the proposed development's potential to significantly impact public health concerns related to its construction and operation. The initial screening assessment determined that a full assessment of the proposed development's potential impacts on public health is not necessary: the proposed project would not be expected to exceed accepted City, State, or Federal public health standards in the areas of air quality, construction, solid waste management practices, odors, and noise. Therefore, the proposed project would not result in significant adverse impacts on public health.

MITIGATION

The technical analyses summarized above examine the potential for significant adverse impacts resulting from the proposed school facility. Significant adverse impacts have been identified in the areas of traffic and noise; measures that would minimize or avoid them are presented below.

TRAFFIC

While capacities at most of the approaches for the intersections bordering the project site would be sufficient to accommodate the traffic volume increases in the future, the proposed project would result in significant adverse traffic impacts at the following two intersection approaches/lane groups during the peak hours analyzed:

- The northbound approach of Seneca Avenue and Stockholm Street during the weekday AM and PM peak hours; and
- The northbound approach of Cypress Avenue and Stockholm Street during the weekday AM peak hour.

The specific improvement measures proposed to mitigate the impacted intersections are summarized in **Table S-1** and discussed in detail below:

Table S-1
Recommended Mitigation Measures

Intersection	AM Peak Hour	PM Peak Hour
Seneca Avenue and Stockholm Street	Install All-Way stop control.	Install All-Way stop control.
Cypress Avenue and Stockholm Street	Install All-Way stop control.	Install All-Way stop control.

Seneca Avenue and Stockholm Street

The impact at the northbound approach during the weekday AM and PM peak hours could be mitigated by changing the operation from a Two-Way to an All-Way stop control at this intersection.

Cypress Avenue and Stockholm Street

The impact at the northbound approach during the weekday AM peak hour could be mitigated by changing the operation from a Two-Way to an All-Way stop control at this intersection.

As summarized in **Table S-2**, with these measures in place, all of the impacted intersection approaches/lane groups would be fully mitigated.

Table S-2
2015 No Build, Build and Mitigated Build Conditions
Traffic Level of Service Analysis

Intersection/ Approach	2015 No Build				2015 Build				2015 Mitigated Build			
	Lane Group	v/c Ratio	Delay (sec)	LOS	Lane Group	v/c Ratio	Delay (sec)	LOS	Lane Group	v/c Ratio	Delay (sec)	LOS
Weekday AM Peak Hour												
Seneca Avenue and Stockholm Street												
Eastbound	LT	0.02	8.1	A	LT	0.05	8.2	A	LT	-	9.8	A
Westbound	-	-	-	-	-	-	-	-	TR	-	10.5	B
Northbound	LTR	0.24	15.0+	C	LTR	0.78	80.2	F+	LTR	-	9.0	A
	Intersection		-	-	Intersection		-	-	Intersection		10.0-	A
Cypress Avenue and Stockholm Street												
Eastbound	LT	0.02	9.5	A	LT	0.02	9.8	A	LT	-	9.4	A
Westbound	-	-	-	-	-	-	-	-	TR	-	12.0	B
Northbound	LTR	0.48	34.0	D	LTR	0.55	41.1	E+	LTR	-	9.4	A
	Intersection		-	-	Intersection		-	-	Intersection		11.0	B
Weekday PM Peak Hour												
Seneca Avenue and Stockholm Street												
Eastbound	LT	0.01	7.7	A	LT	0.04	7.8	A	LT	-	10.2	B
Westbound	-	-	-	-	-	-	-	-	TR	-	9.0	A
Northbound	LTR	0.28	15.1	C	LTR	0.93	106.6	F+	LTR	-	8.9	A
	Intersection		-	-	Intersection		-	-	Intersection		9.5	A
Cypress Avenue and Stockholm Street												
Eastbound	LT	0.03	8.0	A	LT	0.03	8.2	A	LT	-	11.8	B
Westbound	-	-	-	-	-	-	-	-	TR	-	10.8	B
Northbound	LTR	0.35	16.9	C	LTR	0.37	18.0	C	LTR	-	9.8	A
	Intersection		-	-	Intersection		-	-	Intersection		11.0	B

Notes: L = Left Turn, T = Through, R = Right Turn, LOS = Level of Service
+ Denotes a significant adverse traffic impact

NOISE

As discussed above, the noise generated from the proposed school's playground would result in significant adverse noise impacts at 1760 DeKalb Avenue and 459 Stockholm Street, which are residential properties that are adjacent to the project site. The potential for significant adverse noise impacts at 1760 DeKalb Avenue could be fully mitigated by the installation of through-the-wall air conditioning units in each living room or bedroom on the north façade of the building, which would be approximately four to six air conditioning units. With the through-the-wall air conditioning and the existing double glazed windows, the northern façade of 1760 DeKalb Avenue would be expected to provide approximately 30 dBA of window/wall attenuation. This would result in a building façade capable of maintaining interior noise levels less than the CEQR interior $L_{10(1)}$ noise level guideline of 45 dBA for residential uses even when the playground is in use.

Since 459 Stockholm Street has very few windows facing the proposed playground, and the windows are double glazed, the potential for significant adverse noise impacts at 459 Stockholm Street could be fully mitigated by the installation of window air conditioning units in each living room or bedroom on the north façade of the building, which would be approximately one to two air conditioning units. With the window air conditioning, the very few existing double glazed windows, and the masonry wall, the northern façade of 459 Stockholm Street would be expected to provide approximately 30 dBA of window/wall attenuation. This would result in a building façade capable of maintaining interior noise levels less than the CEQR interior $L_{10(1)}$ noise level guideline of 45 dBA for residential uses even when the playground is in use.

ALTERNATIVES

NO BUILD ALTERNATIVE

Under the No Build Alternative, the proposed school building would not be constructed. The project site would remain in its current state—occupied by an underutilized former parochial school building fronting on Seneca Avenue and a paved area at the rear of the building. Like the proposed project, this alternative would not result in any significant adverse impacts with respect to land use, zoning and community character, historic and cultural resources, urban design and visual resources, shadows, transit, pedestrians, parking, air quality, infrastructure and energy, greenhouse gas emissions, soil and groundwater conditions, public health, or construction impacts.

Unlike the proposed project, with the No Build alternative there would be no potential to result in noise impacts from the playground areas and no additional traffic trips would be generated.

BUILDING RENOVATION ALTERNATIVE

Under the Building Renovation Alternative, SCA would renovate the two-story former parochial school building on the project site for public school use. At its rear is a paved area that was used as an accessory parking area and a schoolyard/recreational area. The parking was provided along the southernmost edge of the site, and vehicular access to the site was provided from DeKalb Avenue.

Under the Building Renovation Alternative, the existing school building would be renovated to accommodate a new public primary school to serve CSD 24, with the capacity of approximately 250 seats. The main school entrance would be located on Seneca Avenue, the paved area at the rear of the existing building would contain a row of accessory parking at the southernmost edge of the site, accessed from DeKalb Avenue, and a playground area would be constructed in the area between the school building and the parking. This playground area would be approximately 10,100 square feet (sf), or 16 percent smaller than the playground area provided with the proposed project.

With 250 seats, the Building Renovation Alternative would provide a little more than half the capacity of the proposed project, which would provide 472 seats. Under this alternative, the school building would contain 12 classrooms and two specialty instruction rooms, while the proposed project would contain 24 classrooms and three specialty instruction rooms. Unlike the proposed project, the existing building would not be able to accommodate the gymnatorium or kitchen facility, but would instead include a cafeteria/exercise room.

Overall, it is expected that this alternative would have similar impacts to the proposed project. As with the proposed project, the Building Renovation Alternative would not result in any significant adverse impacts with respect to land use, zoning and community character, historic and cultural resources, urban design and visual resources, shadows, transit, pedestrians, parking, air quality, infrastructure and energy, greenhouse gas emissions, soil and groundwater conditions, public health, or construction impacts.

Although the Building Renovation Alternative has a smaller capacity than the proposed project, this alternative would result in the same significant adverse traffic impacts as the proposed project. However, with the proposed mitigation measures, no significant adverse traffic impacts would occur as a result of the proposed project or the Building Renovation Alternative.

Unlike the proposed project, the Building Renovation Alternative would not result in a significant adverse noise impact at 1760 DeKalb Avenue. However, both the proposed project and the Building Renovation Alternative would result in a significant adverse noise impact at 459 Stockholm Street. As with the proposed project, this noise impact could be mitigated through the installation of window air conditioning units at 459 Stockholm Street.

REDUCED PLAYGROUND ALTERNATIVE

Under the Reduced Playground Alternative, the proposed four-story, approximately 65,930- gsf building containing approximately 472 primary school seats would be constructed. The only change as compared with the proposed project would be the size and location of the playground areas. Under the Reduced Playground Alternative, the playground area would be set back from the southern property line. Specifically, the playground area would be set back by at least 22 feet from the property line where it abuts the residence at 1760 DeKalb Avenue, and would be set back by at least 44 feet from the property line where it abuts the residence at 459 Stockholm Street. These setbacks would be landscaped but would not include recreational space. As a result of these setbacks, the playground area would be approximately 5,533 sf, and approximately 54 percent smaller than the playground area provided with the proposed project.

Overall, it is expected that this alternative would have similar impacts to the proposed project. As with the proposed project, the Reduced Playground Alternative would not result in any significant adverse impacts with respect to land use, zoning and community character, historic and cultural resources, urban design and visual resources, shadows, transit, pedestrians, parking, air quality, infrastructure and energy, greenhouse gas emissions, soil and groundwater conditions, public health, or construction impacts.

As with the proposed project, the Reduced Playground Alternative would have the potential to generate additional traffic trips. However, with the proposed mitigation measures, no significant adverse traffic impacts would occur as a result of the proposed project or Reduced Playground Alternative.

Unlike the proposed project, the Reduced Playground Alternative would not have the potential to result in any significant adverse noise impacts. However, as noted above, the provision of the setbacks required to eliminate the potential for significant adverse noise impacts to the residences directly south of the project site would result in an overall playground area substantially reduced in size as compared with the proposed project.

UNAVOIDABLE ADVERSE IMPACTS

Unavoidable adverse impacts are defined as those that meet the following two criteria: (1) there are no reasonably practicable mitigation measures to eliminate the impact; and (2) 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 discussed above in “Mitigation,” the noise generated from the proposed school’s playground would result in significant adverse noise impacts at 1760 DeKalb Avenue and 459 Stockholm Street. The potential for significant adverse noise impacts at 1760 DeKalb Avenue could be fully mitigated by the installation of through-the-wall air conditioning units in each living room or bedroom on the north façade of the building, which would be approximately four to six air conditioning units.

Since 459 Stockholm Street has very few windows facing the proposed playground, and the windows are double glazed, the potential for significant adverse noise impacts at 459 Stockholm Street could be fully mitigated by the installation of window air conditioning units in each living room or bedroom on the north façade of the building, which would be approximately one to two air conditioning units.

If the proposed mitigation measures were not provided, the noise impacts at these residences would remain unmitigated.

GROWTH-INDUCING ASPECTS OF THE PROPOSED PROJECT

The proposed project would introduce a new 472-seat primary school facility to the Ridgewood section of Queens, which has a growing residential population. The proposed school project is intended to serve students from the surrounding community and relieve pressure on local schools. The proposed project is not expected to induce growth in the area.

IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES

There are manmade resources that would be expended with the proposed project. They are considered irretrievably and irreversibly committed, since reuse for some purpose other than the project is either not possible or is highly unlikely.

These resources include the land area used, as well as the materials, energy, and human effort required to construct the project. The actual construction materials used (concrete and metal, etc.) are included. In addition, there would also be the added demand of energy to operate the proposed facility; however, these are not expected to be significant. Furthermore, the proposed project's design will include a number of specific components that would help minimize the project's energy use. ✷

Chapter 1: Project Description

A. INTRODUCTION

The New York City School Construction Authority (SCA) proposes the site selection, acquisition, acceptance of construction funding, and construction of a new Primary School (P.S.) facility with the capacity of approximately 472 seats in the Ridgewood section of Queens (see **Figure 1-1**). The proposed school would serve Community School District (CSD) 24 and would accommodate children in pre-kindergarten through fifth grades. The project site, an approximately 29,000-square-foot (sf) lot located at located on the southwest side of Seneca Avenue between DeKalb Avenue and Stockholm Street (Block 3425, Lot 7), currently contains a two-story building that was formerly a parochial school and is now occasionally used for parish activities (see **Figure 1-2**).

Although design plans for the new building have not been finalized, it is expected that the proposed school building would contain approximately 65,930 gross square feet (gsf) and would be four stories and approximately 69 feet in height (and up to 82 feet to the top of the mechanical space). It is anticipated that the main entrance to the school would be located on Seneca Avenue. Two outdoor playground areas would be located to the rear of the school building (see **Figure 1-3**). An approximately 12,000-sf outdoor playground area would be located near Stockholm Street and a 3,000-sf early childhood center (ECC) outdoor playground area would be located near DeKalb Avenue.

The site is located in a mixed use area that is predominantly residential, with institutional uses located nearby. The proposed project is located within R6B residential zoning district, with a C1-3 commercial overlay. While the design of the school is not yet final, preliminary plans show that the project would result in zoning bulk non-compliances, including permitted floor area and requirements related to maximum building height. Therefore, the SCA would seek zoning bulk overrides from the Deputy Mayor for Economic Development. Funding for design and construction of this project would be provided in the New York City Department of Education's Capital Plan for Fiscal Years 2010 to 2014.

B. PURPOSE AND NEED

Construction of the new school facility has been proposed to provide additional public school capacity at the Primary school level in CSD 24. According to the latest DOE school utilization profile for 2011 to 2012, Primary schools in CSD 24 are operating at 104 percent capacity, with a district-wide capacity of 20,830 and a district-wide enrollment of 21,726. The Primary school located in closest proximity to the project site is the P.S. 305/Learners and Leaders, located across Stockholm Street from the project site. P.S. 305, which opened in 2008, is currently operating at 131 percent capacity, with 392 seats. P.S. 81/Jean Paul Richter School is located approximately 0.4 miles from the project site at 559 Cypress Avenue. P.S. 81 (Q081) is operating at 104 percent capacity, with 729 seats. The P.S. 81 Annex, Q848, is operating at 104

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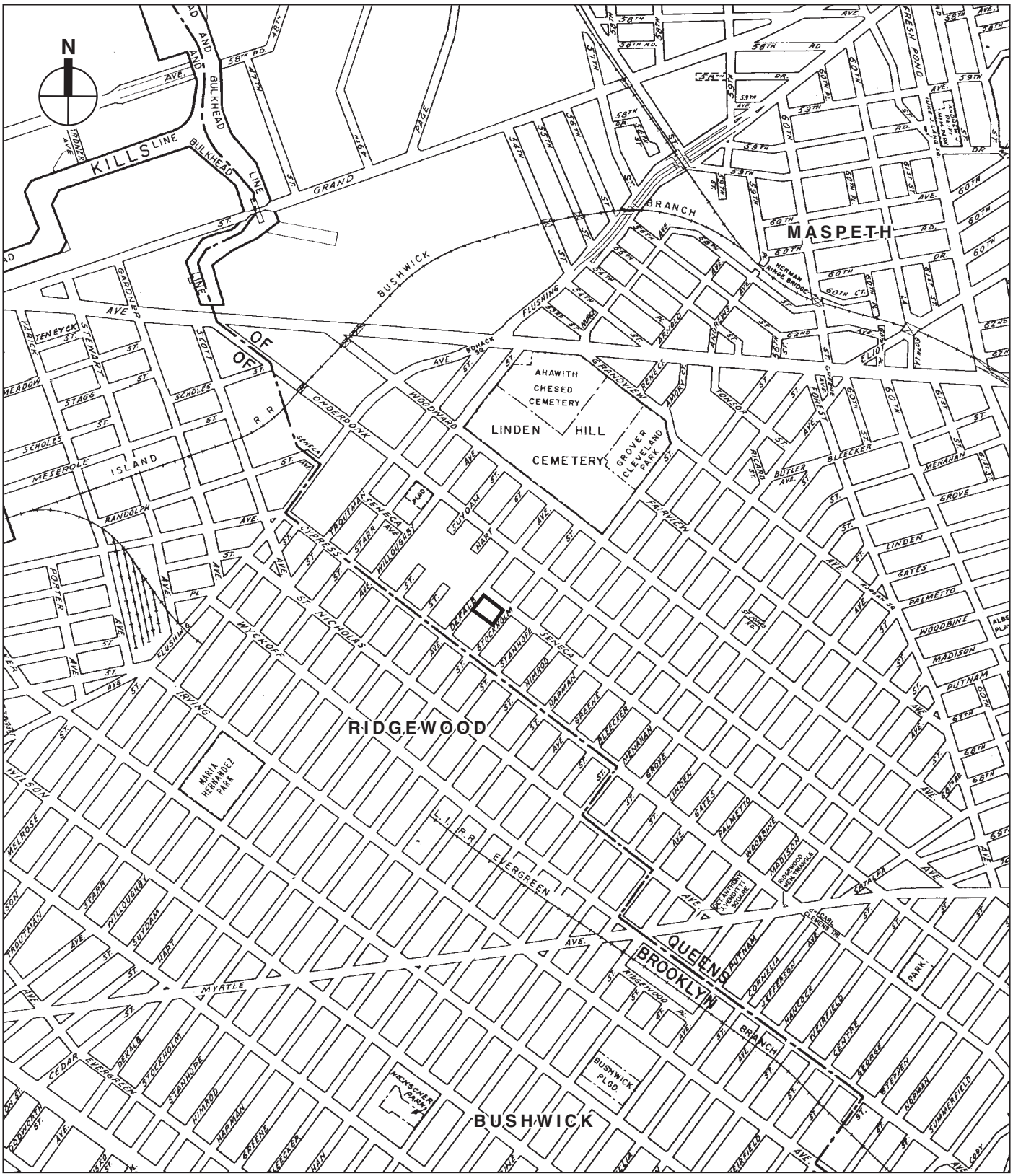

Project Site Boundary

Project Location
Figure 1-1

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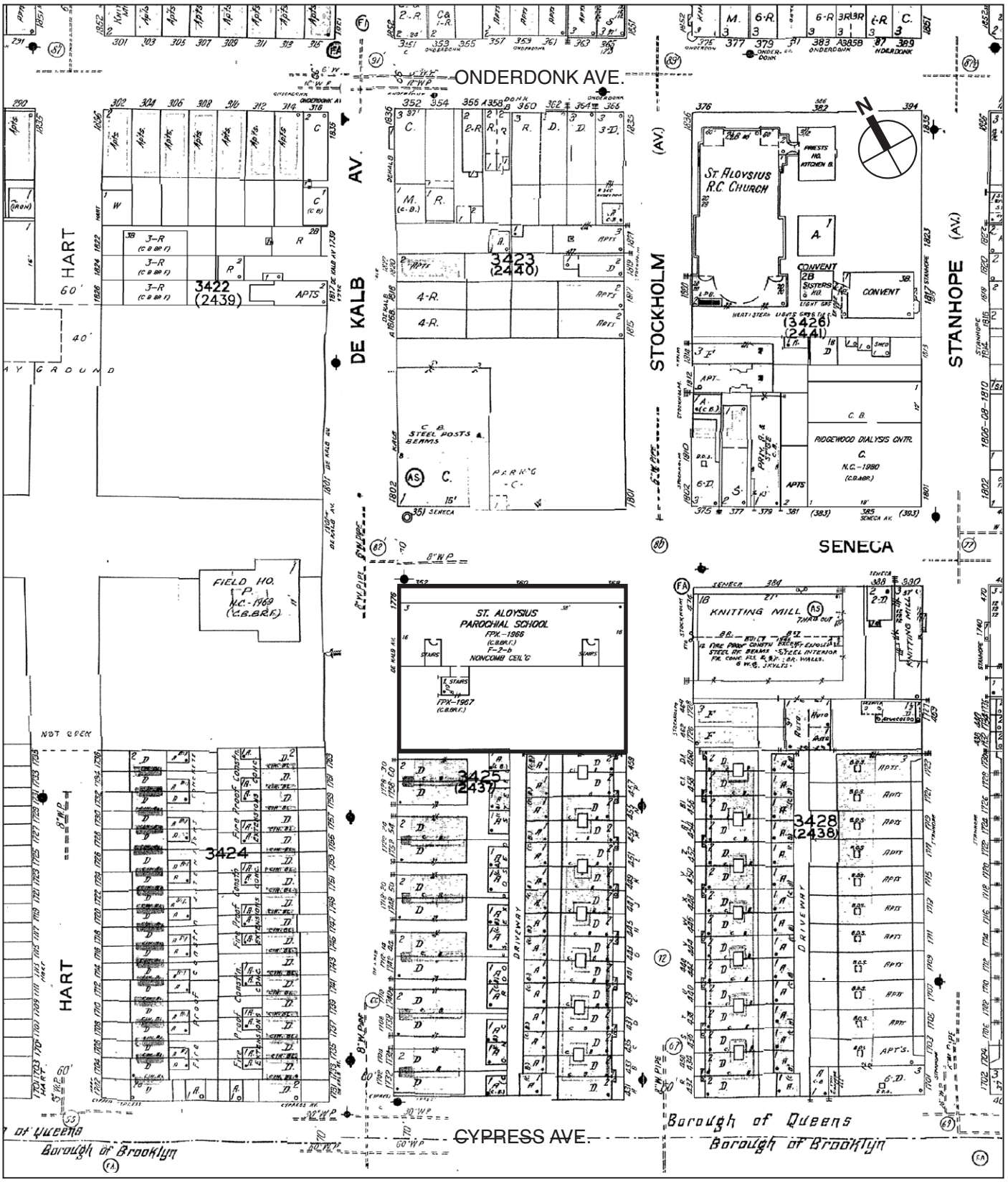

Project Site Boundary

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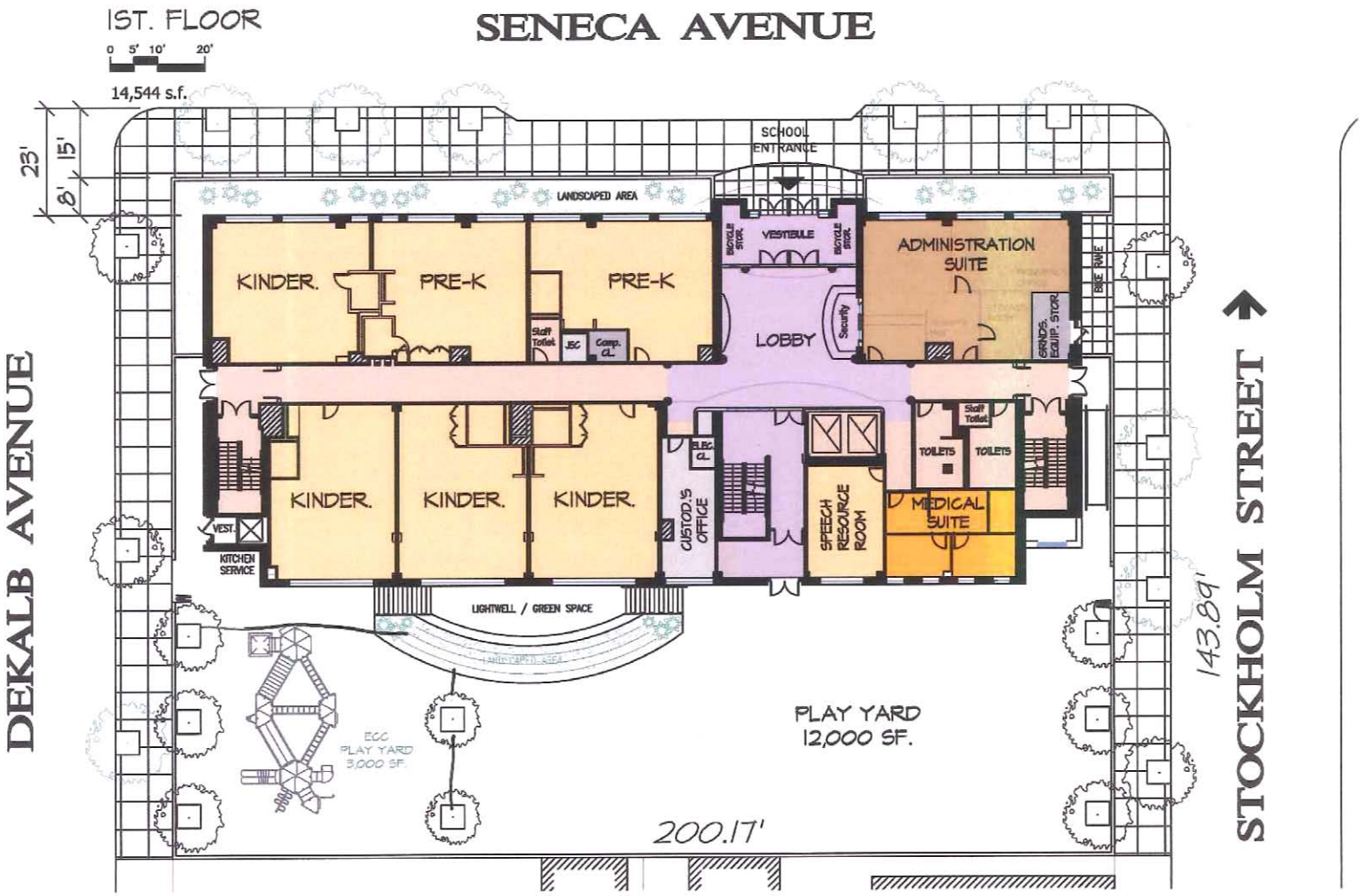
SCALE

Sanborn Map

Figure 1-2



Proposed School - Conceptual Site Plan

SCA P.S. 320

Figure 1-3

percent capacity with 160 seats and the P.S. 81 transportable unit, Q917, is operating at 70 percent capacity with 141 seats.

C. ANALYSIS FRAMEWORK

For the purpose of this environmental review, it is assumed that construction of the proposed project would begin in 2013 and the student occupancy would begin in September 2015. Accordingly, 2015 has been selected as the Build Year for which the environmental assessment areas have been analyzed. It is assumed that if the proposed project does not proceed, the project site would remain in its current underutilized state (the "No Action" scenario).

D. PROJECT SITE AND PROPOSED SCHOOL

The project site is located in the Ridgewood section of Queens. The site, Block 3425, Lot 7, is located on the northeast end of the block bound by Seneca Avenue, Stockholm Street, Cypress Avenue, and DeKalb Avenue. The site has frontage on Seneca Avenue, DeKalb Avenue, and Stockholm Street. The project site currently contains an underutilized two-story building that was formerly a parochial school.

The site is located in a predominantly residential area, though there are also a number of institutional uses nearby, including P.S. 305, located across Stockholm Street from the project site.

As mentioned above, design plans for the proposed project are not yet finalized; however, it is expected that the proposed school building would contain approximately 65,930 gsf and would be four stories and approximately 69 feet in height (82 feet to the top of the mechanical space). The main entrance to the school would be located on Seneca Avenue. An approximately 12,000-sf outdoor playground area and 3,000-sf ECC playground area would be located to the rear of the proposed school.

The new school facility would contain approximately 472 seats for students in grades pre-kindergarten through fifth, and would contain classrooms, administrative spaces, a gymnasium, library, cafeteria, and kitchen facilities. The new school would employ approximately 47 teachers, administrators, and support staff. The school would operate during normal school hours, likely between 8:00 AM to 3:30 PM between September and June. ✶

Chapter 2: Land Use, Zoning, and Public Policy

A. INTRODUCTION

This chapter considers the effects of the proposed project on land use, zoning, and community character. The proposed project would result in the demolition of a two-story underutilized building and the development of a new 472-seat Primary School (P.S.) facility for students in pre-kindergarten through fifth grade in Ridgewood, Queens.

As described below, this analysis concludes that the proposed project would be compatible with and supportive of existing land uses and ongoing land use trends in the study area, and would not result in any significant adverse impacts to land use, zoning, or community character.

B. METHODOLOGY

The approximately 400-foot study area is bounded by Onderdonk Avenue, Cypress Avenue, Hart Street, and Stanhope Street (see **Figure 2-1**). This is the area in which the proposed project has the greatest potential to affect land use or community character. This analysis identifies existing land use, zoning, and community character conditions in the study area, as well as anticipated changes to these conditions that are expected to occur independently of the proposed project by its 2015 build year, in order to assess any potential adverse impacts to land use, zoning, and community character that would occur as a result of the proposed project.

C. EXISTING CONDITIONS

Existing land use patterns and trends are described below for the project site and the study area. This is followed by a discussion of zoning and community character for both areas.

LAND USE

PROJECT SITE

The project site is located at 360 Seneca Avenue in Ridgewood, Queens (Block 3425, Lot 7). The 29,000-square-foot site is on the northeast end of the block bound by Seneca Avenue, Stockholm Street, Cypress Avenue, and DeKalb Avenue (see **Figure 2-1**). The project site is currently occupied by a two-story, approximately 33,500-sf building fronting on Seneca Avenue that was formerly a parochial school and is now occasionally used for parish activities. At the rear of the existing building there is a paved area which was formerly used as an accessory parking area as well as a schoolyard/recreational area for the parochial school.

STUDY AREA

The study area is defined by a mix of uses, the most predominant of which are residential, with several institutional and commercial uses, and a large open space use.

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SCA P.S. 320

Land Use
Figure 2-1

The project site is on the northern end of a residential block occupied by attached two-family buildings on the southeast side of the block and detached, multi-family dwellings on the northwest side of the block. The blocks to the east and west of the project site contain similar residential buildings, ranging from attached multifamily walk up buildings to semi-detached and detached single- and two-family dwellings. These are generally two story residential buildings, with older, three-story row houses along the northwest side of Stanhope Street. Along Onderdonk Avenue and on the corner of Stanhope Street and Seneca Avenue, several residential buildings contain ground floor commercial uses, several of which are vacant.

The largest commercial use in the study area is the Associated supermarket located directly across from the project site on Seneca Avenue. Associated occupies a one-story, approximately 10,000-sf building adjacent to a surface parking lot. There is one other commercial building in the study area, located at 377 Seneca Avenue, that is occupied by a restaurant and catering company. The only industrial use in the study area is Messina Brothers Remanufacturing, a wholesale automotive parts and repair business, adjacent to the restaurant and catering company at 379 Seneca Avenue.

There are several institutional and community facility uses in the study area. Directly southeast of the project site is P.S. 305/Learners and Leaders, a primary school serving students in pre-kindergarten through third grade. The school occupies a newly-constructed, four-story building with a playground on the southern portion of the lot. North of P.S. 305, at 385 Seneca Avenue, is the Ridgewood Dialysis Center. The Dialysis Center occupies a one-story building, and ambulette vehicles park in front of the building along Seneca Avenue to pick up and drop off patients. North of the Dialysis Center on the southeast corner of Onderdonk Avenue and Stockholm Street is St. Aloysius Church, a Roman Catholic parish church. East of the church is a building owned by the church that is occupied by the rectory office and related facilities. East of the rectory building is an accessory parking lot for the church.

Grover Cleveland Athletic Field is the only open space use in the study area. The field is located in the western portion of the study area, forming a superblock where Seneca Avenue terminates at DeKalb Avenue. The field is used by Grover Cleveland High School, located at 2127 Himrod Street outside of the study area, and is not publicly accessible. The field includes tennis courts, and a track surrounding two baseball fields and a soccer field, faced by bleachers on the northeast side. There is also a locker room facility located near the entrance on DeKalb Avenue. The field is surrounded by a low gate and a chain link fence along DeKalb Avenue.

ZONING AND PUBLIC POLICY

PROJECT SITE

The project site is located within an R6B contextual residential zoning district, with a C1-3 commercial overlay (see **Figure 2-2**). R6B zoning districts preserve the scale and streetscape of traditional rowhouses developed during the 19th century. Many are set back from the street with stoops and small front yards. R6B districts allow residential and community facility uses with a maximum floor area ratio (FAR) of 2.0.

STUDY AREA

The R6B zoning district extends through the block that contains the project site and occupies the southeastern portion of the study area. The C1-3 commercial overlay also encompasses two lots directly south of the project site as well as the lot north of the study area containing the

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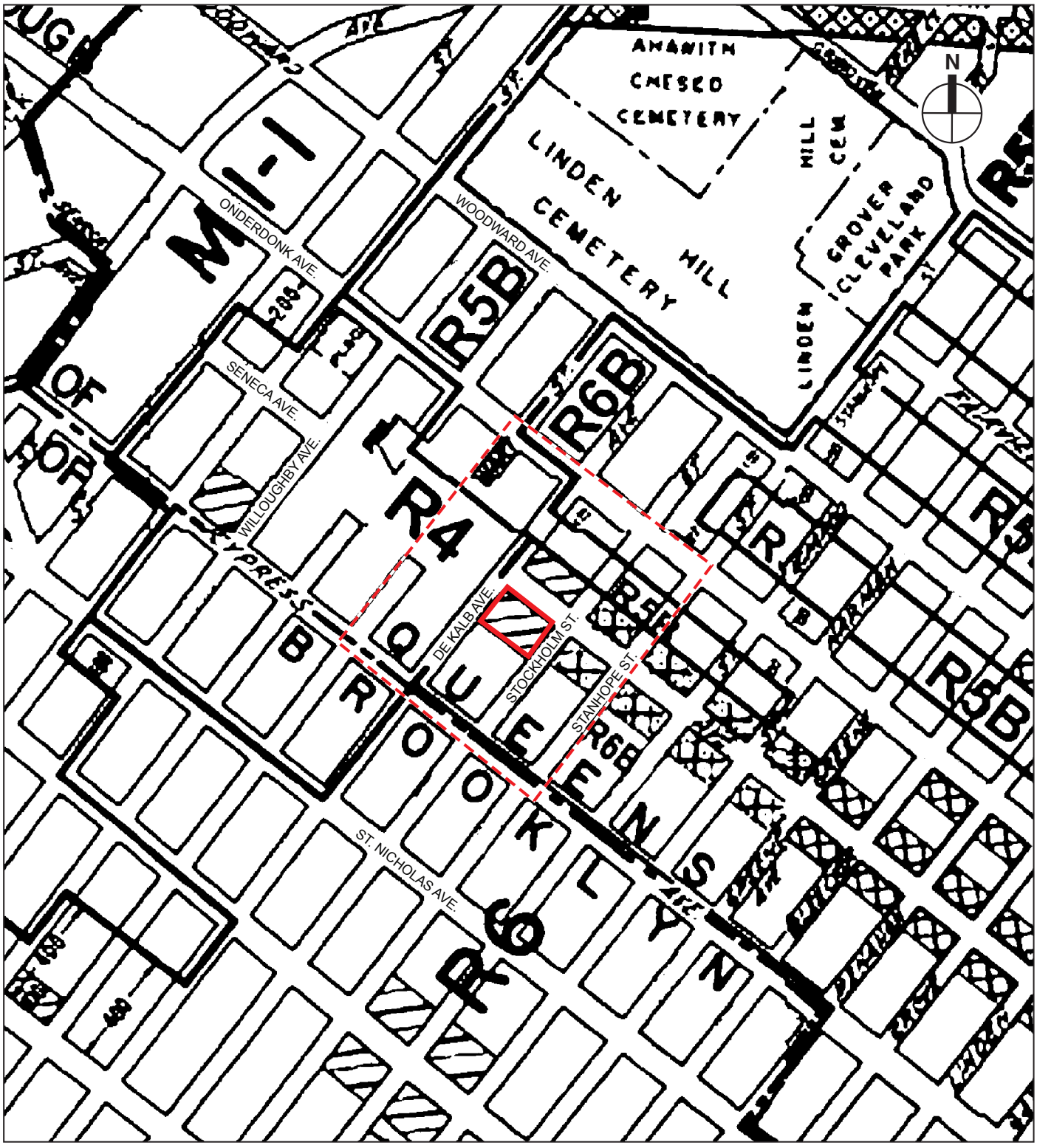

Project Site Boundary

Study Area Boundary

Zoning District Boundary

C1-3 Overlay

C1-4 Overlay

C2-4 Overlay

SCA P.S. 320

Zoning
Figure 2-2

Associated supermarket. The northernmost portion of the study area is also mapped with an R6B district.

In the eastern portion of the study area, the R6B zoning district is modified by a C2-4 commercial overlay. C2-4 commercial overlays are typically found in lower- and medium-density areas and generally include local serving retail. The maximum commercial FAR in this district is 2.0.

The northern portion of the study area contains an R5B contextual district. R5B contextual districts permit detached and semi-detached buildings, but typically include three-story rowhouses. The maximum FAR in R5B districts is 1.35 for residential uses and 2.0 for community facility uses, and the district has height and setback, front yard, and curb cut regulations that serve to maintain the character of the neighborhood.

The block along the eastern side of the study area is located in an R4 zoning district. R4 districts allow a residential FAR of 0.75, plus an attic allowance of up to 20 percent, or 2.0 for community facility uses. As a result, these districts tend to include three-story buildings with pitched roofs.

COMMUNITY CHARACTER

Community character is defined as the combination of a number of traits, including land use, urban design and visual resources, traffic, and noise. These elements are considered together to create a sense of the neighborhood in which a project is proposed, so that the project's compatibility with its community setting can be presented and assessed.

The community character of the Ridgewood section of Queens is generally that of low- to medium-density residential area. The residential blocks vary from attached two- and multi-family units to semi-detached and detached single- and two-family dwellings. Cypress Avenue is a two-way street that generally runs east-west along the southern edge of the study area. Within the study area Cypress Avenue is residential, but carries traffic to retail to the east and west. Seneca Avenue is also an east-west two-way street, but traffic is lighter as the street terminates at DeKalb Avenue in the study area. Onderdonk Avenue is a one-way street generally running east along the northern edge of the study area. The north-south streets are generally quiet, tree-lined residential streets with some ground floor commercial uses on the corners. Pedestrian traffic is relatively light, and concentrated along Cypress Avenue and Seneca Avenue. As noted above, Grover Cleveland Athletic Field is located on a superblock, which restricts north-south access along residential streets in the western portion of the study area between DeKalb Avenue and Willoughby Avenue.

The area is served by the B38 bus route, which runs along Seneca Avenue, Stanhope Street, and DeKalb Avenue in the study area. Two blocks south of the study area is the L subway line, which runs along Wykoff Street. There is a subway station at the corner of Wykoff and Stockholm Street, just outside of the study area.

COMMUNITY FACILITIES

A new school facility would provide additional community resources for area residents. The proposed project is not expected to place additional demands on hospitals and other health facilities, libraries, or public school or day care facilities. This section focuses, therefore, on police and fire protection services.

The project site is served by the New York City Police Department (NYPD) 104th Precinct. The precinct house is located at 64-2 Catalpa Avenue, in the Ridgewood section of Queens, approximately 1.2 miles east of the project site. The project site is served by the New York City Fire Department (FDNY) Engine 291, Division 14, located at 56-07 Metropolitan Avenue, approximately 2.9 miles east of the project site.

D. THE FUTURE WITHOUT THE PROPOSED PROJECT

LAND USE

In the future without the proposed project, the project site is expected to remain occupied by an underutilized building. There are no known development projects planned in the study area by September 2015.

ZONING AND PUBLIC POLICY

There are no zoning changes expected to occur on the project site or in the study area by the 2015 build year.

COMMUNITY CHARACTER

In the future without the proposed project, it is anticipated that the character of the area will remain as it is today. As there are no known development projects in the study area, there would be no change in land use, urban design, traffic or noise. Therefore, no change to the existing community character is expected in the future without the proposed project.

COMMUNITY FACILITIES

NYPD has no plans for any changes that will affect law enforcement services in this portion of the 104th Precinct. Similarly, there are no other anticipated changes in fire protection services or equipment expected by the 2015 build year.

E. PROBABLE IMPACTS OF THE PROPOSED PROJECT

LAND USE

PROJECT SITE

With the proposed project, the existing building on the project site would be demolished and a new, approximately 65,930-gross-square-foot primary school building would be constructed on the site. The proposed building would be four stories and approximately 69 feet in height (up to approximately 82 feet to the top of the mechanical space), fronting on Seneca Avenue. It is anticipated that the main entrance to the school would be located on Seneca Avenue. Two outdoor playground areas would be located to the rear of the school building, including an approximately 12,000-sf general playground area near Stockholm Street and a separate 3,000-sf early childhood center outdoor playground area located near DeKalb Avenue.

STUDY AREA

The proposed project would be compatible with land uses in the study area, most notably P.S. 305 which is located southeast of the project site on the adjacent block. The proposed project

would also improve land use conditions in the study area by redeveloping a site that is occupied by an underutilized building. The proposed project would be consistent with the height of other structures in the study area and would be compatible with the mix of uses. Therefore, the proposed project is not expected to affect adjacent land uses.

ZONING AND PUBLIC POLICY

The proposed project is located within an R6B residential zoning district, in which schools are allowed as-of-right. While the design of the school is not yet final, preliminary plans show that the project would result in zoning bulk non-compliances, including permitted floor area and requirements related to maximum building height. Therefore, the SCA would seek zoning bulk overrides from the Deputy Mayor for Economic Development. If the zoning waivers are granted, they would only apply to the project site and would have no impact on the surrounding zoning. Therefore, the proposed project would have no adverse impacts on zoning in the study area.

COMMUNITY CHARACTER

The proposed project would replace an underutilized building with a new primary school facility that would be similar in scale to existing buildings and compatible with surrounding land uses as well as the former educational use on the project site. The increase in traffic volumes expected to result from the proposed project is not expected to result in any significant adverse impacts to community character.

COMMUNITY FACILITIES

Police and fire services would be adjusted as deemed necessary by NYPD and FDNY, and no significant adverse impacts to police or fire services are expected to result from the proposed project. ✷

A. INTRODUCTION

This chapter considers the effects of the proposed project on historic and cultural resources. The project site is located on the block bounded by Stockholm Street and Seneca, Cypress, and DeKalb Avenues (Block 3425, Lot 7) in the Ridgewood neighborhood of Queens (see **Figure 3-1**). The site contains a two-story former parochial school that is now occasionally used for parish activities. The proposed project includes the construction of a new four-story school with outdoor playgrounds.

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, i.e the project site itself. Study areas for architectural resources are determined based on the area of potential effect for construction-period impacts, such as ground-borne vibrations, and the area of potential effect for visual or contextual effects, which is usually a larger area. The architectural resources study area for this project is defined as being within an approximately 400-foot radius of the project site, as shown on **Figure 3-1**.

Known architectural resources include properties listed on the State and National Registers of Historic Places (S/NR) or properties determined eligible for S/NR listing, National Historic Landmarks (NHLs), New York City Landmarks (NYCLs) and Historic Districts (NYCHDs) and properties determined eligible for landmark status. Potential architectural resources are properties that may meet the criteria of eligibility for S/NR listing or NYCL designation.

As described below, this analysis concludes that the proposed project would not result in any direct or indirect adverse impacts on historic resources. In a letter dated August 29, 2012, the New York State Office of Parks, Recreation and Historic Preservation (OPRHP) determined that the proposed project would have No Impact upon cultural resources in or eligible for inclusion in the Registers (see **Appendix A**).

B. EXISTING CONDITIONS

ARCHAEOLOGICAL RESOURCES

In July 2012, a disturbance memorandum and preliminary archaeological assessment of the project site was prepared.[1] This memorandum, the results of which are summarized below, concluded that the project site has no sensitivity for archaeological resources dating to either the precontact or historic periods. The memorandum was submitted to OPRHP for review and comment on July 27, 2012 (see **Appendix A**). In a comment letter dated August 29, 2012,

[1] AKRF, Inc. *Disturbance Memorandum and Preliminary Archaeological Assessment: Proposed Public School Q320; 360 Seneca Avenue, Queens, New York*. July 2012.

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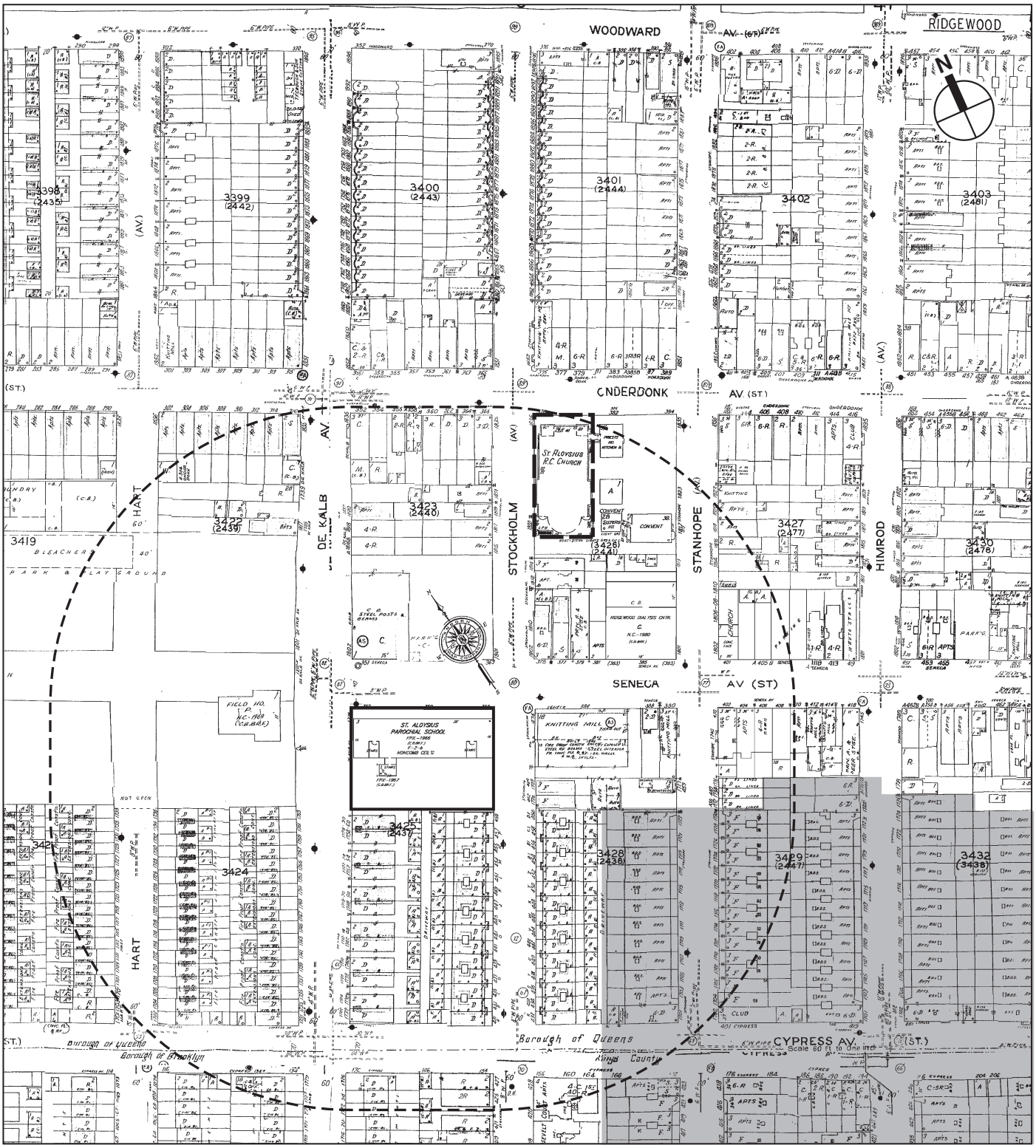


Project Site Boundary

Study Area Boundary (400-Foot Perimeter)

St. Aloysius RC Church (NR-eligible)

Cypress Avenue West Historic District (S/NR)

SCA P.S. 320

Historic Resources

Figure 3-1

OPRHP concurred with the conclusions and recommendations of the memorandum (see **Appendix A**).

BACKGROUND HISTORY

The precontact period refers to the time when New York City was inhabited by Native Americans prior to the settlement of the region by European colonists in the 17th century. Precontact settlements in New York City were typically located in close proximity to level slopes, water courses, well-drained soils, and other precontact sites.

Europeans began to establish settlements in Queens in the mid-17th century. Newtown, the large township in which the project site was initially located, was characterized by large tracts of marsh and farmland for the next two centuries. While some nearby areas were developed with small towns and roads, the project site appears to have been used as farmland throughout most of the 19th century. Historic maps dating to the 19th and 20th centuries depict no development on the project site before the construction of the existing school in 1966. The project site was surrounded by railroad tracks and rail yards. Prior to the construction of the existing school, the site may have been used as a storage yard or parking lot, possibly in association with the nearby railroads. A small structure used as a luncheonette was located on the property during this time. An aerial photograph of the area taken in 1966, the year the former railroad facilities were demolished and the existing school was built, depicts the project site as vacant and cleared of all debris and pavement.

The construction of the existing parochial school building in 1966 appears to be the first significant development on the project site. The two-story school building occupies the northern portion of the project site and the paved surface to the rear of the building does not appear to have ever been developed.

POTENTIAL ARCHAEOLOGICAL SENSITIVITY OF THE PROJECT SITE

The disturbance memorandum and preliminary archaeological assessment of the project site reached the following conclusions regarding the site's archaeological sensitivity:

Precontact Sensitivity

The project site is more than one mile from other previously identified archaeological sites, however, it is near the original location of the eastern branches of the Newtown Creek/English Kills, which was formerly lined with Native American settlements. In addition, a Native American trail ran several blocks to the west of the project site. It therefore appears likely that some form of Native American activity took place on the project site. While that activity may have been limited to resource exploitation near the marshland surrounding the English Kills, it is possible that a habitation site may have been located in the immediate vicinity of the project site.

Despite this possibility, precontact sites are generally shallowly buried. The disturbance to the site caused by the construction of the existing building and the grading and paving associated with the construction of both the existing and former paved parking areas could have resulted in the disturbance of any precontact resources on the project site. The existing building has a basement, and therefore, no archaeological resources are likely to be present in the northern half of the project site as a result of excavation during the building's construction. Soil borings suggest that fill materials are present between 5 and 15 feet below the surface of the parking lot. Because the elevation of the site as depicted on historic maps has been relatively consistent since the early-20th century and the soil levels below the fill are very similar to the fill deposits, it is

possible that what is identified in the boring logs as fill is actually disturbed and/or redeposited soil. It therefore appears that grading and paving associated with the site's historic use as a parking or storage area have impacted any shallowly-buried archaeological resources. As such, the project site is not considered to be sensitive for precontact archaeological resources.

Historic Sensitivity

The project site was vacant until the early 20th century, when a small structure used as a luncheonette was constructed in the northwest corner of the site. The remainder of the site was used as a parking lot until 1966, when the existing school building was built. The project site was therefore determined to have no sensitivity for archaeological resources dating to the historic period.

ARCHITECTURAL RESOURCES

PROJECT SITE

The building on the project site is a non-descript two-story brick school constructed in 1966. It does not appear to meet the eligibility criteria for State and/or National Register listing.

STUDY AREA

There are two architectural resources located within the 400-foot project study area (see **Figure 3-1**).

St. Aloysius Roman Catholic Church (S/NR-eligible) at 382 Onderdonk Avenue is a neo-Renaissance-style brick church with two 165-foot-tall towers capped by metal cupolas (see view 1 of **Figure 3-2**). It was constructed in 1917 to designs by Francis J. Berlenbach. The east and west ends of the transept are designed similarly to the main façade on Onderdonk Avenue with smaller towers capped by stone cupolas. The church is richly detailed with stone ornament, arched windows and doors, arcades, and rose windows. The two towers can be seen from multiple locations throughout the area for long distances over intervening low-rise buildings (see view 2 of **Figure 3-2**).

The Cypress Avenue West Historic District (S/NR) consists of 440 structures along Cypress Avenue between Stockholm and Linden Streets. The northwestern corner of the historic district falls within the project study area. The district largely consists of two- and three-story brick row houses and tenements constructed between 1888 and 1906. Most buildings are set back from the street behind small yards, and Romanesque Revival ornament provides variation between buildings and blocks while creating a cohesive architectural character to the district. (See **Figure 3-3** for photographs of the portion of the historic district that falls within the project study area.)

C. THE FUTURE WITHOUT THE PROPPOSED PROJECT

ARCHAEOLOGICAL RESOURCES

In the future without the proposed project, the project site is expected to remain occupied by an underutilized building. The project site is not considered to be archaeologically sensitive and is not expected to contain intact archaeological resources.

St. Aloysius RC Church. View west on Onderdonk Avenue **1**

St. Aloysius RC Church. View north on Cypress Avenue between DeKalb Avenue and Stockholm Street **2**

Cypress Avenue West Historic District. View northwest on Stanhope Street from Cypress Avenue **3**

Cypress Avenue West Historic District. View northeast on Stanhope Street from Cypress Avenue **4**

ARCHITECTURAL RESOURCES

Architectural resources that are listed on the National Register or that have been found eligible for listing are given a measure of protection from the effects of federally sponsored or assisted projects under Section 106 of the National Historic Preservation Act. Although preservation is not mandated, federal agencies must attempt to avoid adverse impacts on such resources through a notice, review and construction process. Properties listed on the State Register are similarly protected against impacts resulting from state-sponsored or state-assisted projects under the State Historic Preservation Act. Private property owners using private funds can, however, alter or demolish their properties without such a review process.

PROJECT SITE

In the future without the proposed project, the project site is expected to remain occupied by an underutilized building.

STUDY AREA

No development projects or rezonings are planned within the study area by 2015.

D. PROBABLE IMPACTS OF THE PROPOSED PROJECT

ARCHAEOLOGICAL RESOURCES

As described above, the project site is not considered to be sensitive for archaeological resources dating to either the precontact or historic periods. As noted above, the disturbance memorandum was submitted to OPRHP on July 27, 2012. (see **Appendix A**). In a comment letter dated August 29, 2012, OPRHP concurred with the conclusions and recommendations of the memorandum (see **Appendix A**). Therefore, the proposed project is not expected to adversely affect archaeological resources.

ARCHITECTURAL RESOURCES

In general, potential impacts on architectural resources can include both direct physical impacts and indirect 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 that 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 (DOB) *Technical Policy and Procedure Notice (TPPN) #10/88*. Indirect impacts such as contextual impacts may include isolation of a historic resource from its setting or visual relationships with the streetscape, changes to a resource's visual prominence, elimination or screening of publicly accessible views of a historic resource, introduction of significant new shadows or significant lengthening of the duration of existing shadows on sun-sensitive historic resources, and introduction of incompatible visual, audible, or atmospheric elements to a resource's setting.

PROJECT SITE

With the proposed project, the existing building on the project site would be demolished and a new, approximately 65,930-gross-square-foot primary school building would be constructed on the site. The proposed building would be four stories and approximately 69 feet in height (82 feet to the top of the mechanical space), fronting on Seneca Avenue. The proposed building would be approximately 32,428 square feet larger and 32 feet taller than the existing building that would remain in the future without the proposed project. Two outdoor playground areas would be located to the rear of the school building, including an approximately 12,000-square-foot general playground area near Stockholm Street and a 3,000-square-foot early childhood center outdoor playground area located near DeKalb Avenue. As described above, the existing building on the project site does not appear to meet the eligibility criteria for State and/or National Register listing.

STUDY AREA

The proposed project would not have direct or indirect adverse impacts on the two historic resources in the study area. Neither the church nor the portion of the historic district within the study area is located close enough to the proposed construction activities to potentially experience inadvertent construction damage. For the most part, there is no visual relationship between the project site and the church and historic district due to intervening buildings. Therefore, the proposed project would not adversely affect the setting or context of those historic resources. Although the proposed school building would partially obscure limited views of the towers of St. Alyosius Roman Catholic Church as seen over the project site from Cypress Avenue, there are other, better views of the church throughout the study area, particularly in the view corridors along Onderdonk Avenue and Stockholm and Stanhope Streets. Therefore, the proposed project would not affect the church's visual prominence. Overall, the proposed project would not result in any visual or contextual impacts on surrounding historic resources. In a letter dated August 29, 2012, OPRHP concurred with these findings that the proposed project would have No Impact upon historic resources (see **Appendix A**). ✷

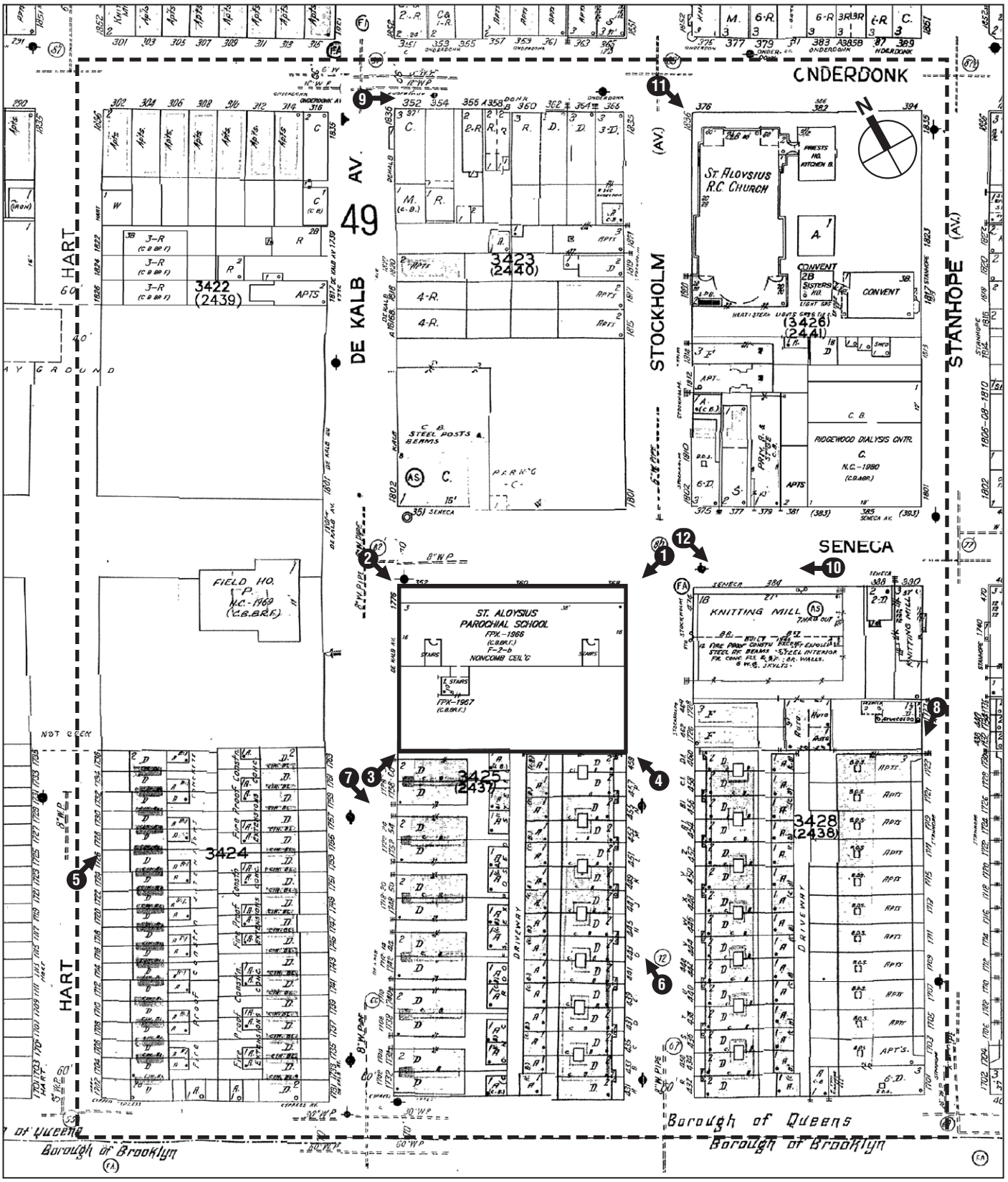
A. INTRODUCTION

This chapter considers the potential of the proposed project to affect urban design and visual resources in the study area. The project site (Block 3425, Lot 7) is located in Ridgewood, Queens, at 360 Seneca Avenue, on the northeast end of the block bound by Seneca Avenue, Stockholm Street, Cypress Avenue, and DeKalb Avenue. According to the 2012 *New York City Environmental Quality Review (CEQR) Manual*, the urban design and visual resources study area is consistent with the study area for the analysis of land use, zoning, and public policy and defines where the proposed project would be expected to have the greatest effect on urban design and visual resources. The study area is therefore roughly bounded by Onderdonk Avenue to the north, Cypress Avenue to the south, Stanhope Street to the east, and Hart Street to the west (see **Figures 4-1** and **4-2**). Views of the project site are generally not available beyond this distance.

This preliminary assessment addresses urban design and visual resources for existing conditions and the future without and with the proposed project for the year 2015, when the proposed project is expected to be completed. The basis for comparison is the No Action scenario, which assumes that in the absence of the proposed project, the project site would remain in its current underutilized condition.

The proposed project would involve the demolition of the existing two-story former parochial school building on the project site and the construction of a new, approximately 65,930-gross-square-foot (gsf) primary school building and outdoor playground areas. The New York City School Construction Authority (SCA) has not yet finalized the project plans for the proposed school; however, as currently contemplated, the new school building would be four stories and approximately 69 feet in height, plus mechanical space (up to approximately 82 feet to the top of the mechanical space). The proposed building would be located on the northern portion of the project site, fronting on Seneca Avenue, and the outdoor playground areas would be located to the rear of the school building. The main entrance to the school is expected to be on Seneca Avenue. The proposed school building would cover approximately 50 percent of the lot, and would be similar in bulk and height to P.S. 305/Learners and Leaders, a recently built school located adjacent to the project site across Stockholm Street. The proposed project would not be expected to affect wind conditions in the study area. It would not alter the street pattern, block shapes, or natural features of the study area, nor would it introduce an incompatible use. The proposed project would not alter any view corridors or obstruct views of any visual resources in the study area.

This preliminary assessment concludes that in comparison to the No Action scenario, the proposed project would not be expected to result in any significant adverse impacts to urban design and visual resources on the project site or in the study area. Therefore, no additional analysis is warranted.



Project Site Boundary

Study Area Boundary

Photograph Number and View Direction

0 100 200 FEET

SCALE

Project Location and Study Area

Figure 4-1

8.10.12

Project Site Boundary

Study Area Boundary

A *Photograph View Direction and Reference Letter (See Figures 4-9 to 4-11)*

0 100 200 FEET

SCALE

Aerial Photograph of the Project Site and Study Area
Figure 4-2

SCA P.S. 320

B. EXISTING CONDITIONS

PROJECT SITE

URBAN DESIGN

The project site is currently occupied by a former parochial school building that is now occasionally used for parish activities (see Views 1 through 4 of **Figures 4-3** and **4-4**). The two-story, brick clad building was constructed in 1966 and occupies the northeastern portion of the project site. The building has a uniform, shallow setback from Seneca Avenue, DeKalb Avenue, and Stockholm Street, and is surrounded by a low metal fence. The main entrance faces Seneca Avenue from the middle of the building's northeast facade and includes three metal doors with a metal hood projecting over the sidewalk. The southwestern portion of the project site contains a parking lot surrounded by a chain link fence.

The existing building is approximately 33,500 square feet (sf), and the project site is approximately 29,000 sf. The project site has a permitted maximum floor area ratio (FAR) of 2.0 for community facility uses, residential uses, and commercial uses. Existing lot coverage is approximately 39 percent.

VISUAL RESOURCES

The project site does not include any visual resources. St. Aloysius Roman Catholic Church is visible from the project site and is described in detail below.

STUDY AREA

URBAN DESIGN

The topography of the study area slopes upwards to the northeast. With the exception of DeKalb Avenue, which carries two-way traffic, the streets that run northeast-southwest carry one-way traffic. Cypress Avenue is the primary thoroughfare in the study area, and traffic generally becomes lighter in the northeast where the neighborhood has a more residential character. Parking is available on the street, and the residential blocks in the southwestern portion of the study area include midblock alleys that provide garage access, in some cases below street grade. The study area is characterized by a grid street pattern, interrupted by the termination of Seneca Avenue at the Grover Cleveland Athletic Field, which extends from DeKalb Avenue and Seneca Avenue in the study area to the northwest, beyond the study area. The Grover Cleveland Athletic field creates a superblock, interrupting Hart Street in the study area as well as Suydam Street outside of the study area.

Southwest of Seneca Avenue, the blocks are primarily residential, containing a mix of attached, semi-detached, and detached, single-family and multifamily buildings, all with various setbacks. The residential buildings along Stanhope Street, Stockholm Street, DeKalb Avenue, and Hart Street are uniform in architectural style along each street. Along Hart Avenue and the northwest side of DeKalb Avenue, the residential buildings are brick-clad, with deeper front yard setbacks and driveways (see View 5 of **Figure 4-5**). The residential buildings along Stockholm Street are similar in style but have shallower setbacks (see View 6 of **Figure 4-5**). Along the southeast side of DeKalb, residential buildings consist of semi-detached multifamily light-colored brick-faced buildings built to the sidewalk and interrupted by driveways (see View 7 of **Figure 4-6**).

View looking west at the project site from Seneca Avenue and Stockholm Street **1**

View looking southeast at the project site from Seneca Avenue and DeKalb Avenue **2**

Project Site Photographs
Figure 4-3

View looking northeast at the project site from DeKalb Avenue **3**

View looking north at the project site from Stockholm Street **4**

Project Site Photographs
Figure 4-4

View northeast on Hart Avenue **5**

View north on Stockholm Avenue **6**

View south on DeKalb Avenue **7**

View southwest on Stanhope Street **8**

Study Area Photographs
Figure 4-6

Stanhope Street contains older, three-story rowhouses with decorative cornices (see View 8 of **Figure 4-6**). All of these residential streets contain street trees, and parking is available on the street. As described above, residential buildings along these streets have backyard access through midblock alleys accessible from Cypress Avenue.

North of Seneca Avenue, a few residential buildings include ground floor retail space, generally on the corners of blocks. Many of these spaces are vacant and are distinguished only by roll-down security gates. Along Onderdonk Avenue, buildings are primarily three stories, set closer to the street and are varied in architectural style (see View 9 of **Figure 4-7**). Along Stanhope Street north of Seneca Avenue the streetwall is interrupted by one-story garages and driveways.

There are several institutional uses in the study area, of various architectural styles. P.S. 305 is located directly southeast of the project site at 378 Seneca Avenue, in a modern building. St. Aloysius Church is located on the southeast corner of Onderdonk Avenue and Stockholm Street, in a neo-Renaissance-style brick building with two tall towers. Both the church and the school are visually prominent in the study area, and are described below. The Ridgewood Dialysis Center is located on Seneca Avenue across from the project site. The clinic occupies a one-story building and accounts for much of the activity on this portion of the street with ambulettes and other motorists picking up and dropping off patients.

Most of the streets in the study area contain ample street trees, but there are no benches or other pedestrian amenities. Pedestrian traffic is light throughout the study area, especially along the residential blocks. Many of the streets contain above ground wiring and telephone poles that break up the streetscape. The Grover Cleveland Athletic Field is the only open space in the study area, and is not publicly accessible.

VISUAL RESOURCES

View corridors are generally limited in the study area. Views looking northeast up Stanhope Street, Stockholm Street, and DeKalb Avenue are limited due to the uphill slope. These views are also limited for the pedestrian by parked cars lining both sides of the streets. From the northeastern portion of Stockholm Street, the Stockholm Street Historic District (located outside of the study area) is partially visible. Brick paving is visible along the street, and the cemetery is visible in the background, but the view is not significant from within the study area.

The view corridor looking northwest on Seneca Avenue is partially blocked by the Grover Cleveland Athletic Field perimeter fencing. However, the field is mostly devoid of buildings, and provides a view corridor across the field that includes the Manhattan skyline far in the background (see View 10 of **Figure 4-7**).

St. Aloysius Roman Catholic Church is a prominent visual resource in the study area, located on the northeast end of the block bounded by Stockholm Street, Onderdonk Avenue, Stanhope Street, and Seneca Avenue (see View 11 of **Figure 4-8**). The Church occupies a neo-Renaissance-style brick building with two towers topped by metal cupolas, and was constructed in 1917. As it is also located at the highest topographical point in the area, the two towers of the Church are visible from most vantage points in the study area.

P.S. 305 is a primary school occupying a modern building on Seneca Avenue directly east of the project site (see View 12 of **Figure 4-8**). Built in 2008, the building is clad in buff-colored brick, with modern, metal accents including the decorative hood over the door and the school name in large lettering on the building's northern elevation. Due to its size, location and modern style, the building is visually prominent in the study area, but is not a visual resource as it fits in with existing buildings in the area.

View southeast on Onderdonk Avenue **9**

View northwest on Seneca Avenue **10**

Study Area Photographs
Figure 4-7

St. Aloysius Roman Catholic Church, 382 Onderdonk Avenue **11**

P.S. 305, 378 Seneca Avenue **12**

Study Area Photographs
Figure 4-8

C. THE FUTURE WITHOUT THE PROPOSED PROJECT

PROJECT SITE

In the future without the proposed project, the project site is expected to remain unchanged. Therefore, the urban design character of the site would not be altered.

STUDY AREA

There are no known developments planned in the study area expected to be completed by the 2015 build year. Therefore, no change to the urban design or visual resources in the study area is expected in the future without the proposed project.

D. THE FUTURE WITH THE PROPOSED PROJECT

PROJECT SITE

URBAN DESIGN

Plans for the proposed project are not yet finalized; however, as currently anticipated, the proposed project would result in the demolition of the existing two-story building and the development of a new, approximately 65,930-gsf school building. The proposed building would be four stories and approximately 69 feet in height (up to approximately 82 feet to the top of the mechanical space). The proposed school building would occupy the northeastern portion of the project site, fronting on Seneca Avenue, and two outdoor playground areas would be located to the rear of the school building, including an approximately 12,000-sf general playground area near Stockholm Street and a 3,000-sf early childhood center outdoor playground area located near DeKalb Avenue.

The proposed building would be approximately 32,428 sf larger and 45 feet taller than the existing building. The proposed building would be built with higher lot coverage (50.2 percent) than the existing building (38.7 percent). Like the existing building, the school's main entrance would be located on Seneca Avenue. The proposed building would be set back from the Seneca Avenue sidewalk by an 8-ft landscaped area, with similar setbacks along Stockholm Street and DeKalb Avenue.

As currently contemplated, the proposed project would require zoning overrides for bulk as well as height related to the street walls. The proposed project, like the No Action scenario, would be constructed on an existing block, and would not require any changes to streets or street patterns, open spaces, or natural features on the project site. With the proposed project, the use on the site would change from an underutilized building to a school. Although the proposed project would result in changes to use, bulk, and height on the project site, the proposed building would be similar in orientation and lot coverage to the existing building and would reflect the height and bulk of nearby P.S. 305. These changes would therefore not be considered adverse, and the proposed project would fit with the varied building types, heights, sizes, and uses in the study area. The anticipated changes to the pedestrian experience would not be considered likely to disturb the vitality, walkability, or visual character of the project site. Instead, the proposed project would reactivate a site that is currently underutilized.

VISUAL RESOURCES

There are no visual resources on the project site. The proposed building would not disturb the view corridor looking northwest on Seneca Avenue or the view of St. Aloysius Church from the project site. The open space component of the proposed project would create an amenity and improve the pedestrian experience of the project site.

STUDY AREA

URBAN DESIGN

The proposed building would be constructed on an existing block and would not alter streets, street patterns, or block shapes in the study area. The proposed school would be consistent with existing uses in the study area.

As described above, as currently contemplated, the proposed building would reflect the shape, form, lot coverage, and setbacks of nearby P.S. 305. At four stories and approximately 69 feet (plus mechanical space) in height, the proposed building would be taller than the surrounding residential and commercial uses in the study area, but would be consistent with the height of the P.S. 305 building. As described above, the proposed building would have minimal setbacks from Seneca Avenue, Stockholm Street, and DeKalb Avenue. These would be similar to setbacks in the study area and represent only a slight change to the streetwall created by P.S. 305. As a result, the proposed building would not seem out-of-scale with the surrounding buildings from the pedestrian perspective, but would instead represent a continuation of the streetwall created by P.S. 305 along Seneca Avenue. The proposed playground area in the southwestern portion of the project site would also reflect the similarly aligned playground on P.S. 305. **Figures 4-9** through **4-11** provide a three-dimensional representation of the future streetscape in the No Action condition and with the proposed project.

The proposed project would be expected to positively affect the character of the project site and surrounding area by providing a new school building and playground area that would add pedestrian activity to the project site. The proposed project would add a compatible institutional use to a site that is currently underutilized and is surrounded by other institutional uses and compatible residential and commercial uses. The proposed building and playground areas would enliven the streetscape and be consistent with the height of the adjacent school building and compatible with the surrounding residential and commercial buildings.

VISUAL RESOURCES

The proposed school would be noticeable from views from the immediately surrounding streets. However, the proposed building would not significantly alter the more significant view corridors along surrounding streets. The proposed building would not disturb the view corridor looking northwest on Seneca Avenue or views of St. Aloysius Church from throughout the study area.

Overall, this preliminary assessment concludes that compared with the No Action condition, the proposed project would not be expected to result in any significant adverse impacts to urban design and visual resources on the project site or in the study area ✷

View A: Existing and No Action Condition

View A: Proposed Project

Views West from Seneca Avenue and Stanhope Street

Figure 4-9

View B: Existing and No Action Condition

View B: Proposed Project

Views North along Stockholm Street
Figure 4-10

View C: Existing and No Action Condition

View C: Proposed Project

Views Northeast from DeKalb Avenue

Figure 4-11

Chapter 5: Shadows

The *CEQR Technical Manual* requires a shadow assessment if a proposed structure is 50 feet or greater in height, or adjacent to a sunlight-sensitive resource regardless of height. The proposed school, as currently contemplated, would be four stories and approximately 69 feet (and up to approximately 82 feet to the top of the mechanical space) in height. Additionally, the project site is located across the street from the Grover Cleveland Athletic Field.

According to CEQR methodology, the longest shadow that a structure can cast occurs on December 21, the winter solstice, at the very start of the analysis day, and is equal to 4.3 times the height of the structure. Therefore, the longest shadow that the proposed school could cast would be 297 feet (and the shadow from the mechanical space could reach up to 353 feet), and would extend into portions of the Grover Cleveland Athletic Field.

According to the *CEQR Technical Manual*, sunlight-sensitive resources of concern include publicly-accessible open spaces, architectural resources that depend on direct sunlight for their enjoyment by the public, or important natural resources. The Grover Cleveland Athletic Field contains outdoor recreational facilities for nearby Grover Cleveland High School, including a track surrounding two baseball fields and a soccer field, and tennis courts. The facility also includes a building containing locker rooms and a surface parking area along DeKalb Avenue, across from the project site. The Grover Cleveland Athletic Field is used only by the students of the school and for school-sponsored athletic events. The Athletic Field is surrounded by a locked fence and is not publicly accessible. Therefore, it is not considered a sunlight-sensitive resource of concern as defined by the *CEQR Technical Manual*. As no sunlight-sensitive resources of concern were identified within the longest shadow study area, the proposed project would not result in any significant adverse shadow impacts, and no further analysis is necessary. ✷

A. INTRODUCTION

The proposed school would generate new trips from students and staff traveling to and from the project site. This chapter examines the potential for impacts of the proposed project on transportation conditions. The proposed school, expected to be operational in 2015, would accommodate a total of 472 students in pre-kindergarten through fifth grade. In terms of staff, the proposed school would employ approximately 47 faculty and staff.

Based on travel demand estimates, the proposed project would exceed the 2012 *City Environmental Quality Review (CEQR) Technical Manual* thresholds for undertaking quantified traffic, parking and pedestrian analyses. However, since the proposed project would not exceed the CEQR threshold for undertaking a quantified transit analyses—i.e., 200 or more peak hour transit trips—it is not expected to result in significant adverse transit impacts in the study area. For informational purposes, this chapter provides a qualitative assessment of transit conditions in the study area.

B. METHODOLOGY

The operation of all of the signalized intersections and unsignalized intersections in the study area were assessed using methodologies presented in the *2000 Highway Capacity Manual (HCM)* using the *Highway Capacity Software (HCS+ 5.5).* The *HCM* procedure evaluates the levels of service (LOS) for signalized and unsignalized intersections using stop control delay, in seconds per vehicle, as described below.

SIGNALIZED INTERSECTIONS

The average control delay per vehicle is the basis for LOS determination for individual lane groups (grouping of movements in one or more travel lanes), the approaches, and the overall intersection. The levels of service are defined as follows:

Table 6-1
LOS Criteria for Signalized Intersections

LOS	Average Control Delay
A	≤ 10.0 seconds
B	>10.0 and ≤ 20.0 seconds
C	>20.0 and ≤ 35.0 seconds
D	>35.0 and ≤ 55.0 seconds
E	>55.0 and ≤ 80.0 seconds
F	>80.0 seconds
Source:	Transportation Research Board. *Highway Capacity Manual*, 2000.

Although the HCM methodology calculates a volume-to-capacity (v/c) ratio, there is no strict relationship between v/c ratios and LOS as defined in the *HCM*. A high v/c ratio indicates substantial traffic passing through an intersection, but a high v/c ratio combined with low

average delay actually represents the most efficient condition in terms of traffic engineering standards, where an approach or the whole intersection processes traffic close to its theoretical maximum capacity with minimal delay. However, very high v/c ratios—especially those approaching or greater than 1.0—are often correlated with a deteriorated LOS. Other important variables affecting delay include cycle length, progression, and green time. LOS A and B indicate good operating conditions with minimal delay. At LOS C, the number of vehicles stopping is higher, but congestion is still fairly light. LOS D describes a condition where congestion levels are more noticeable and individual cycle failures (a condition where motorists may have to wait for more than one green phase to clear the intersection) can occur. Conditions at LOS E and F reflect poor service levels, and cycle breakdowns are frequent. The *HCM* methodology also provides for a summary of the total intersection operating conditions. The analysis chooses the two critical movements (the worst case from each roadway) and calculates a summary critical v/c ratio. The overall intersection delay, which determines the intersection's LOS, is based on a weighted average of control delays of the individual lane groups. Within New York City, the midpoint of LOS D (45 seconds of delay) is generally considered as the threshold between acceptable and unacceptable operations.

SIGNIFICANT IMPACT CRITERIA

According to the criteria presented in the *CEQR Technical Manual*, impacts are considered significant and require examination of mitigation if they result in an increase in the Action condition of 5 or more seconds of delay in a lane group over No Action levels beyond mid-LOS D. For No Action LOS E, a 4-second increase in delay is considered significant. For No Action LOS F, a 3-second increase in delay is considered significant. In addition, impacts are considered significant if levels of service deteriorate from acceptable A, B, or C in the No Action condition to marginally unacceptable LOS D (a delay in excess of 45 seconds, the midpoint of LOS D), or unacceptable LOS E or F in the future Action condition.

UNSIGNALIZED INTERSECTIONS

For unsignalized intersections, the average control delay is defined as the total elapsed time from which a vehicle stops at the end of the queue until the vehicle departs from the stop line. This includes the time required for the vehicle to travel from the last-in-queue to the first-in-queue position. The average control delay for any particular minor movement is a function of the service rate or capacity of the approach and the degree of saturation. The LOS criteria for unsignalized intersections are summarized as follows:

Table 6-2
LOS Criteria for Unsignalized Intersections

LOS	Average Control Delay
A	≤ 10.0 seconds
B	> 10.0 and ≤ 15.0 seconds
C	> 15.0 and ≤ 25.0 seconds
D	> 25.0 and ≤ 35.0 seconds
E	> 35.0 and ≤ 50.0 seconds
F	> 50.0 seconds

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

The LOS thresholds for unsignalized intersections are different from those for signalized intersections. The primary reason is that drivers expect different levels of performance from

different types of transportation facilities. The expectation is that a signalized intersection is designed to carry higher traffic volumes than an unsignalized intersection; hence, the corresponding control delays are higher at a signalized intersection than at an unsignalized intersection for the same LOS. In addition, certain driver behavioral considerations combine to make delays at signalized intersections less onerous than at unsignalized intersections. For example, drivers at signalized intersections are able to relax during the red interval, whereas drivers on minor approaches to unsignalized intersections must remain attentive to the task of identifying acceptable gaps and vehicle conflicts. Also, there is often much more variability in the amount of delay experienced by individual drivers at unsignalized intersections. For these reasons, the corresponding delay thresholds for unsignalized intersections are lower than those of signalized intersections. As with signalized intersections, within New York City, the midpoint of LOS D (30 seconds of delay) is generally perceived as the threshold between acceptable and unacceptable operations.

SIGNIFICANT IMPACT CRITERIA

The same sliding scale of significant delays described for signalized intersections applies for unsignalized intersections. For the minor street to trigger significant impacts, at least 90 passenger car equivalents (PCE) must be identified in the future Action condition in any peak hour.

PARKING CONDITIONS ASSESSMENT

The parking analysis identifies the extent to which on-street and off-street parking is available and utilized under existing and future conditions. It takes into consideration anticipated changes in area parking supply and provides a comparison of parking needs versus availability to determine if a parking shortfall is likely to result from parking displacement attributable to or additional demand generated by a proposed action. Typically, this analysis encompasses a study area within ¼-mile of the project site. If the analysis concludes a shortfall in parking within the ¼-mile study area, the study area could sometimes be extended to ½-mile (reasonable for certain uses, such as amusement parks, arenas, beaches, and other recreational facilities) to identify additional parking supply.

Outside of Manhattan, and areas in the South Bronx, Flushing, Jamaica, Long Island City/Astoria, Downtown Brooklyn, and Greenpoint/Williamsburg, a parking shortfall that exceeds more than half the available on-street and off-street parking spaces within ¼-mile of the project site may be considered significant. Additional factors, such as the availability and extent of transit in the area, proximity of the project to such transit, and patterns of automobile usage by area residents, could be considered to determine significance of the identified parking shortfall. In some cases, if there is adequate parking supply within ½-mile of the project site, the projected parking shortfall may also not necessarily be considered significant.

PEDESTRIAN OPERATIONS

The adequacy of the study area's sidewalks, crosswalks, and corner reservoir capacities in relation to the demand imposed on them is evaluated based on the methodologies presented in the 2000 *Highway Capacity Manual* (HCM), pursuant to procedures detailed in the *CEQR Technical Manual*.

Sidewalks are analyzed in terms of pedestrian flow. The calculation of the average pedestrians per minute per foot (PMF) of effective walkway width is the basis for a sidewalk level-of-service (LOS) analysis. The determination of walkway LOS is also dependent on whether the pedestrian flow being analyzed is best described as "non-platoon" or "platoon." Non-platoon

flow occurs when pedestrian volume within the peak 15-minute period is relatively uniform, whereas, platoon flow occurs when pedestrian volumes vary significantly with the peak 15-minute period. Such variation typically occurs near bus stops, subway stations, and/or where adjacent crosswalks account for much of the walkway's pedestrian volume.

Crosswalks and street corners are not easily measured in terms of free pedestrian flow, as they are influenced by the effects of traffic signals. Street corners must be able to provide sufficient space for a mix of standing pedestrians (queued to cross a street) and circulating pedestrians (crossing the street or moving around the corner). The HCM methodologies apply a measure of time and space availability based on the area of the corner, the timing of the intersection signal, and the estimated space used by circulating pedestrians.

The total "time-space" available for these activities, expressed in square feet-second, is calculated by multiplying the net area of the corner (in square feet) by the signal's cycle length. The analysis then determines the total circulation time for all pedestrian movements at the corner per signal cycle (expressed as pedestrians per second). The ratio of net time-space divided by the total pedestrian circulation volume per signal cycle provides the LOS measurement of square feet per pedestrian (SFP).

Crosswalk LOS is also a function of time and space. Similar to the street corner analysis, crosswalk conditions are first expressed as a measurement of the available area (the crosswalk width multiplied by the width of the street) and the permitted crossing time. This measure is expressed in square feet-second. The average time required for a pedestrian to cross the street is calculated based on the width of the street and an assumed walking speed. The ratio of time-space available in the crosswalk to the total crosswalk pedestrian occupancy time is the LOS measurement of available square feet per pedestrian. The LOS analysis also accounts for vehicular turning movements that traverse the crosswalk.

The LOS standards for sidewalks, corner reservoirs, and crosswalks are summarized as follows:

Table 6-3
Level of Service Criteria for Pedestrian Elements

LOS	Sidewalks		Corner Reservoirs and Crosswalks
	Non-Platoon Flow	Platoon Flow	
A	≤ 5 PMF	≤ 0.5 PMF	> 60 SFP
B	> 5 and ≤ 7 PMF	> 0.5 and ≤ 3 PMF	> 40 and ≤ 60 SFP
C	> 7 and ≤ 10 PMF	> 3 and ≤ 6 PMF	> 24 and ≤ 40 SFP
D	> 10 and ≤ 15 PMF	> 6 and ≤ 11 PMF	> 15 and ≤ 24 SFP
E	> 15 and ≤ 23 PMF	> 11 and ≤ 18 PMF	> 8 and ≤ 15 SFP
F	> 23 PMF	> 18 PMF	≤ 8 SFP

Notes: PMF = pedestrians per minute per foot; SFP = square feet per pedestrian.
Source: New York City Mayor's Office of Environmental Coordination, *CEQR Technical Manual* (January 2012).

The *CEQR Technical Manual* specifies acceptable LOS in non-CBD areas is LOS C or better.

SIGNIFICANT IMPACT CRITERIA

The determination of significant pedestrian impacts considers the level of predicted deterioration in pedestrian flow or decrease in pedestrian space between the No Action and Action conditions. For different pedestrian elements, flow conditions, and area types, the CEQR procedure for impact determination corresponds with various sliding-scale formulas, as further detailed below.

Sidewalks

There are two sliding-scale formulas for determining significant sidewalk impacts. For non-platoon flow, the increase in average pedestrian flow rate (Y) in PMF needs to be greater or equal to 3.53 minus X divided by 8.0 (where X is the No Action pedestrian flow rate in PMF [$Y \geq 3.53 - X/8.0$]) for it to be a significant impact. For platoon flow, the sliding-scale formula is $Y \geq 3.03 - X/8.0$. Since deterioration in pedestrian flow within acceptable levels would not constitute a significant impact, these formulas would apply only if the Action pedestrian flow exceeds LOS C in non-CBD areas or mid-LOS D in CBD areas. The following table summarizes the sliding scale guidance provided by the *CEQR Technical Manual* for determining potential significant sidewalk impacts.

Table 6-4
Significant Impact Guidance for Sidewalks

Non-Platoon Flow				Platoon Flow			
Sliding Scale Formula: ***Y ≥ 3.53 – X/8.0***				**Sliding Scale Formula:** ***Y ≥ 3.03 – X/8.0***			
Non-CBD Areas		**CBD Areas**		**Non-CBD Areas**		**CBD Areas**	
No Action Ped. Flow (X, PMF)	**Action Ped. Flow Incr. (Y, PMF)**	**No Action Ped. Flow (X, PMF)**	**Action Ped. Flow Incr. (Y, PMF)**	**No Action Ped. Flow (X, PMF)**	**Action Ped. Flow Incr. (Y, PMF)**	**No Action Ped. Flow (X, PMF)**	**Action Ped. Flow Incr. (Y, PMF)**
7.5 to 7.8	≥ 2.6	–	–	3.5 to 3.8	≥ 2.6	–	–
7.9 to 8.6	≥ 2.5	–	–	3.9 to 4.6	≥ 2.5	–	–
8.7 to 9.4	≥ 2.4	–	–	4.7 to 5.4	≥ 2.4	–	–
9.5 to 10.2	≥ 2.3	–	–	5.5 to 6.2	≥ 2.3	–	–
10.3 to 11.0	≥ 2.2	10.4 to 11.0	≥ 2.2	6.3 to 7.0	≥ 2.2	6.4 to 7.0	≥ 2.2
11.1 to 11.8	≥ 2.1	11.1 to 11.8	≥ 2.1	7.1 to 7.8	≥ 2.1	7.1 to 7.8	≥ 2.1
11.9 to 12.6	≥ 2.0	11.9 to 12.6	≥ 2.0	7.9 to 8.6	≥ 2.0	7.9 to 8.6	≥ 2.0
12.7 to 13.4	≥ 1.9	12.7 to 13.4	≥ 1.9	8.7 to 9.4	≥ 1.9	8.7 to 9.4	≥ 1.9
13.5 to 14.2	≥ 1.8	13.5 to 14.2	≥ 1.8	9.5 to 10.2	≥ 1.8	9.5 to 10.2	≥ 1.8
14.3 to 15.0	≥ 1.7	14.3 to 15.0	≥ 1.7	10. to 11.0	≥ 1.7	10. to 11.0	≥ 1.7
15.1 to 15.8	≥ 1.6	15.1 to 15.8	≥ 1.6	11.1 to 11.8	≥ 1.6	11.1 to 11.8	≥ 1.6
15.9 to 16.6	≥ 1.5	15.9 to 16.6	≥ 1.5	11.9 to 12.6	≥ 1.5	11.9 to 12.6	≥ 1.5
16.7 to 17.4	≥ 1.4	16.7 to 17.4	≥ 1.4	12.7 to 13.4	≥ 1.4	12.7 to 13.4	≥ 1.4
17.5 to 18.2	≥ 1.3	17.5 to 18.2	≥ 1.3	13.5 to 14.2	≥ 1.3	13.5 to 14.2	≥ 1.3
18.3 to 19.0	≥ 1.2	18.3 to 19.0	≥ 1.2	14.3 to 15.0	≥ 1.2	14.3 to 15.0	≥ 1.2
19.1 to 19.8	≥ 1.1	19.1 to 19.8	≥ 1.1	15.1 to 15.8	≥ 1.1	15.1 to 15.8	≥ 1.1
19.9 to 20.6	≥ 1.0	19.9 to 20.6	≥ 1.0	15.9 to 16.6	≥ 1.0	15.9 to 16.6	≥ 1.0
20.7 to 21.4	≥ 0.9	20.7 to 21.4	≥ 0.9	16.7 to 17.4	≥ 0.9	16.7 to 17.4	≥ 0.9
21.5 to 22.2	≥ 0.8	21.5 to 22.2	≥ 0.8	17.5 to 18.2	≥ 0.8	17.5 to 18.2	≥ 0.8
22.3 to 23.0	≥ 0.7	22.3 to 23.0	≥ 0.7	18.3 to 19.0	≥ 0.7	18.3 to 19.0	≥ 0.7
> 23.0	≥ 0.6	> 23.0	≥ 0.6	> 19.0	≥ 0.6	> 19.0	≥ 0.6

Notes: PMF = pedestrians per minute per foot; Y = increase in average pedestrian flow rate in PMF; X = No Action pedestrian flow rate in PMF.
Sources: New York City Mayor's Office of Environmental Coordination, *CEQR Technical Manual* (January 2012).

Corner Reservoirs and Crosswalks

The determination of significant corner and crosswalk impacts is also based on a sliding scale using the following formula: $Y \geq X/9.0 - 0.31$, where Y is the decrease in pedestrian space in SFP and X is the No Action pedestrian space in SFP. Since a decrease in pedestrian space within acceptable levels would not constitute a significant impact, this formula would apply only if the Action pedestrian space falls short of LOS C in non-CBD areas or mid-LOS D in CBD areas. The following table summarizes the sliding scale guidance provided by the *CEQR Technical Manual* for determining potential significant corner reservoir and crosswalk impacts.

Table 6-5
Significant Impact Guidance for Corners and Crosswalks

Sliding Scale Formula: *Y ≥ X/9.0 – 0.31*			
Non-CBD Areas		**CBD Areas**	
No Action Pedestrian Space (X, SFP)	**Action Pedestrian Space Reduction (Y, SFP)**	**No Action Pedestrian Space (X, SFP)**	**Action Pedestrian Space Reduction (Y, SFP)**
25.8 to 26.6	≥ 2.6	–	–
24.9 to 25.7	≥ 2.5	–	–
24.0 to 24.8	≥ 2.4	–	–
23.1 to 23.9	≥ 2.3	–	–
22.2 to 23.0	≥ 2.2	–	–
21.3 to 22.1	≥ 2.1	21.3 to 21.5	≥ 2.1
20.4 to 21.2	≥ 2.0	20.4 to 21.2	≥ 2.0
19.5 to 20.3	≥ 1.9	19.5 to 20.3	≥ 1.9
18.6 to 19.4	≥ 1.8	18.6 to 19.4	≥ 1.8
17.7 to 18.5	≥ 1.7	17.7 to 18.5	≥ 1.7
16.8 to 17.6	≥ 1.6	16.8 to 17.6	≥ 1.6
15.9 to 16.7	≥ 1.5	15.9 to 16.7	≥ 1.5
15.0 to 15.8	≥ 1.4	15.0 to 15.8	≥ 1.4
14.1 to 14.9	≥ 1.3	14.1 to 14.9	≥ 1.3
13.2 to 14.0	≥ 1.2	13.2 to 14.0	≥ 1.2
12.3 to 13.1	≥ 1.1	12.3 to 13.1	≥ 1.1
11.4 to 12.2	≥ 1.0	11.4 to 12.2	≥ 1.0
10.5 to 11.3	≥ 0.9	10.5 to 11.3	≥ 0.9
9.6 to 10.4	≥ 0.8	9.6 to 10.4	≥ 0.8
8.7 to 9.5	≥ 0.7	8.7 to 9.5	≥ 0.7
7.8 to 8.6	≥ 0.6	7.8 to 8.6	≥ 0.6
6.9 to 7.7	≥ 0.5	6.9 to 7.7	≥ 0.5
6.0 to 6.8	≥ 0.4	6.0 to 6.8	≥ 0.4
5.1 to 5.9	≥ 0.3	5.1 to 5.9	≥ 0.3
< 5.1	≥ 0.2	< 5.1	≥ 0.2

Notes: SFP = square feet per pedestrian; Y = decrease in pedestrian space in SFP; X = No Action pedestrian space in SFP.
Sources: New York City Mayor's Office of Environmental Coordination, *CEQR Technical Manual* (January 2012).

VEHICULAR AND PEDESTRIAN SAFETY EVALUATION

An evaluation of vehicular and pedestrian safety is necessary for locations within the traffic and pedestrian study areas that have been identified as high accident locations, where 48 or more total reportable and non-reportable crashes or five or more pedestrian/bicyclist injury crashes occurred in any consecutive 12 months of the most recent three-year period for which data are available. For these locations, accident trends are identified to determine whether projected vehicular and pedestrian traffic would further impact safety at these locations. The determination of potential significant safety impacts depends on the type of area where the project site is located, traffic volumes, accident types and severity, and other contributing factors. Where appropriate, measures to improve traffic and pedestrian safety are identified and coordinated with the New York City Department of Transportation (NYCDOT).

C. TRAFFIC ANALYSES

EXISTING CONDITIONS

ROADWAY NETWORK

To assess the potential traffic impacts associated with the development of the project, nine key intersections were identified that would most likely be affected by the project-generated traffic (see **Figure 6-1**). These include four signalized intersections, which are as follows:

- Cypress Avenue and Flushing Avenue;
- Cypress Avenue and DeKalb Avenue;
- Wyckoff Avenue and DeKalb Avenue; and
- Wyckoff Avenue and Stockholm Street.

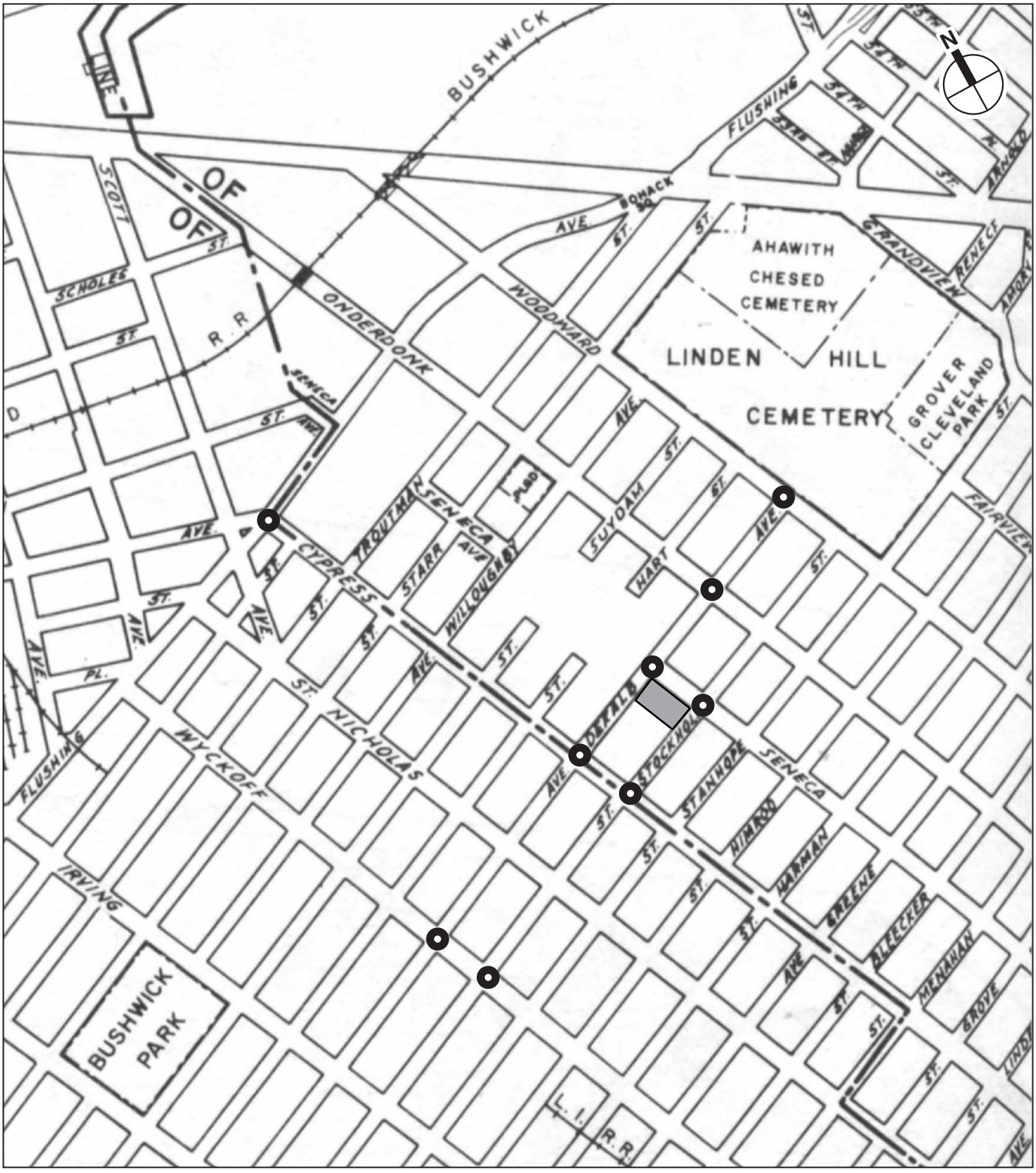
The five unsignalized intersections are listed as follows:

- Woodward Avenue and DeKalb Avenue;
- Onderdonk Avenue and DeKalb Avenue;
- Seneca Avenue and DeKalb Avenue;
- Seneca Avenue and Stockholm Street; and
- Cypress Avenue and Stockholm Street.

Major roadways in the study area are discussed as follows:

- Cypress Avenue is a major two-way eastbound-westbound roadway that operates with one effective moving lane in each direction and provides curbside parking on both sides of the street. Cypress Avenue provides access to Flushing Avenue, DeKalb Avenue and other major roadways in the area.
- Wyckoff Avenue is a major two-way eastbound-westbound roadway that operates with one effective moving lane in each direction and provides curbside parking on both sides of the street. Wyckoff Avenue provides access to Flushing Avenue, DeKalb Avenue and other major roadways in the area. The B13 bus route runs along Wyckoff Avenue in both directions.
- DeKalb Avenue is a major two-way northbound-southbound roadway that operates with one effective moving lane in each direction and provides curbside parking on both sides of the street. DeKalb Avenue provides access to Cypress Avenue, Wyckoff Avenue and other major roadways in the area. The B38 bus route runs along DeKalb Avenue in both directions.
- Flushing Avenue is a major two-way northbound-southbound roadway that operates with one effective moving lane in each direction and provides curbside parking on both sides of the street. Flushing Avenue provides access to Cypress Avenue, Wyckoff Avenue and other major roadways in the area. The B57 bus route runs along Flushing Avenue in both directions.
- Woodward Avenue is a local one-way westbound roadway that operates with one effective moving lane and provides curbside parking on both sides of the street. This roadway provides access to DeKalb Avenue, Flushing Avenue and other major roadways in the area.

6.13.12



Project Site Area

Intersection Analyzed

0 500 FEET

SCALE

SCA P.S. 320

Traffic Study Area
Figure 6-1

- Onderdonk Avenue is a local one-way eastbound roadway that operates with one effective moving lane and provides curbside parking on both sides of the street. This roadway provides access to DeKalb Avenue, Flushing Avenue and other major roadways in the area.
- Stockholm Street is a local roadway which operates one-way northbound between Bushwick Avenue and Onderdonk Avenue and one-way southbound, north of Onderdonk Avenue. Stockholm Street operates with one effective moving lane and provides curbside parking on both sides of the street. This roadway provides access to Cypress Avenue, Wyckoff Avenue and other major roadways in the area.

TRAFFIC CONDITIONS

Existing traffic levels at study area intersections were established based on traffic counts conducted in May 2012 during the weekday AM and PM school-related peak periods. These included manual turning movement counts as well as 24-hour Automatic Traffic Recorder (ATR) machine counts at selected locations.

To supplement the field data, inventories of roadway geometry, traffic controls, bus stops, and parking regulations/activities were also recorded to provide appropriate inputs for the operational analyses. In addition, official signal timings obtained from NYCDOT were used in the analysis for all of the signalized intersections. **Figures 6-2** and **6-3** show the existing traffic volumes for the weekday AM and PM peak hours, which were determined to take place from 7:45 to 8:45 AM and 2:45 to 3:45 PM, respectively.

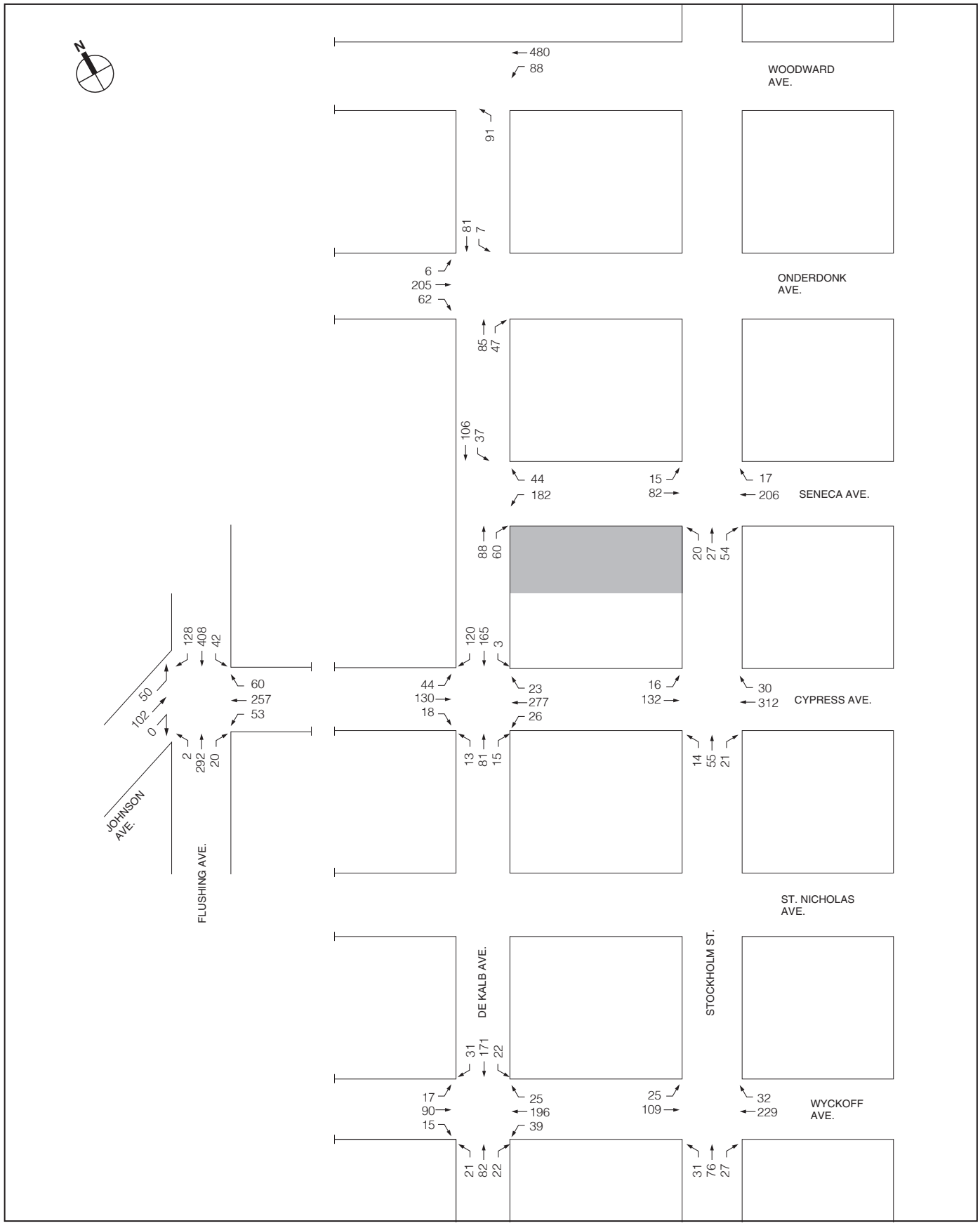
In terms of traffic levels, all streets bordering the project site carry low to moderate traffic volumes during the school related morning and afternoon peak periods. Flushing Avenue, which carries two-way traffic volumes of approximately 850 vehicles per hour (vph) during the morning and afternoon peak hours, is the most heavily traveled roadway bordering the project site.

LEVELS OF SERVICE

Table 6-6 presents the service conditions for the study area's signalized and unsignalized intersections. The capacity analysis indicates that majority of the study area's intersection approaches operate acceptably—at mid-LOS D (delays of 45 seconds or less for signalized intersections and 30 seconds or less for unsignalized intersections) or better for the two peak hours, except at the following:

- The northbound approach at the intersection of Cypress Avenue and Stockholm Street, which operates at beyond mid-LOS D during the weekday AM peak hour;
- The westbound approach at the intersection of Cypress Avenue and Flushing Avenue, which operates at LOS E during the weekday AM peak hour; and
- The eastbound approach at the intersection of Cypress Avenue and Flushing Avenue, which operates at beyond mid-LOS D during the weekday PM peak hour.

6.11.12



NOT TO SCALE

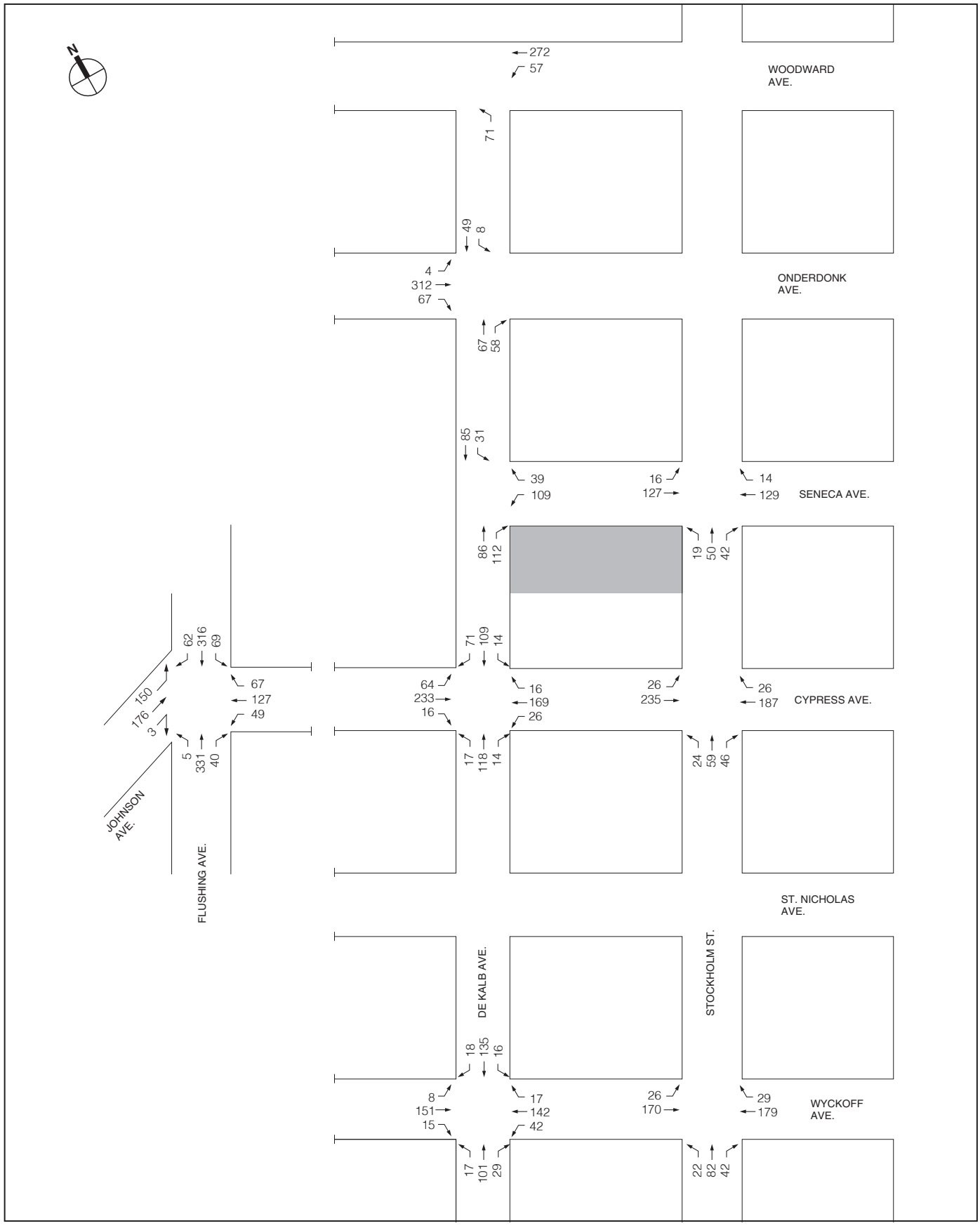
Project Site Area

2012 Existing Traffic Volumes
Weekday AM Peak Hour

SCA P.S. 320

Figure 6-2

6.11.12



NOT TO SCALE

Project Site Area

2012 Existing Traffic Volumes
Weekday PM Peak Hour

SCA P.S. 320

Figure 6-3

Table 6-6
2012 Existing Conditions Level of Service Analysis

Intersection/ Approach	AM Peak Hour				PM Peak Hour			
	Lane Group	v/c Ratio	Delay (sec)	LOS	Lane Group	v/c Ratio	Delay (sec)	LOS
Signalized Intersections								
Cypress Avenue and Flushing Avenue								
Eastbound	LTR	0.39	24.8	C	LTR	0.90	50.9	D
Westbound	LTR	0.98	66.2	E	LTR	0.68	34.8	C
Northbound	LTR	0.36	12.6	B	LTR	0.53	15.6	B
Southbound	LTR	0.79	24.3	C	LTR	0.71	21.0	C
	Intersection		32.9	C	Intersection		29.5	C
Cypress Avenue and DeKalb Avenue								
Eastbound	LTR	0.45	15.1	B	LTR	0.68	20.5	C
Westbound	LTR	0.60	17.6	B	LTR	0.44	14.7	B
Northbound	LTR	0.25	12.1	B	LTR	0.33	13.0	B
Southbound	LTR	0.67	20.8	C	LTR	0.45	14.8	B
	Intersection		17.4	B	Intersection		16.6	B
Wyckoff Avenue and DeKalb Avenue								
Eastbound	LTR	0.20	8.1	A	LTR	0.31	9.0	A
Westbound	LTR	0.37	9.6	A	LTR	0.35	9.5	A
Northbound	LTR	0.41	18.8	B	LTR	0.49	20.7	C
Southbound	LTR	0.61	23.5	C	LTR	0.49	20.3	C
	Intersection		15.4	B	Intersection		14.4	B
Wyckoff Avenue and Stockholm Street								
Eastbound	LT	0.23	8.4	A	LT	0.35	9.6	A
Westbound	TR	0.32	8.8	A	TR	0.29	8.6	A
Northbound	LTR	0.31	16.8	B	LTR	0.38	17.8	B
	Intersection		10.6	B	Intersection		11.4	B
Unsignalized Intersections								
Woodward Avenue and DeKalb Avenue								
Westbound	LT	0.07	7.6	A	LT	0.04	7.5	A
Northbound	L	0.36	22.7	C	L	0.15	13.2	B
Onderdonk Avenue and DeKalb Avenue								
Eastbound	LTR	-	10.6	B	LTR	-	13.9	B
Northbound	TR	-	9.1	A	TR	-	9.5	A
Southbound	LT	-	9.0	A	LT	-	9.2	A
	Intersection		9.9	A	Intersection		12.5	B
Seneca Avenue and DeKalb Avenue								
Westbound	LR	0.46	15.7	C	LR	0.31	14.6	B
Southbound	LT	0.03	7.9	A	LT	0.03	8.2	A
Seneca Avenue and Stockholm Street								
Eastbound	LT	0.02	8.1	A	LT	0.01	7.7	A
Northbound	LTR	0.24	14.8	B	LTR	0.27	14.9	B
Cypress Avenue and Stockholm Street								
Eastbound	LT	0.02	9.4	A	LT	0.03	8.0	A
Northbound	LTR	0.46	32.5	D	LTR	0.34	16.6	C

Notes: L = Left Turn, T = Through, R = Right Turn, LOS = Level of Service

THE FUTURE WITHOUT THE PROPOSED PROJECT

Future 2015 conditions without the proposed project were forecasted by increasing existing traffic levels to reflect expected growth in overall travel through and within the study area. As per the 2012 *CEQR Technical Manual*, a background growth rate of 0.5 percent per year was assumed for an overall compounded growth rate of 1.5 percent by 2015. Based on consultation with the New York City Department of City Planning (NYCDCP), there are no notable development projects slated for completion in the study area by the 2015 build year.

TRAFFIC OPERATIONS

The 2015 No Build traffic volumes are shown in **Figures 6-4** and **6-5** for the weekday AM and PM peak hours, respectively. A comparison of Existing and No Build traffic conditions is presented in **Table 6-7** based on which, all of the approaches/lane-groups in the study area would operate at the same LOS in the No Build conditions as the Existing conditions.

Table 6-7
2012 Existing and 2015 No Build Conditions Level of Service Analysis

	AM Peak Hour								PM Peak Hour							
	2012 Existing				2015 No Build				2012 Existing				2015 No 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
Signalized Intersections																
Cypress Avenue and Flushing Avenue																
Eastbound	LTR	0.39	24.8	C	LTR	0.40	25.0	C	LTR	0.90	50.9	D	LTR	0.92	54.0	D
Westbound	LTR	0.98	66.2	E	LTR	0.99	69.4	E	LTR	0.68	34.8	C	LTR	0.70	35.6	D
Northbound	LTR	0.36	12.6	B	LTR	0.37	12.7	B	LTR	0.53	15.6	B	LTR	0.54	15.8	B
Southbound	LTR	0.79	24.3	C	LTR	0.80	25.1	C	LTR	0.71	21.0	C	LTR	0.72	21.4	C
	Intersection		32.9	C	Intersection		34.2	C	Intersection		29.5	C	Intersection		30.6	C
Cypress Avenue and DeKalb Avenue																
Eastbound	LTR	0.45	15.1	B	LTR	0.46	15.3	B	LTR	0.68	20.5	C	LTR	0.69	21.1	C
Westbound	LTR	0.60	17.6	B	LTR	0.61	17.8	B	LTR	0.44	14.7	B	LTR	0.45	14.8	B
Northbound	LTR	0.25	12.1	B	LTR	0.25	12.1	B	LTR	0.33	13.0	B	LTR	0.33	13.1	B
Southbound	LTR	0.67	20.8	C	LTR	0.68	21.1	C	LTR	0.45	14.8	B	LTR	0.45	14.9	B
	Intersection		17.4	B	Intersection		17.6	B	Intersection		16.6	B	Intersection		16.8	B
Wyckoff Avenue and DeKalb Avenue																
Eastbound	LTR	0.20	8.1	A	LTR	0.20	8.1	A	LTR	0.31	9.0	A	LTR	0.31	9.1	A
Westbound	LTR	0.37	9.6	A	LTR	0.38	9.7	A	LTR	0.35	9.5	A	LTR	0.35	9.6	A
Northbound	LTR	0.41	18.8	B	LTR	0.41	18.9	B	LTR	0.49	20.7	C	LTR	0.49	20.9	C
Southbound	LTR	0.61	23.5	C	LTR	0.62	23.8	C	LTR	0.49	20.3	C	LTR	0.50	20.4	C
	Intersection		15.4	B	Intersection		15.6	B	Intersection		14.4	B	Intersection		14.5	B
Wyckoff Avenue and Stockholm Street																
Eastbound	LT	0.23	8.4	A	LT	0.23	8.4	A	LT	0.35	9.6	A	LT	0.36	9.6	A
Westbound	TR	0.32	8.8	A	TR	0.32	8.8	A	TR	0.29	8.6	A	TR	0.29	8.7	A
Northbound	LTR	0.31	16.8	B	LTR	0.31	16.8	B	LTR	0.38	17.8	B	LTR	0.39	17.9	B
	Intersection		10.6	B	Intersection		10.6	B	Intersection		11.4	B	Intersection		11.4	B
Unsignalized Intersections																
Woodward Avenue and DeKalb Avenue																
Westbound	LT	0.07	7.6	A	LT	0.07	7.6	A	LT	0.04	7.5	A	LT	0.04	7.5	A
Northbound	L	0.36	22.7	C	L	0.37	23.2	C	L	0.15	13.2	B	L	0.16	13.4	B
Onderdonk Avenue and DeKalb Avenue																
Eastbound	LTR	-	10.6	B	LTR	-	10.7	B	LTR	-	13.9	B	LTR	-	14.2	B
Northbound	TR	-	9.1	A	TR	-	9.2	A	TR	-	9.5	A	TR	-	9.6	A
Southbound	LT	-	9.0	A	LT	-	9.1	A	LT	-	9.2	A	LT	-	9.3	A
	Intersection		9.9	A	Intersection		10.0-	A	Intersection		12.5	B	Intersection		12.7	B
Seneca Avenue and DeKalb Avenue																
Westbound	LR	0.46	15.7	C	LR	0.47	16.0	C	LR	0.31	14.6	B	LR	0.31	14.8	B
Southbound	LT	0.03	7.9	A	LT	0.03	7.9	A	LT	0.03	8.2	A	LT	0.03	8.2	A
Seneca Avenue and Stockholm Street																
Eastbound	LT	0.02	8.1	A	LT	0.02	8.1	A	LT	0.01	7.7	A	LT	0.01	7.7	A
Northbound	LTR	0.24	14.8	B	LTR	0.24	15.0+	C	LTR	0.27	14.9	B	LTR	0.28	15.1	C
Cypress Avenue and Stockholm Street																
Eastbound	LT	0.02	9.4	A	LT	0.02	9.5	A	LT	0.03	8.0	A	LT	0.03	8.0	A
Northbound	LTR	0.46	32.5	D	LTR	0.48	34.0	D	LTR	0.34	16.6	C	LTR	0.35	16.9	C

Notes: L = Left Turn, T = Through, R = Right Turn, LOS = Level of Service

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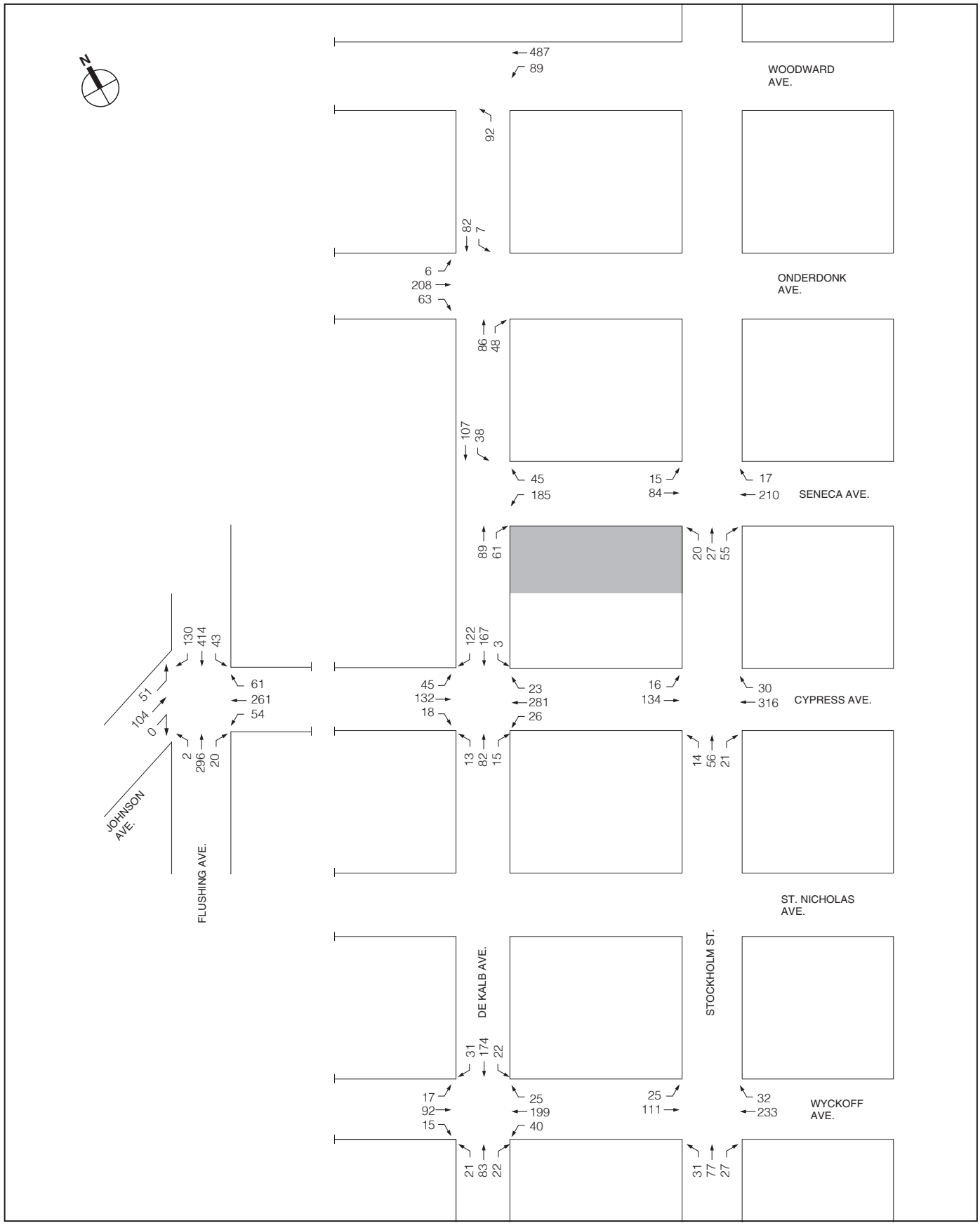

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Project Site Area

2015 No Build Traffic Volumes
Weekday AM Peak Hour

SCA P.S. 320

Figure 6-4

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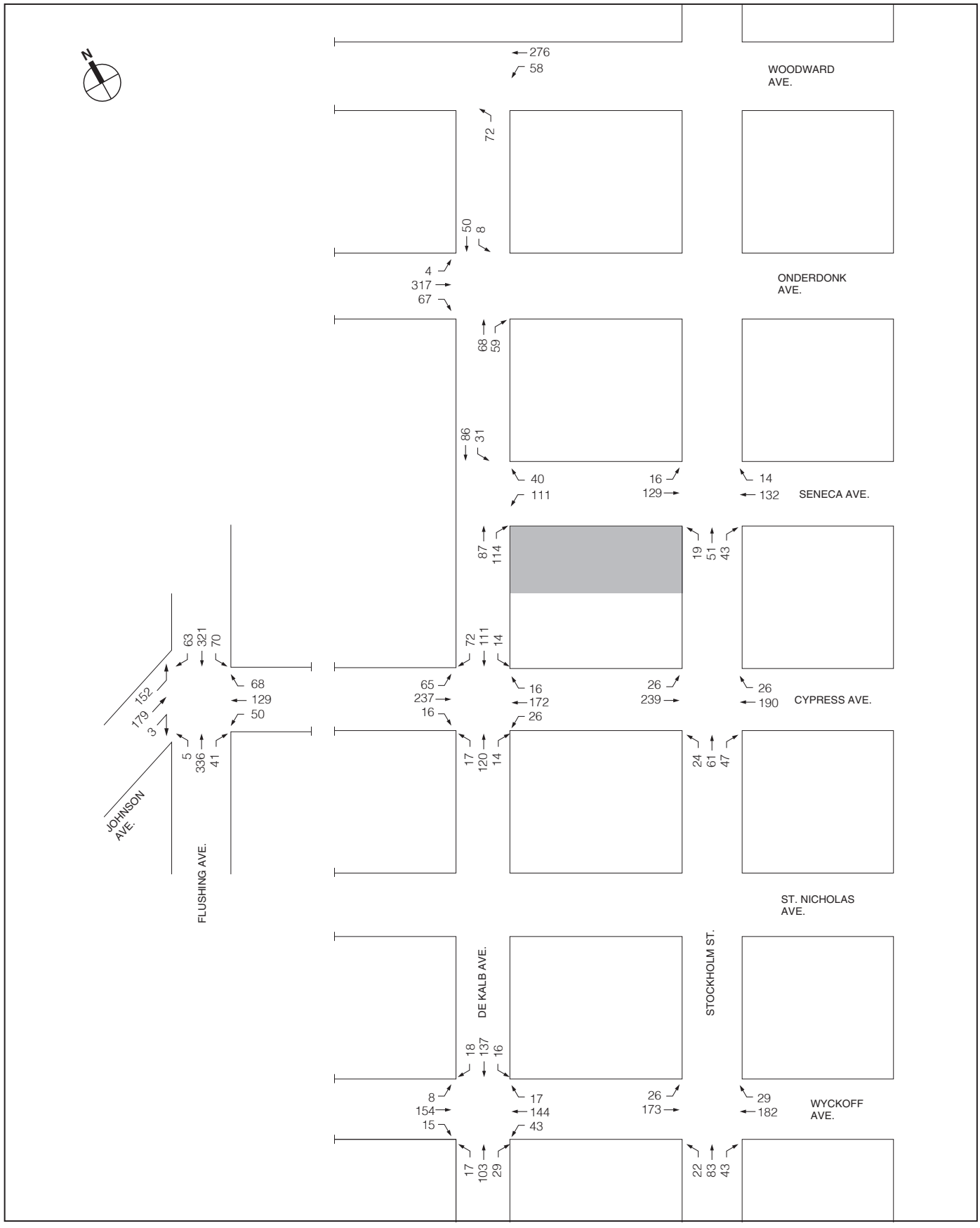

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Project Site Area

2015 No Build Traffic Volumes
Weekday PM Peak Hour

SCA P.S. 320

Figure 6-5

PROBABLE IMPACTS OF THE PROPOSED PROJECT

PROJECT TRIP GENERATION AND MODAL SPLIT

The proposed school would accommodate students in pre-kindergarten through fifth grade. Modal split estimates for the students were determined based on the information presented in previously approved environmental studies for other school projects with comparable characteristics and the New York Metropolitan Transportation Council (NYMTC) data for Queens County.

The proposed school would serve approximately 472 students. To estimate the number of student trips on a typical day, a 10 percent absentee rate was assumed, yielding a total of 425 students. In addition, it is estimated that approximately 90 percent, or about 383 of the students, would arrive and depart during the morning and afternoon peak hours. The school facility would be staffed by approximately 47 teachers and administrative staff. It is estimated that about 90 percent of the teachers and administrative staff would arrive and depart during the morning and afternoon peak hours. The travel demand assumptions and trip generation estimates for the proposed primary school are presented in **Tables 6-8 and 6-9**.

Table 6-8
Travel Demand Assumptions

	Students	Faculty/Staff
	472	47 (1)
Vehicle Occupancy	1.3 (2)	1.13 (3)
School Bus/Van Occupancy	17 (2)	-
Absentee Rate	10% (2)	0% (2)
AM Peak Hour Temporal	90% (2)	90% (2)
PM Peak Hour Temporal	90% (2)	90% (2)
Travel Mode	**Modal Split (4)**	
	AM Peak Hour	
Auto (Drop-offs/pick-ups)	23%*	50%
Taxi	0%	1%
School Bus/Van	15%*	0%
Public Transit	6%	26%
City Bus	4%	9%
Subway	2%	17%
Walk	56%	23%
	PM Peak Hour	
Auto (Drop-offs/pick-ups)	23%*	50%
Taxi	0%	1%
School Bus/Van	15%*	0%
Public Transit	6%	26%
City Bus	4%	9%
Subway	2%	17%
Walk	56%	23%

Notes:
(1) Assumes one faculty/staff member for every 10 students.
(2) P.S. 315Q (2011)
(3) 2000 Census Reverse Journey-to-Work data.
(4) Modal Splits based on NYMTC School Paired Journey data (Queens County) and 2000 Census Reverse Journey-to-Work data for faculty/staff.
* Both inbound and outbound vehicle trips take place during the same peak hour.

Table 6-9
Trip Generation Summary

Peak Hour	In/Out	Person Trips							Vehicle Trips			
		Auto	Taxi	School Bus	Bus	Subway	Walk*	Total	Auto	Taxi	School Bus	Total
Student Trip Generation												
AM	In	88	0	57	15	8	321	489	68	0	4	72
	Out	0	0	0	0	0	107	107	68	0	4	72
	Total	88	0	57	15	8	428	596	136	0	8	144
PM	In	0	0	0	0	0	107	107	68	0	4	72
	Out	88	0	57	15	8	321	489	68	0	4	72
	Total	88	0	57	15	8	428	596	136	0	8	144
Faculty/Staff Trip Generation												
AM	In	21	0	0	4	7	10	42	19	0	0	19
	Out	0	0	0	0	0	0	0	0	0	0	0
	Total	21	0	0	4	7	10	42	19	0	0	19
PM	In	0	0	0	0	0	0	0	0	0	0	0
	Out	21	0	0	4	7	10	42	19	0	0	19
	Total	21	0	0	4	7	10	42	19	0	0	19
Total Trip Generation (Students and Faculty/Staff)												
AM	In	109	0	57	19	15	331	531	87	0	4	91
	Out	0	0	0	0	0	107	107	68	0	4	72
	Total	109	0	57	19	15	438	638	155	0	8	163
PM	In	0	0	0	0	0	107	107	68	0	4	72
	Out	109	0	57	19	15	331	531	87	0	4	91
	Total	109	0	57	19	15	438	638	155	0	8	163

Note: * Assumes one parent/guardian accompanying two students walking to school.

SITE ACCESS AND STUDENT DROP-OFFS

The main entrance for the proposed school facility would be located on Seneca Avenue between DeKalb Avenue and Stockholm Street. The majority of the auto and all of the school bus drop-off/pick-up activities were assumed to take place on Seneca Avenue in front of the school's main entrance, while the remaining auto student drop-offs/pick-ups were assumed to take place on DeKalb Avenue and Stockholm Street between Seneca Avenue and Cypress Avenue. Since the proposed school is not expected to provide on-site parking for faculty/staff, it was assumed that faculty/staff would seek on-street parking on blocks in the vicinity of the school and then walk to the main entrance.

PROJECT VEHICLE ASSIGNMENT

Project-generated traffic was assigned to the study area network based on its location with respect to major roadways and local streets, the configuration of the project site access/egress points, local travel patterns, and the Community School District (CSD) boundaries. Traffic distribution for student trips was conducted in the following manner: 50 percent from the east, 35 percent from the north, and 15 percent from the west. Given the location of the proposed school with respect to the CSD boundaries, no students trips are assumed from south of the project site. For faculty/staff trips, traffic distribution was conducted in the following manner: 35 percent from the south, 35 percent from the east, 20 percent from the north and 10 percent from the west. The project-generated traffic volumes are shown in **Figures 6-6** and **6-7** for the AM and PM peak hours, respectively.

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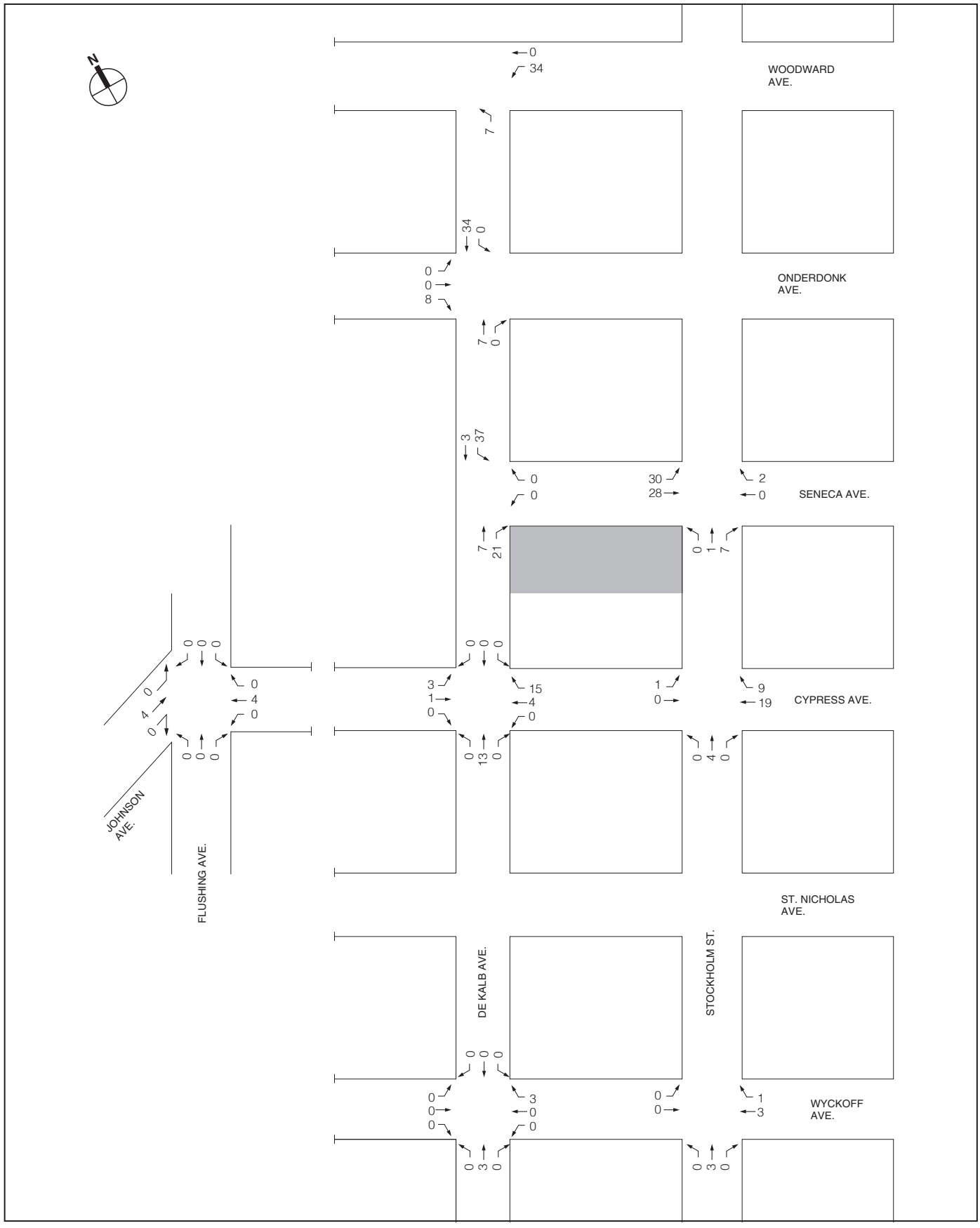

Project Generated Traffic Volumes
Weekday AM Peak Hour

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Figure 6-6

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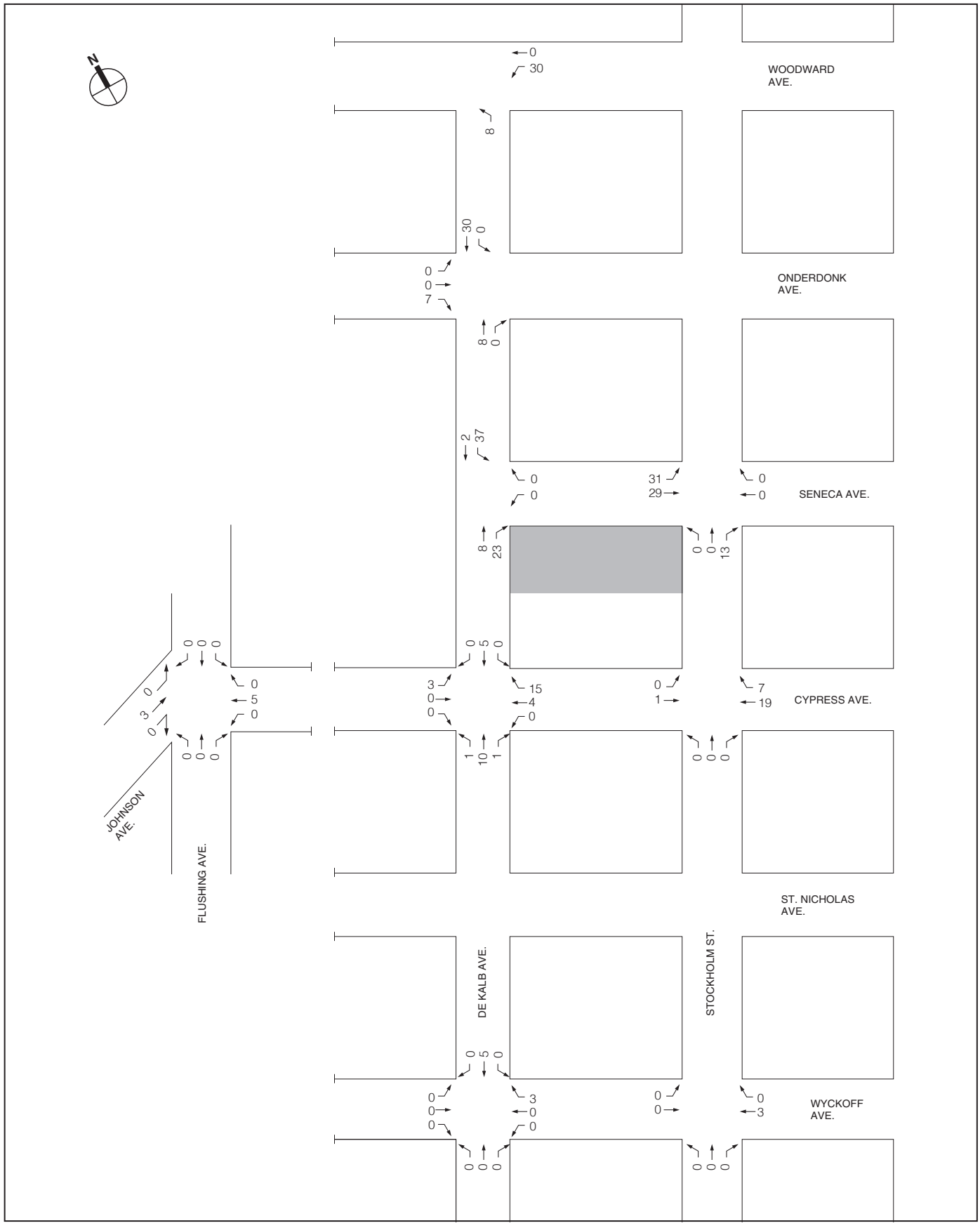

Project Generated Traffic Volumes
Weekday PM Peak Hour

SCA P.S. 320

Figure 6-7

TRAFFIC OPERATIONS

The 2015 Build traffic volumes are shown in **Figures 6-8** and **6-9** for the AM and PM peak hours, respectively. **Table 6-10** presents a comparison of the No Build and Build traffic conditions.

Table 6-10
2015 No Build and Build Conditions Level of Service Analysis

Intersection/ Approach	AM Peak Hour								PM Peak Hour							
	2015 No Build				2015 Build				2015 No Build				2015 Build			
	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
Signalized Intersections																
Cypress Avenue and Flushing Avenue																
Eastbound	LTR	0.40	25.0	C	LTR	0.41	25.2	C	LTR	0.92	54.0	D	LTR	0.93	55.9	E
Westbound	LTR	0.99	69.4	E	LTR	1.00	72.3	E	LTR	0.70	35.6	D	LTR	0.71	36.2	D
Northbound	LTR	0.37	12.7	B	LTR	0.37	12.7	B	LTR	0.54	15.8	B	LTR	0.54	15.8	B
Southbound	LTR	0.80	25.1	C	LTR	0.80	25.1	C	LTR	0.72	21.4	C	LTR	0.72	21.4	C
	Intersection		34.2	C	Intersection		35.0+	D	Intersection		30.6	C	Intersection		31.2	C
Cypress Avenue and DeKalb Avenue																
Eastbound	LTR	0.46	15.3	B	LTR	0.47	15.6	B	LTR	0.69	21.1	C	LTR	0.70	21.6	C
Westbound	LTR	0.61	17.8	B	LTR	0.65	19.1	B	LTR	0.45	14.8	B	LTR	0.49	15.6	B
Northbound	LTR	0.25	12.1	B	LTR	0.28	12.4	B	LTR	0.33	13.1	B	LTR	0.36	13.5	B
Southbound	LTR	0.68	21.1	C	LTR	0.68	21.2	C	LTR	0.45	14.9	B	LTR	0.46	15.1	B
	Intersection		17.6	B	Intersection		18.1	B	Intersection		16.8	B	Intersection		17.3	B
Wyckoff Avenue and DeKalb Avenue																
Eastbound	LTR	0.20	8.1	A	LTR	0.20	8.1	A	LTR	0.31	9.1	A	LTR	0.31	9.1	A
Westbound	LTR	0.38	9.7	A	LTR	0.38	9.8	A	LTR	0.35	9.6	A	LTR	0.36	9.7	A
Northbound	LTR	0.41	18.9	B	LTR	0.42	19.0	B	LTR	0.49	20.9	C	LTR	0.50	20.9	C
Southbound	LTR	0.62	23.8	C	LTR	0.62	23.8	C	LTR	0.50	20.4	C	LTR	0.51	20.7	C
	Intersection		15.6	B	Intersection		15.6	B	Intersection		14.5	B	Intersection		14.7	B
Wyckoff Avenue and Stockholm Street																
Eastbound	LT	0.23	8.4	A	LT	0.23	8.4	A	LT	0.36	9.6	A	LT	0.36	9.6	A
Westbound	TR	0.32	8.8	A	TR	0.33	8.9	A	TR	0.29	8.7	A	TR	0.30	8.7	A
Northbound	LTR	0.31	16.8	B	LTR	0.32	17.0	B	LTR	0.39	17.9	B	LTR	0.39	18.0	B
	Intersection		10.6	B	Intersection		10.7	B	Intersection		11.4	B	Intersection		11.4	B
Unsignalized Intersections																
Woodward Avenue and DeKalb Avenue																
Westbound	LT	0.07	7.6	A	LT	0.09	7.7	A	LT	0.04	7.5	A	LT	0.06	7.6	A
Northbound	L	0.37	23.2	C	L	0.45	28.9	D	L	0.16	13.4	B	L	0.19	14.7	B
Onderdonk Avenue and DeKalb Avenue																
Eastbound	LTR	-	10.7	B	LTR	-	11.2	B	LTR	-	14.2	B	LTR	-	15.4	C
Northbound	TR	-	9.2	A	TR	-	9.5	A	TR	-	9.6	A	TR	-	9.9	A
Southbound	LT	-	9.1	A	LT	-	9.6	A	LT	-	9.3	A	LT	-	9.8	A
	Intersection		10.0-	A	Intersection		10.3	B	Intersection		12.7	B	Intersection		13.4	B
Seneca Avenue and DeKalb Avenue																
Westbound	LR	0.47	16.0	C	LR	0.68	29.8	D	LR	0.31	14.8	B	LR	0.45	22.6	C
Southbound	LT	0.03	7.9	A	LT	0.08	8.7	A	LT	0.03	8.2	A	LT	0.09	9.1	A
Seneca Avenue and Stockholm Street																
Eastbound	LT	0.02	8.1	A	LT	0.05	8.2	A	LT	0.01	7.7	A	LT	0.04	7.8	A
Northbound	LTR	0.24	15.0+	C	LTR	0.78	80.2	F+	LTR	0.28	15.1	C	LTR	0.93	106.6	F+
Cypress Avenue and Stockholm Street																
Eastbound	LT	0.02	9.5	A	LT	0.02	9.8	A	LT	0.03	8.0	A	LT	0.03	8.2	A
Northbound	LTR	0.48	34.0	D	LTR	0.55	41.1	E+	LTR	0.35	16.9	C	LTR	0.37	18.0	C

Notes: L = Left Turn, T = Through, R = Right Turn, LOS = Level of Service
+ Denotes a significant adverse traffic impact

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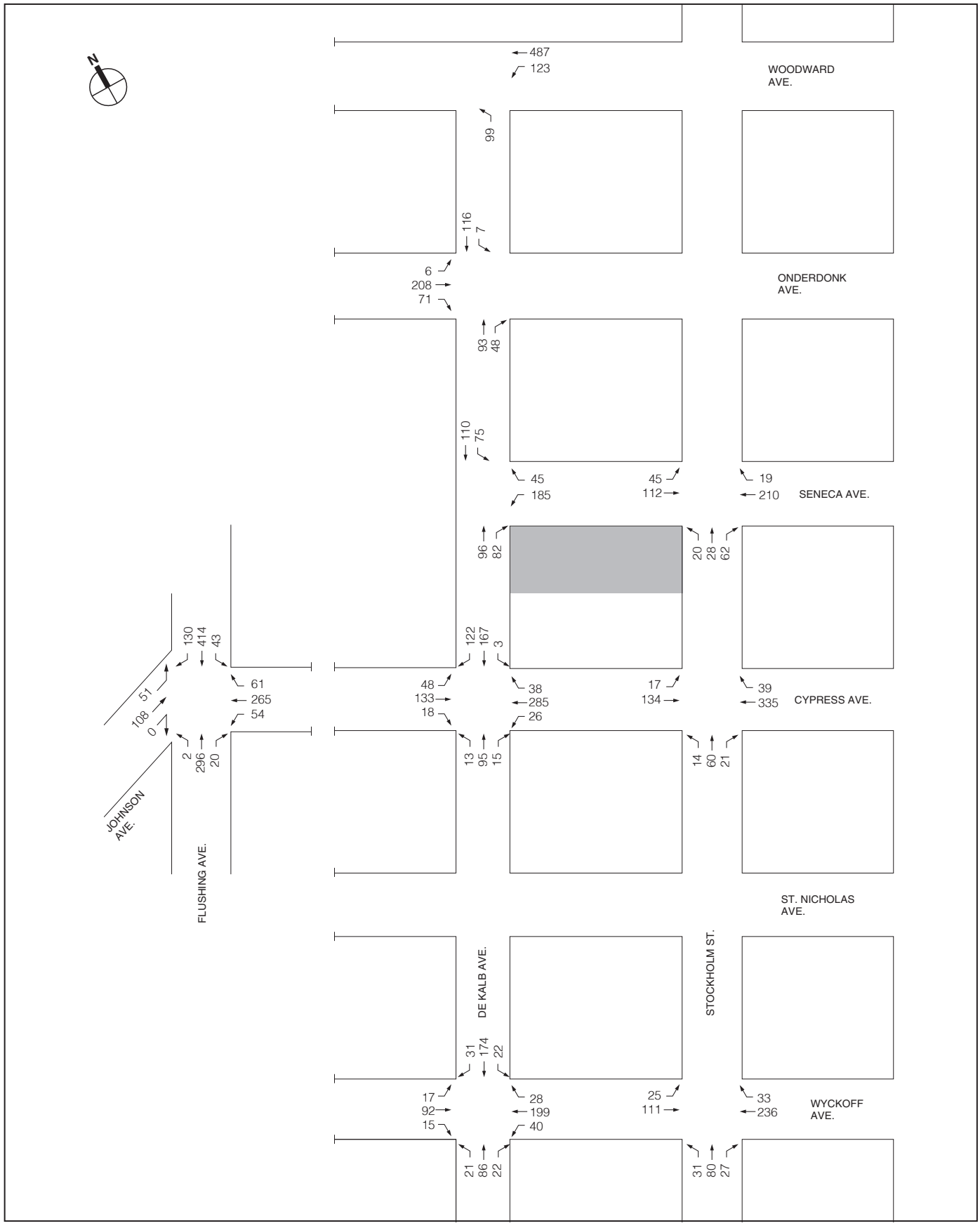

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Project Site Area

2015 Build Traffic Volumes
Weekday AM Peak Hour

SCA P.S. 320

Figure 6-8

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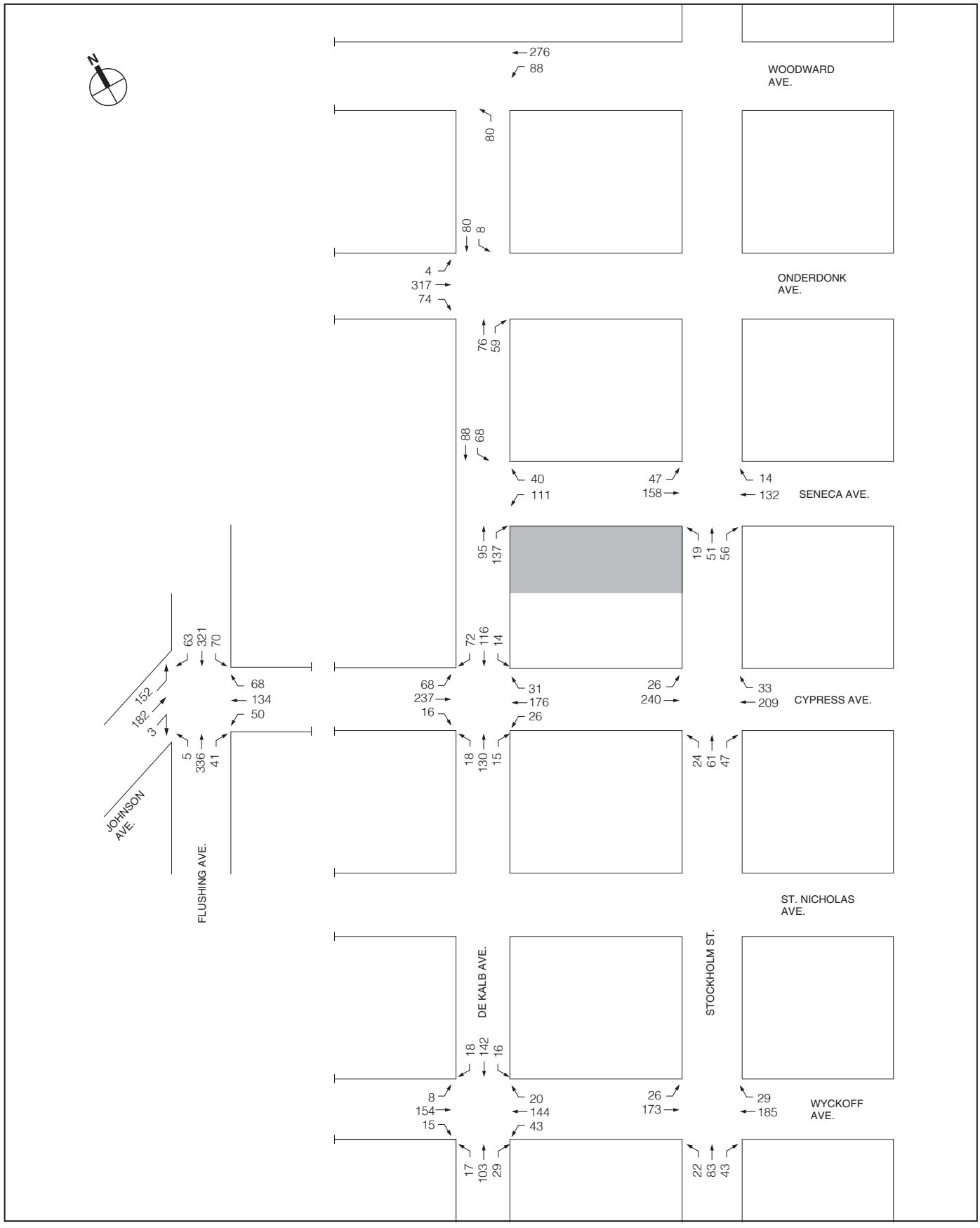

NOT TO SCALE

Project Site Area

2015 Build Traffic Volumes
Weekday PM Peak Hour

SCA P.S. 320

Figure 6-9

For the intersections bordering the project site, capacities at majority of the approaches would be sufficient to accommodate these volume increases in the future. However, based on the CEQR impact criteria discussed earlier, the proposed project would result in significant adverse traffic impacts at the two intersection approaches listed below during the peak periods analyzed. Measures that can be implemented to mitigate these potential significant adverse traffic impacts are discussed in Chapter 14, "Mitigation."

- The northbound approach of Seneca Avenue and Stockholm Street during the weekday AM and PM peak hours; and
- The northbound approach of Cypress Avenue and Stockholm Street during the weekday AM peak hour.

D. TRANSIT OPERATIONS

The project site is located in an area served by various mass transit options provided by New York City Transit (NYCT) including subway and local bus. The project site is served by the L and M subway lines; and the B13, B38, and B57 bus routes. Based on the travel demand estimates and the availability and service frequencies of the three bus routes in the study area, it was determined that no individual bus route would experience 50 or more peak hour bus trips in one direction, and no individual station element would experience 200 or more peak hour subway trips—the CEQR recommended threshold for undertaking quantified bus and subway analysis, and therefore, a quantitative analysis of bus and subway operations is not warranted.

Table 6-11 provides a summary of the NYCT bus routes that provide regular service to the study area and their weekday frequency of operation.

Table 6-11
NYCT Local Bus Routes Serving the Study Area

Bus Route	Start Point	End Point	Routing in Study Area	Freq. of Bus Service (Headway in Minutes)	
				AM	PM
B13 N/S	Gateway Center Mall	Bushwick	Wyckoff Avenue	12/20	20/15
B38 E/W	Downtown Brooklyn	Ridgewood Queens	DeKalb Avenue	15/5	9/8
B57 N/S	Carroll Gardens	Maspeth Queens	Flushing Avenue	15/12	15/15

Notes: N/S = North/South; E/W = East/West.
Source: MTA NYCT Bus Timetables (2012).

E. PEDESTRIAN OPERATIONS

Existing pedestrian volumes in the study area were established based on counts conducted in May 2012 at key locations near the project site during the weekday hours of 7:00 AM to 9:30 AM and 2:00 PM to 4:00 PM. Peak hours were determined by comparing rolling hourly averages and the highest 15-minute volumes within the selected peak hours were selected for analysis.

PEDESTRIAN STUDY AREA

Pedestrian trip assignments were developed by distributing person trips generated by the proposed project to surrounding pedestrian facilities, including sidewalks, crosswalks, and corner reservoirs adjacent to the project site. Transit riders were assigned to the nearby bus and subway stops. As shown in **Figures 6-10** and **6-11**, pedestrian activities resulting from the proposed school are

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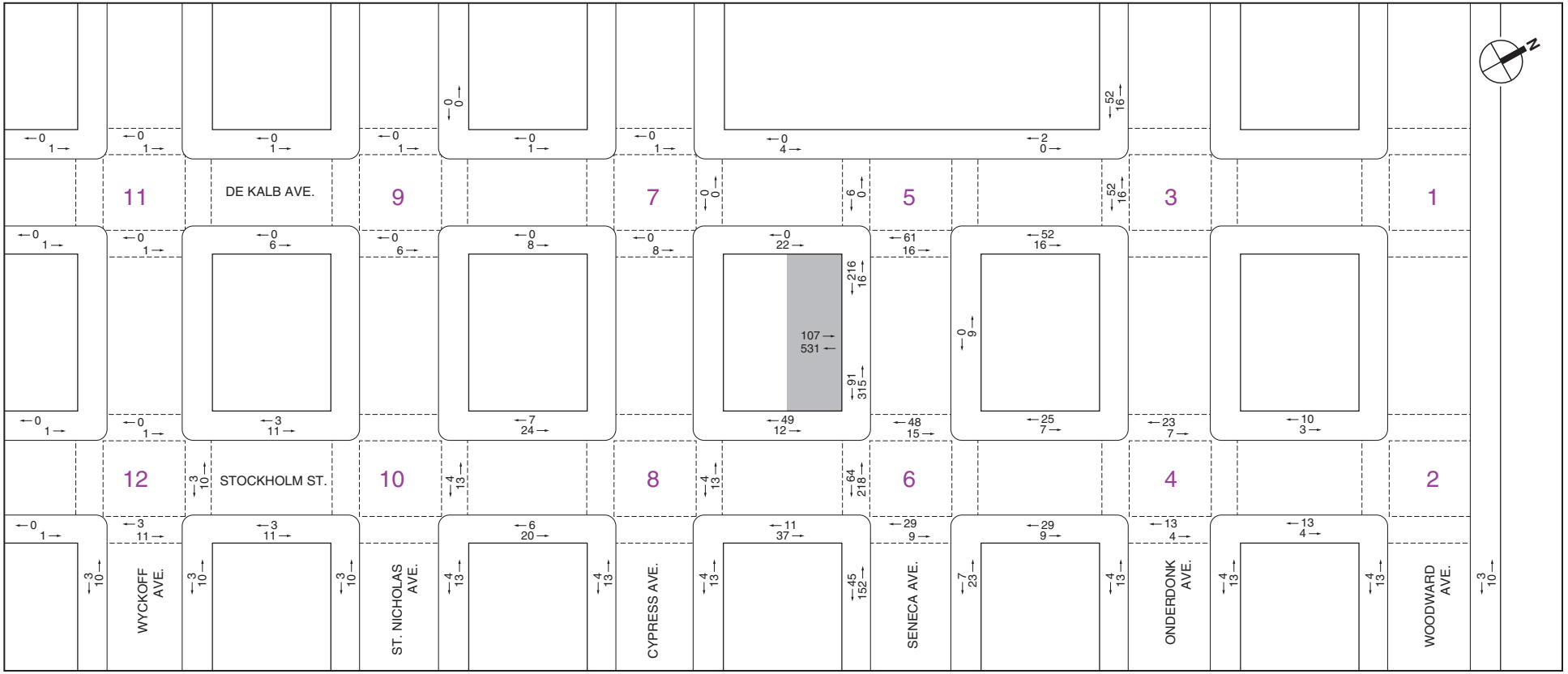

Project Generated Pedestrian Volumes
Weekday AM Peak Hour
Figure 6-10

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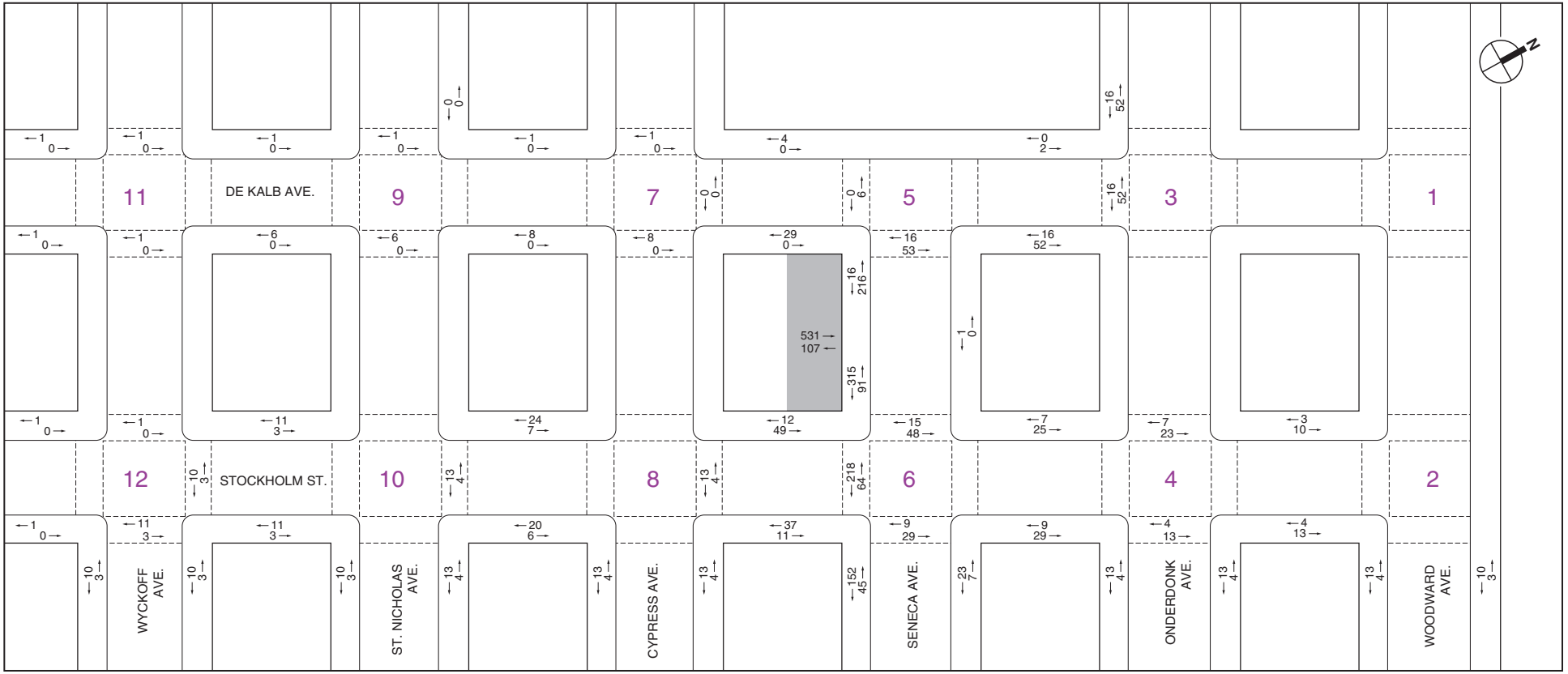


Project Generated Pedestrian Volumes
Weekday PM Peak Hour
Figure 6-11

expected to be concentrated on the Seneca Avenue sidewalk adjacent to the main entrance, and along DeKalb Avenue and Stockholm Street near the project site.

Based on the *CEQR Technical Manual*, quantified pedestrian analyses would be required for pedestrian elements incurring 200 or more incremental peak hour trips. As a result of the proposed school, various pedestrian elements in the vicinity of the project site would exceed 200 peak hour trips. The following pedestrian elements were included as part of the analysis:

- North sidewalk on Seneca Avenue between DeKalb Avenue and Stockholm Street;
- South sidewalk on Seneca Avenue between DeKalb Avenue and Stockholm Street;
- East sidewalk on DeKalb Avenue between Seneca Avenue and Cypress Avenue;
- West sidewalk on DeKalb Avenue between Seneca Avenue and Cypress Avenue;
- North sidewalk on Seneca Avenue between Stockholm Street and Stanhope Street;
- South sidewalk on Seneca Avenue between Stockholm Street and Stanhope Street;
- East sidewalk on Stockholm Street between Seneca Avenue and Cypress Avenue; and
- West sidewalk on Stockholm Street between Seneca Avenue and Cypress Avenue.

ANALYSIS RESULTS

STREET LEVEL PEDESTRIAN OPERATIONS

Existing peak 15-minute volumes were developed for the pedestrian analysis locations. As shown in **Table 6-12**, all sidewalk analysis locations operate at acceptable levels (maximum 6 PMF platoon flows for sidewalks) during the weekday AM and PM peak 15-minute periods.

Table 6-12
2012 Existing Conditions: Pedestrian LOS Analysis for Sidewalks

Location	Sidewalk	Effective Width (ft)	15 Minute Two-Way Volume	Platoon Flow	
				PMF	LOS
AM Peak Period					
Seneca Avenue between DeKalb Avenue and Stockholm Street	North	4.0	49	0.82	B
	South	12.0	14	0.08	A
DeKalb Avenue between Seneca Avenue and Cypress Avenue	East	5.0	20	0.27	A
	West	6.0	19	0.21	A
Seneca Avenue between Stockholm Street and DeKalb Avenue	South	12.0	14	0.08	A
Seneca Avenue between Stockholm Street and Stanhope Street	North	3.0	27	0.60	B
	South	8.0	187	1.56	B
Stockholm Street between Seneca Avenue and Cypress Avenue	East	6.0	17	0.19	A
	West	5.0	10	0.13	A
PM Peak Period					
Seneca Avenue between DeKalb Avenue and Stockholm Street	North	4.0	61	1.02	B
	South	12.0	19	0.11	A
DeKalb Avenue between Seneca Avenue and Cypress Avenue	East	5.0	42	0.56	B
	West	6.0	23	0.26	A
Seneca Avenue between Stockholm Street and DeKalb Avenue	South	12.0	19	0.11	A
Seneca Avenue between Stockholm Street and Stanhope Street	North	3.0	53	1.18	B
	South	8.0	394	3.28	C
Stockholm Street between Seneca Avenue and Cypress Avenue	East	6.0	77	0.86	B
	West	5.0	25	0.33	A

Note: PMF = pedestrians per minute per foot

THE FUTURE WITHOUT THE PROPOSED PROJECT

Future 2015 conditions without the proposed project were forecasted by increasing existing traffic levels to reflect expected growth in overall travel through and within the study area. As per the 2012 *CEQR Technical Manual*, a background growth rate of 0.5 percent per year was assumed for an overall compounded growth rate of 1.5 percent by 2015. Based on consultation with NYCDCP, there are no notable development projects slated for completion in the study area by the 2015 build year.

STREET LEVEL PEDESTRIAN OPERATIONS

The 2015 No Build peak hour volumes were applied to the pedestrian analysis locations described previously. As shown in **Table 6-13**, all sidewalk analysis locations would continue to operate at acceptable levels (maximum 6 PMF platoon flows for sidewalks) during both the weekday AM and PM peak 15-minute periods.

Table 6-13
2015 No Build Conditions: Pedestrian LOS Analysis for Sidewalks

Location	Sidewalk	Effective Width (ft)	15 Minute Two-Way Volume	Platoon Flow	
				PMF	LOS
AM Peak Period					
Seneca Avenue between DeKalb Avenue and Stockholm Street	North	4.0	49	0.82	B
	South	12.0	14	0.08	A
DeKalb Avenue between Seneca Avenue and Cypress Avenue	East	5.0	20	0.27	A
	West	6.0	19	0.21	A
Seneca Avenue between Stockholm Street and DeKalb Avenue	South	12.0	14	0.08	A
Seneca Avenue between Stockholm Street and Stanhope Street	North	3.0	27	0.60	B
	South	8.0	190	1.58	B
Stockholm Street between Seneca Avenue and Cypress Avenue	East	6.0	17	0.19	A
	West	5.0	10	0.13	A
PM Peak Period					
Seneca Avenue between DeKalb Avenue and Stockholm Street	North	4.0	62	1.03	B
	South	12.0	19	0.11	A
DeKalb Avenue between Seneca Avenue and Cypress Avenue	East	5.0	42	0.56	B
	West	6.0	23	0.26	A
Seneca Avenue between Stockholm Street and DeKalb Avenue	South	12.0	19	0.11	A
Seneca Avenue between Stockholm Street and Stanhope Street	North	3.0	54	1.20	B
	South	8.0	400	3.33	C
Stockholm Street between Seneca Avenue and Cypress Avenue	East	6.0	78	0.87	B
	West	5.0	25	0.33	A

Note: PMF = pedestrians per minute per foot

PROBABLE IMPACTS OF THE PROPOSED PROJECT

The future with the proposed project would result in increased pedestrian trips as compared to the No Build conditions. This section describes the projected travel patterns of the site-related trips and assesses their potential impacts on nearby pedestrian facilities.

TRIP DISTRIBUTION AND ASSIGNMENT

Pedestrian access to the project site would be primarily concentrated on the Seneca Avenue sidewalk adjacent to the main entrance, and along DeKalb Avenue and Stockholm Street near the project site. The following assumptions were used to assign auto, school bus, transit, and walk-only trips to the project site.

- The majority of the auto and all of the school bus drop-off/pick-up activities were assumed to take place on Seneca Avenue in front of the school's main entrance, while the remaining auto student drop-offs/pick-ups were assumed to take place on DeKalb Avenue and Stockholm Street between Seneca Avenue and Cypress Avenue. Since the proposed school is not expected to provide on-site parking for faculty/staff, it was assumed that faculty/staff would seek on-street parking on blocks in the vicinity of the school and then walk to the main entrance on Seneca Avenue.
- Transit trips would be distributed to the B13, B38, and B57 bus routes; and the L and M subway lines. The assignment of transit trips began with designating specific bus and subway station stops at which users would access mass transit, and then tracing these trips through logical walking routes to the project site.
- While all trips would require a walking component that connects the origins and destinations with their respective mode of transportation, a portion of the trips are made only by walking. These trips were estimated to be 219 total walk-only project-generated trips during each of the weekday AM and PM peak 15-minute periods. The area's pedestrian network and nearby populated neighborhoods were accounted for in the assignment of these walk-only trips.

ANALYSIS RESULTS

Pedestrian trips associated with the proposed project would result in increased volumes at the analysis locations. The analysis conducted for the 2015 Build condition accounts for the distribution of project-generated trips overlaid onto the 2015 No Build trips within the study area. **Table 6-14** presents the future Build operating conditions for the analysis elements. Based on the analysis results, all sidewalk analysis locations would continue to operate at acceptable levels (maximum 6 PMF platoon flows for sidewalks) during both the weekday AM and PM peak 15-minute periods and would not result in any significant adverse pedestrian impacts as part of the proposed project.

Table 6-14
2015 Build Conditions: Pedestrian LOS Analysis for Sidewalks

Location	Sidewalk	Effective Width (ft)	15 Minute Two-Way Volume	Platoon Flow	
				PMF	LOS
AM Peak Period					
Seneca Avenue between DeKalb Avenue and Stockholm Street	North	4.0	54	0.90	B
	South	12.0	130	0.72	B
DeKalb Avenue between Seneca Avenue and Cypress Avenue	East	5.0	31	0.41	A
	West	6.0	21	0.23	A
Seneca Avenue between Stockholm Street and DeKalb Avenue	South	12.0	218	1.21	B
Seneca Avenue between Stockholm Street and Stanhope Street	North	3.0	43	0.96	B
	South	8.0	289	2.41	B
Stockholm Street between Seneca Avenue and Cypress Avenue	East	6.0	42	0.47	A
	West	5.0	41	0.55	B
PM Peak Period					
Seneca Avenue between DeKalb Avenue and Stockholm Street	North	4.0	63	1.05	B
	South	12.0	135	0.75	B
DeKalb Avenue between Seneca Avenue and Cypress Avenue	East	5.0	57	0.76	B
	West	6.0	25	0.28	A
Seneca Avenue between Stockholm Street and DeKalb Avenue	South	12.0	223	1.24	B
Seneca Avenue between Stockholm Street and Stanhope Street	North	3.0	70	1.56	B
	South	8.0	499	4.16	C
Stockholm Street between Seneca Avenue and Cypress Avenue	East	6.0	103	1.14	B
	West	5.0	56	0.75	B

Note: PMF = pedestrians per minute per foot

F. PARKING

EXISTING CONDITIONS

A parking survey was conducted to determine the existing on-and off-street parking supply and utilization within a ¼-mile radius of the project site. Based on this survey, there are no publicly available off-street parking facilities located within a ¼-mile radius of the project site.

In terms of on-street parking, there are approximately 2,364 on-street spaces within a ¼-mile radius of the project site. Out of these, approximately 222 spaces were available during the morning peak period resulting in an overall utilization rate of approximately 91 percent.

THE FUTURE WITHOUT THE PROPOSED PROJECT

The study area's overall on-street parking utilization is assumed to experience the same growth as projected for the traffic and pedestrian conditions in the study area. Accounting for the general background growth, the overall on-street parking utilization rate in the study area in the 2015 No Build condition would increase to approximately 92 percent, with 190 available on-street spaces during the weekday morning peak period.

PROBABLE IMPACTS OF THE PROPOSED PROJECT

All of the additional parking demand generated as part of the proposed school would be accommodated by the available on-street parking spaces in the vicinity of the project site. With the additional parking demand generated by the proposed project, the overall on-street parking utilization rate in the study area in the 2015 Build condition would increase to approximately 93 percent, with 169 available on-street spaces during the weekday morning peak period. Thus, the proposed project would not result in significant adverse impacts to the supply and demand of on-street parking in the study area.

G. PEDESTRIAN SAFETY

Accident data for the study area intersections were obtained from the New York State Department of Transportation (NYSDOT) for the time period between January 1, 2009 and December 31, 2011. The data obtained quantify the total number of reportable accidents (involving fatality, injury, or more than $1,000 in property damage) during the study period, as well as a yearly breakdown of pedestrian and bicycle-related accidents at each location. According to the *CEQR Technical Manual*, a high accident location is one where there were five or more pedestrian/bicyclist-related accidents or 48 or more total reportable and non-reportable accidents in any consecutive 12 months within the most recent 3-year period for which data are available.

During the January 2009 to December 2011 3-year period, a total of 136 reportable and non-reportable accidents (including 31 pedestrian/bicyclist-related accidents), no fatalities, and 121 injuries occurred at the study area intersections. A rolling total of accident data identifies none of the study area intersections as high pedestrian accident location in the 2009 to 2011 period. **Table 6-15** depicts total accident characteristics by intersection during the study period, as well as a breakdown of pedestrian and bicycle accidents by year and location.

Table 6-15
Accident Summary

Intersection		Study Period					Accidents by Year					
North-South Roadway	East-West Roadway	All Accidents by Year			Total Fatalities	Total Injuries	Pedestrian			Bicycle		
		2009	2010	2011			2009	2010	2011	2009	2010	2011
Woodward Ave	Dekalb Ave	1	1	2	0	2	0	0	0	0	1	1
Woodward Ave	Stockholm St	1	0	0	0	0	0	0	0	0	0	0
Woodward Ave	Stanhope St	1	0	0	0	1	0	0	0	1	0	0
Onderdonk Ave	Dekalb Ave	2	0	2	0	1	1	0	0	0	0	0
Onderdonk Ave	Stockholm St	1	1	0	0	2	1	1	0	0	0	0
Onderdonk Ave	Stanhope St	1	2	3	0	6	0	2	1	0	0	0
Seneca Ave	Dekalb Ave	1	0	0	0	0	0	0	0	0	0	0
Seneca Ave	Stockholm St	1	1	0	0	0	0	0	0	0	0	0
Seneca Ave	Stanhope St	3	1	0	0	4	1	0	0	0	0	0
Cypress Ave	Flushing Ave	7	4	3	0	7	0	0	0	0	0	1
Cypress Ave	Jefferson St	5	0	0	0	4	0	0	0	1	0	0
Cypress Ave	Troutman St	3	3	3	0	8	1	0	0	0	1	1
Cypress Ave	Starr St	1	1	0	0	3	0	0	0	0	1	0
Cypress Ave	Willoughby Ave	4	0	0	0	5	0	0	0	0	0	0
Cypress Ave	Suydam St	1	1	0	0	0	0	0	0	0	0	0
Cypress Ave	Hart St	0	0	1	0	1	0	0	0	0	0	0
Cypress Ave	Dekalb Ave	4	1	4	0	12	1	0	0	1	0	0
Cypress Ave	Stockholm St	9	4	2	0	18	0	0	0	1	0	0
Cypress Ave	Stanhope St	1	1	1	0	5	0	0	0	0	0	0
St. Nicholas Ave	Dekalb Ave	3	2	2	0	7	2	0	0	0	0	0
St. Nicholas Ave	Stockholm St	1	2	1	0	2	0	0	0	0	0	0
St. Nicholas Ave	Stanhope St	0	4	0	0	3	0	1	0	0	1	0
Wyckoff Ave	Dekalb Ave	5	6	6	0	12	0	2	1	0	0	0
Wyckoff Ave	Stockholm St	4	2	1	0	13	0	0	0	0	0	1
Wyckoff Ave	Stanhope St	6	1	1	0	5	3	1	0	0	0	0

Source: NYSDOT January 1, 2009 to December 31, 2011 accident data.
Bold intersections are high pedestrian accident locations.

✷

A. INTRODUCTION

The potential for air quality impacts with the proposed school is examined in this chapter. Air quality impacts can be either direct or indirect. Direct impacts result from emissions generated by stationary sources at the project site, such as emissions from on-site fuel combustion for heat and hot water systems. Indirect impacts are those caused by emissions from nearby existing stationary sources (impacts on the proposed project) or by emissions from on-road vehicle trips (mobile sources) generated by a project.

The maximum hourly traffic that would be generated by the proposed school would not exceed the 2012 *City Environmental Quality Review (CEQR) Technical Manual* carbon monoxide screening threshold of 170 for peak hour trips at nearby intersections in the study area, therefore an analysis of carbon monoxide emissions from mobile sources is not warranted. However, the emissions from the proposed school vehicle trips, including school buses, would exceed the particulate matter emission screening threshold discussed in Chapter 17, Sections 210 and 311 of the *CEQR Technical Manual*. Therefore, a quantified assessment of particulate matter emissions from traffic that would be generated by the proposed school was conducted.

The proposed school would include heating and hot water systems that would use natural gas as fuel. Therefore, a screening analysis was conducted to evaluate the potential for air quality impacts from the heating and hot water systems exhaust.

The mobile source analysis conducted shows that there would be no potential for significant adverse impacts on air quality from the vehicle trips generated by the proposed school. Based on the screening analyses, there would be no potential for significant adverse air quality impacts from emissions of the proposed school's heating and hot water systems. Therefore, there would be no potential for any significant adverse air quality impacts with the proposed school.

B. POLLUTANTS FOR ANALYSIS

Ambient air quality is affected by air pollutants produced by both motor vehicles and stationary sources. Emissions from motor vehicles are referred to as mobile source emissions, while emissions from fixed facilities are referred to as stationary source emissions. Ambient concentrations of carbon monoxide (CO) are predominantly influenced by mobile source emissions. Particulate matter (PM), volatile organic compounds (VOCs), and nitrogen oxides (NO and NO_2, collectively referred to as NO_x) are emitted from both mobile and stationary sources. Fine PM is also formed when emissions of NO_x, sulfur oxides (SO_x), ammonia, organic compounds, and other gases react or condense in the atmosphere. Emissions of sulfur dioxide (SO_2) are associated mainly with stationary sources, and sources utilizing non-road diesel such as diesel trains, marine engines, and non-road vehicles (e.g., construction engines). On-road diesel vehicles currently contribute very little to SO_2 emissions since the sulfur content of on-

road diesel fuel, which is federally regulated, is extremely low. Ozone is formed in the atmosphere by complex photochemical processes that include NO_x and VOCs.

CARBON MONOXIDE

CO, a colorless and odorless gas, is produced in the urban environment primarily by the incomplete combustion of gasoline and other fossil fuels. In urban areas, approximately 80 to 90 percent of CO emissions are from motor vehicles. Since CO is a reactive gas which does not persist in the atmosphere, CO concentrations can vary greatly over relatively short distances; elevated concentrations are usually limited to locations near crowded intersections, heavily traveled and congested roadways, parking lots, and garages. Consequently, CO concentrations must be predicted on a local, or microscale, basis. Since the proposed school would not result in peak hour vehicle trips that would exceed the *CEQR Technical Manual* screening analysis threshold for CO, a quantified assessment of air quality impacts from vehicle CO emissions was not conducted.

NITROGEN OXIDES, VOCS, AND OZONE

NO_x are of principal concern because of their role, together with VOCs, as precursors in the formation of ozone. Ozone is formed through a series of reactions that take place in the atmosphere in the presence of sunlight. Because the reactions are slow, and occur as the pollutants are advected downwind, elevated ozone levels are often found many miles from sources of the precursor pollutants. The effects of NO_x and VOC emissions from all sources are therefore generally examined on a regional basis. The contribution of any action or project to regional emissions of these pollutants would include any added stationary or mobile source emissions; the change in regional mobile source emissions of these pollutants would be related to the total vehicle miles traveled added or subtracted on various roadway types throughout the New York metropolitan area, which is designated as a moderate nonattainment area for ozone by the U.S. Environmental Protection Agency (EPA).

The proposed school would not have a significant effect on the overall volume of vehicular travel in the metropolitan area; therefore, no measurable impact on regional NO_x emissions or on ozone levels is predicted. An analysis of emissions of these pollutants from mobile sources was therefore not warranted.

In addition to being a precursor to the formation of ozone, NO_2 (one component of NO_x) is also a regulated pollutant. Since NO_2 is mostly formed from the transformation of NO in the atmosphere, it has mostly been of concern further downwind from large stationary point sources, and not a local concern from mobile sources. (NO_x emissions from fuel combustion consist of approximately 90 percent NO and 10 percent NO_2 at the source.) However, with the promulgation of the 2010 1-hour average standard for NO_2, local (i.e., mobile) sources may become of greater concern for this pollutant. The potential for NO_x emissions impacts from the proposed school heating and hot water systems was evaluated.

LEAD

Airborne lead emissions are currently associated principally with industrial sources. Effective January 1, 1996, the Clean Air Act (CAA) banned the sale of the small amount of leaded fuel that was still available in some parts of the country for use in on-road vehicles, concluding a 25-year effort to phase out lead in gasoline. Even at locations in the New York City area where

traffic volumes are very high, atmospheric lead concentrations are below the 3-month average national standard of 0.15 micrograms per cubic meter ($\mu g/m^3$).

No significant sources of lead are associated with the proposed school and, therefore, analysis was not warranted.

RESPIRABLE PARTICULATE MATTER—PM_{10} AND $PM_{2.5}$

PM is a broad class of air pollutants that includes discrete particles of a wide range of sizes and chemical compositions, as either liquid droplets (aerosols) or solids suspended in the atmosphere. The constituents of PM are both numerous and varied, and they are emitted from a wide variety of sources (both natural and anthropogenic). Natural sources include the condensed and reacted forms of naturally occurring VOC; salt particles resulting from the evaporation of sea spray; wind-borne pollen, fungi, molds, algae, yeasts, rusts, bacteria, and material from live and decaying plant and animal life; particles eroded from beaches, soil, and rock; and particles emitted from volcanic and geothermal eruptions and from forest fires. Naturally occurring PM is generally greater than 2.5 micrometers in diameter. Major anthropogenic sources include the combustion of fossil fuels (e.g., vehicular exhaust, power generation, boilers, engines, and home heating), chemical and manufacturing processes, all types of construction, agricultural activities, as well as wood-burning stoves and fireplaces. PM also acts as a substrate for the adsorption (accumulation of gases, liquids, or solutes on the surface of a solid or liquid) of other pollutants, often toxic and some likely carcinogenic compounds.

As described below, PM is regulated in two size categories: particles with an aerodynamic diameter of less than or equal to 2.5 micrometers ($PM_{2.5}$), and particles with an aerodynamic diameter of less than or equal to 10 micrometers (PM_{10}, which includes $PM_{2.5}$). $PM_{2.5}$ has the ability to reach the lower regions of the respiratory tract, delivering with it other compounds that adsorb to the surfaces of the particles, and is also extremely persistent in the atmosphere. $PM_{2.5}$ is mainly derived from combustion material that has volatilized and then condensed to form primary PM (often soon after the release from a source exhaust) or from precursor gases reacting in the atmosphere to form secondary PM.

Diesel-powered vehicles, especially heavy duty trucks and buses, are a significant source of respirable PM, most of which is $PM_{2.5}$; PM concentrations may, consequently, be locally elevated near roadways with high volumes of heavy diesel-powered vehicles. Since the proposed school would result in an increase in $PM_{2.5}$ vehicle emissions that would exceed the $PM_{2.5}$ emissions threshold defined in Chapter 17, Sections 210 and 311 of the *CEQR Technical Manual* above which a detailed analysis of mobile source impacts on air quality is required, a quantified assessment of air quality impacts from vehicle PM emissions was conducted.

SULFUR DIOXIDE

SO_2 emissions are primarily associated with the combustion of sulfur-containing fuels (oil and coal). Monitored SO_2 concentrations in New York City are lower than the national standards. Due to the federal restrictions on the sulfur content in diesel fuel for on-road vehicles, no significant quantities are emitted from vehicular sources. Vehicular sources of SO_2 are not significant and therefore, an analysis of SO_2 from mobile sources was not warranted.

The proposed school would include heating and hot water systems that would use natural gas fuel. The sulfur content of natural gas is negligible; therefore, an analysis was not warranted.

NONCRITERIA POLLUTANTS

In addition to the criteria pollutants discussed above, noncriteria pollutants are of concern. Noncriteria pollutants are emitted by a wide range of man-made and naturally occurring sources. Emissions of noncriteria pollutants from industries are regulated by EPA. Federal ambient air quality standards do not exist for noncriteria pollutants; however, the New York State Department of Environmental Conservation (NYSDEC) has issued standards for certain noncriteria compounds, including beryllium, gaseous fluorides, and hydrogen sulfide. NYSDEC has also developed guideline concentrations for numerous noncriteria pollutants. The NYSDEC guidance document DAR-1 (October 2010) contains a compilation of annual and short term (1-hour) guideline concentrations for these compounds. The NYSDEC guidance thresholds represent ambient levels that are considered safe for public exposure.

No significant sources of noncriteria pollutants are associated with the proposed school and, therefore, analysis was not warranted.

C. AIR QUALITY REGULATIONS, STANDARDS, AND BENCHMARKS

NATIONAL AND STATE AIR QUALITY STANDARDS

As required by the CAA, primary and secondary National Ambient Air Quality Standards (NAAQS) have been established for six major air pollutants: CO, NO_2, ozone, respirable PM (both $PM_{2.5}$ and PM_{10}), 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 and secondary standards are the same for NO_2 (annual), ozone, lead, and PM, and there is no secondary standard for CO and the 1-hour NO_2 standard. The NAAQS are presented in **Table 7-1**. 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 particulate matter (TSP), settleable particles, non-methane hydrocarbons (NMHC), 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, fluoride, and hydrogen sulfide (H_2S).

EPA revised the 8-hour ozone standard, lowering it from 0.08 to 0.075 parts per million (ppm), effective as of May 2008.

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

EPA established a 1-hour average NO_2 standard of 0.100 ppm, effective April 12, 2010, in addition to the annual standard. The statistical form is the 3-year average of the 98th percentile of daily maximum 1-hour average concentration in a year.

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

Table 7-1
National Ambient Air Quality Standards (NAAQS)

Pollutant	Primary		Secondary	
	ppm	µg/m^3	ppm	µg/m^3
Carbon Monoxide (CO)				
8-Hour Average [1]	9	10,000	None	
1-Hour Average [1]	35	40,000		
Lead				
Rolling 3-Month Average [2]	NA	0.15	NA	0.15
Nitrogen Dioxide (NO_2)				
1-Hour Average [3]	0.100	188	None	
Annual Average	0.053	100	0.053	100
Ozone (O_3)				
8-Hour Average [4]	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	NA	15	NA	15
24-Hour Average [5]	NA	35	NA	35
Sulfur Dioxide (SO_2) [6]				
1-Hour Average [7]	0.075	196	NA	NA
Maximum 3-Hour Average [1]	NA	NA	0.50	1,300

Notes:
ppm – parts per million
µg/m^3 – micrograms per cubic meter
NA – not applicable

All annual periods refer to calendar year.

PM concentrations (including lead) are in µg/m^3 since ppm is a measure for gas concentrations. Concentrations of all gaseous pollutants are defined in ppm and approximately equivalent concentrations in µg/m^3 are presented.

(1) Not to be exceeded more than once a year.

(2) EPA 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-hr average concentration.

(4) 3-year average of the annual fourth highest daily maximum 8-hr average concentration.

(5) Not to be exceeded by the annual 98th percentile when averaged over 3 years.

(6) EPA revoked the 24-hour and annual primary standards, replacing them with a 1-hour average standard. Effective August 23, 2010.

(7) 3-year average of the annual 99th percentile daily maximum 1-hr average concentration. Effective August 23, 2010.

Source: 40 CFR Part 50: National Primary and Secondary Ambient Air Quality Standards.

NAAQS ATTAINMENT STATUS AND STATE IMPLEMENTATION PLANS

The CAA, as amended in 1990, defines nonattainment areas (NAA) as geographic regions that have been designated as not meeting one or more of the NAAQS. When an area is designated as nonattainment by EPA, 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.

In 2002, EPA re-designated New York City as in attainment for CO. The CAA requires that a maintenance plan ensure continued compliance with the CO NAAQS for former nonattainment areas. New York City is also 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 December 17, 2004, EPA took final action designating the five New York City counties and Nassau, Suffolk, Rockland, Westchester, and Orange Counties as a $PM_{2.5}$ nonattainment area under the CAA due to exceedance of the annual average standard. Based on monitoring data (2006-2009), annual average concentrations of $PM_{2.5}$ in New York City no longer exceed the annual standard.

In October 2009 EPA finalized the designation of the New York City Metropolitan Area as nonattainment with the 2006 24-hour $PM_{2.5}$ NAAQS, effective in November 2009. The nonattainment area includes the same 10-county area EPA originally designated as nonattainment with the 1997 annual $PM_{2.5}$ NAAQS. Based on recent monitoring data (2007-2009), 24-hour average concentrations of $PM_{2.5}$ in this area no longer exceed the standard. New York has submitted a "Clean Data" request to the USEPA. Any requirement to submit a SIP is stayed until EPA acts on New York's request.

The five New York City counties, Nassau, Suffolk, Rockland, Westchester, and Lower Orange County Metropolitan Area (LOCMA) had been designated as a severe non-attainment 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 EPA effective March 6, 2002, addressing attainment of the 1-hour ozone NAAQS by 2007. Although revoked by EPA (effective 2005), some provisions of the 1-hour standard remained in place for 8-hour NAAs (see below). On June 18, 2012, EPA determined that the New York—New Jersey–Long Island NAA has 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, EPA designated these same counties as moderate non-attainment for the 1997 8-hour average ozone standard (LOCMA was moved to the Poughkeepsie moderate non-attainment area for 8-hour ozone). On February 8, 2008, NYSDEC submitted final revisions to the SIP to EPA to address the 1997 8-hour ozone standard. On June 18, 2012, EPA determined that the New York–New Jersey–Long Island NAA has 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 8-hour standard. In March 2008 EPA strengthened the 8–hour ozone standards. EPA designated the five New York City counties, and the counties of Suffolk, Nassau, 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 are due in 2015.

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

EPA has established a 1-hour SO_2 standard, replacing the 24-hour and annual standards, effective August 23, 2010. Based on the available monitoring data, all New York State counties currently meet the 1-hour standard. Additional monitoring will be required. EPA plans to make final attainment designations in 2013. SIPs for nonattainment areas will be due in 2015.

DETERMINING THE SIGNIFICANCE OF AIR QUALITY IMPACTS

The State Environmental Quality Review Act (SEQRA) regulations state that the significance of a predicted consequence of a project (i.e., whether it is material, substantial, large or important) should be assessed in connection with its setting (e.g., urban or rural), its probability of occurrence, its duration, its irreversibility, its geographic scope, its magnitude, and the number of people affected.[1] In terms of the magnitude of air quality impacts, any action predicted to increase the concentration of a criteria air pollutant to a level that would exceed the concentrations defined by the NAAQS (see **Table 7-1**) would be deemed to have a potential significant adverse impact.

In addition, in order to maintain concentrations lower than the NAAQS in attainment areas, or to ensure that concentrations will not be significantly increased in nonattainment areas, threshold levels have been defined for certain pollutants; any action predicted to increase the concentrations of these pollutants above the thresholds would be deemed to have a potential significant adverse impact, even in cases where violations of the NAAQS are not predicted.

$PM_{2.5}$ INTERIM GUIDANCE CRITERIA

NYSDEC has published a policy to provide interim direction for evaluating $PM_{2.5}$ impacts[2]. This policy would apply only to facilities applying for permits or major permit modifications under SEQRA that emit 15 tons of PM_{10} or more annually. The policy states that such a project will be deemed to have a potentially significant adverse impact if the project's maximum impacts are predicted to increase $PM_{2.5}$ concentrations by more than 0.3 $\mu g/m^3$ averaged annually or more than 5 $\mu g/m^3$ on a 24-hour basis. Projects that exceed either the annual or 24-hour threshold will be required to prepare an Environmental Impact Statement (EIS) to assess the severity of the impacts, to evaluate alternatives, and to employ reasonable and necessary mitigation measures to minimize the $PM_{2.5}$ impacts of the source to the maximum extent practicable.

In addition, New York City uses interim guidance criteria for evaluating the potential $PM_{2.5}$ impacts for projects subject to CEQR. The interim guidance criteria currently employed under CEQR for determination of potential significant adverse $PM_{2.5}$ impacts are as follows:

- 24-hour average $PM_{2.5}$ concentration increments which are predicted to be greater than 5 $\mu g/m^3$ at a discrete receptor location would be considered a significant adverse impact on air quality under operational conditions (i.e., a permanent condition predicted to exist for many years regardless of the frequency of occurrence);
- 24-hour average $PM_{2.5}$ concentration increments which are predicted to be greater than 2 $\mu g/m^3$ but no greater than 5 $\mu g/m^3$ would be considered a significant adverse impact on air

[1] *CEQR Technical Manual*, Chapter 17, section 400, January 2012; and State Environmental Quality Review Regulations, 6 NYCRR § 617.7

[2] CP33/Assessing and Mitigating Impacts of Fine Particulate Emissions, NYSDEC 12/29/2003.

quality based on the magnitude, frequency, duration, location, and size of the area of the predicted concentrations;

- Annual average $PM_{2.5}$ concentration increments which are predicted to be greater than 0.1 $\mu g/m^3$ at ground level on a neighborhood scale (i.e., the annual increase in concentration representing the average over an area of approximately 1 square kilometer, centered on the location where the maximum ground-level impact is predicted for stationary sources; or at a distance from a roadway corridor similar to the minimum distance defined for locating neighborhood scale monitoring stations); or
- Annual average $PM_{2.5}$ concentration increments which are predicted to be greater than 0.3 $\mu g/m^3$ at a discrete receptor location (elevated or ground level).

Actions under CEQR predicted to increase $PM_{2.5}$ concentrations by more than the above interim guidance criteria will be considered to have a potential significant adverse impact.

The above interim guidance criteria have been used to evaluate the significance of predicted impacts of the proposed project on $PM_{2.5}$ concentrations.

D. METHODOLOGY FOR PREDICTING POLLUTANT CONCENTRATIONS

MOBILE SOURCES

The prediction of vehicle-generated emissions and their dispersion in an urban environment incorporates meteorological phenomena, traffic conditions, and physical configuration. Air pollutant dispersion models mathematically simulate how traffic, meteorology, and physical configuration combine to affect pollutant concentrations. The mathematical expressions and formulations contained in the various models attempt to describe an extremely complex physical phenomenon as closely as possible. However, because all models contain simplifications and approximations of actual conditions and interactions, and since it is necessary to predict the reasonable worst-case condition, most dispersion analyses predict conservatively high concentrations of pollutants, particularly under adverse meteorological conditions.

The mobile source analysis for the proposed school employs a model approved by EPA that has been widely used for evaluating air quality impacts of projects in New York City, other parts of New York State, and throughout the country. The modeling approach includes a series of conservative assumptions relating to meteorology, traffic, and background concentration levels resulting in a conservatively high estimate of expected pollutant concentrations that could ensue from the proposed school. The assumptions used in the analysis are based on the latest $PM_{2.5}$ interim guidance for CEQR projects.

VEHICLE EMISSIONS

Engine Emissions

Vehicular PM engine emission factors were computed using the EPA mobile source emissions model, MOBILE6.2[1]. This emissions model is capable of calculating engine emission factors for

[1] EPA, User's Guide to MOBILE6.1 and MOBILE6.2: Mobile Source Emission Factor Model, EPA420-R-03-010, August 2003.

various vehicle types, based on the fuel type (gasoline, diesel, or natural gas), meteorological conditions, vehicle speeds, vehicle age, roadway types, number of starts per day, engine soak time, and various other factors that influence emissions, such as inspection maintenance programs. The inputs and use of MOBILE6.2 incorporate the most current guidance available from NYSDEC and NYCDEP.

Vehicle classification was based on data collected in the field. Appropriate credits were used to accurately reflect the inspection and maintenance program. The inspection and maintenance programs require inspections of automobiles and light trucks to determine if pollutant emissions from each vehicle exhaust system are lower than emission standards. Vehicles failing the emissions test must undergo maintenance and pass a repeat test to be registered in New York State. An ambient temperature of 43°F was used. The use of this temperature is recommended in the *CEQR Technical Manual* for the Borough of Queens.

Road Dust

The contribution of re-entrained road dust to PM_{10} concentrations, as presented in the PM_{10} SIP, is considered to be significant; therefore, the PM_{10} estimates include both exhaust and road dust. In accordance with the DEP $PM_{2.5}$ interim guidance criteria methodology, $PM_{2.5}$ emission rates were determined with fugitive road dust to account for their impacts in local microscale analyses. However, fugitive road dust was not included in the neighborhood scale $PM_{2.5}$ microscale analyses, since DEP considers it to have an insignificant contribution on that scale. Road dust emission factors were calculated according to the latest procedure delineated by EPA[1] and the 2012 *CEQR Technical Manual*.

TRAFFIC DATA

Traffic data for the air quality analysis were derived from existing traffic counts, projected future growth in traffic, and other information developed as part of the traffic analysis for the proposed school (see Chapter 6, "Transportation"). Traffic data for the future without and with the proposed school were employed in the respective air quality modeling scenarios. The future conditions were modeled for 2015, the year by which the proposed school would be built and operational. The weekday morning (7:30 to 8:30 AM) and afternoon (3 to 4 PM) peak hour traffic volumes were used as a baseline for determining off-peak volumes. Off-peak traffic volumes in the future without the proposed school, and off-peak increments from the proposed school, were determined by adjusting the peak period volumes by the 24-hour distributions of actual vehicle counts collected at appropriate locations.

DISPERSION MODEL FOR MICROSCALE ANALYSES

Maximum PM concentrations adjacent to streets near the project site, resulting from vehicle emissions, were predicted using the CAL3QHCR model Version 2.0.[2] The model employs a Gaussian (normal distribution) dispersion assumption and includes an algorithm for estimating vehicular queue lengths at signalized intersections. CAL3QHCR predicts dispersion of PM from

[1] EPA, Compilations of Air Pollutant Emission Factors AP-42, Fifth Edition, Volume I: Stationary Point and Area Sources, Ch. 13.2.1, NC, http://www.epa.gov/ttn/chief/ap42, January 2011.

[2] EPA, User's Guide to CAL3QHC, A Modeling Methodology for Predicted Pollutant Concentrations Near Roadway Intersections, Office of Air Quality, Planning Standards, Research Triangle Park, North Carolina, EPA-454/R-92-006.

idling and moving vehicles. The queuing algorithm includes site-specific traffic parameters, such as signal timing and delay calculations (from the *2000 Highway Capacity Manual* traffic forecasting model), saturation flow rate, vehicle arrival type, and signal actuation (i.e., pre-timed or actuated signal) characteristics to accurately predict the number of idling vehicles. CAL3QHCR incorporates hourly traffic and meteorological data to determine motor vehicle generated PM concentrations adjacent to streets near the project site.

METEOROLOGY

In general, the transport and concentration of pollutants from vehicular sources are influenced by three principal meteorological factors: wind direction, wind speed, and atmospheric stability. Wind direction influences the direction in which pollutants are dispersed, and atmospheric stability accounts for the effects of vertical mixing in the atmosphere. These factors, therefore, influence the concentration at a particular prediction location (receptor).

CAL3QHCR models hourly concentrations based on hourly traffic data and five years of monitored hourly meteorological data. The data consists of surface data collected at LaGuardia Airport and upper air data collected at Brookhaven, New York for the period 2007-2011. All hours were modeled, and the highest resulting concentration for each averaging period is presented.

BACKGROUND CONCENTRATIONS

Background concentrations are those pollutant concentrations originating from distant sources that are not directly included in the modeling analysis, which directly accounts for vehicular emissions on the streets within 1,000 feet and in the line of sight of the analysis site. Background concentrations are added to modeling results to obtain total pollutant concentrations at an analysis site.

For the assessment of 24-hour average PM_{10} levels, a background concentration of 50 $\mu g/m^3$ was used. The background concentration is based on monitored levels at the Queens College 2 monitoring station, the NYSDEC monitoring station nearest to and most representative of the conditions surrounding the proposed school site. The selected background value represents the maximum second highest concentration over the most recent 3-year period (2009 to 2011) for which a New York State Ambient Air Quality Report is available. $PM_{2.5}$ impacts are assessed on an incremental basis and compared with the $PM_{2.5}$ interim guidance criteria. Therefore, a background concentration for $PM_{2.5}$ is not included.

ANALYSIS SITE AND RECEPTOR PLACEMENT

The intersection of Seneca Ave and Stockholm Street was selected for microscale analysis because it is the location where the greatest number of peak hour trips would be generated by the proposed school. Therefore, the highest air quality impacts and maximum changes in concentrations would occur at this intersection. The greatest number of school bus trips is expected at this intersection as well. Multiple receptors (i.e. precise locations at which concentrations are predicted) were modeled along the approach and departure links at spaced intervals. Receptors were placed at sidewalk or roadside locations near intersections with continuous public access. For predicting annual average neighborhood-scale $PM_{2.5}$ concentrations, receptors were placed at a distance of 15 meters from the nearest moving lane, based on the NYCDEP procedure for neighborhood-scale $PM_{2.5}$ modeling.

HEAT AND HOT WATER SYSTEM SCREENING ANALYSIS

To assess air quality impacts associated with emissions from the proposed school's heating and hot water systems, a screening analysis was performed. The methodology described in the *CEQR Technical Manual* was used for the analysis, which determines the threshold of development size below which the action would not have a significant adverse impact. The screening procedures utilize information regarding the type of fuel to be burned, the maximum development size, type of development, and the stack height, to evaluate whether a significant adverse impact is likely. Based on the distance from the development 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. Otherwise, the source passes the screening analysis, and no further analysis is required.

E. EXISTING CONDITIONS

Representative criteria pollutant concentrations measured in recent years at NYSDEC air quality monitoring stations nearest to the proposed school are presented in **Table 7-2**. The values presented are consistent with the NAAQS format. For example, the 8-hour ozone concentration shown is the 3-year average of the 4th highest daily maximum 8-hour average concentrations. The concentrations were obtained from the 2011 New York State Ambient Air Quality Report, the most recent report available. As shown in **Table 7-2**, the recently monitored levels did not exceed the NAAQS. It should be noted that the PM_{10} concentration shown in **Table 7-2** is somewhat different from the background PM_{10} concentration used in the analyses. Background concentrations are based on several years of monitoring data, and represent a conservative estimate of the highest background concentrations for future conditions.

Table 7-2
Representative Monitored Ambient Air Quality Data

Pollutant	Location	Units	Averaging Period	Concentration	NAAQS
CO	Queens College 2, Queens	ppm	8-hour	1.4	9
			1-hour	1.9	35
SO_2	Queens College 2, Queens[1]	µg/m^3	3-hour	78	1,300
			1-hour	78.6	196
PM_{10}	Queens College 2, Queens	µg/m^3	24-hour	40	150
$PM_{2.5}$	Maspeth Library, Queens	µg/m^3	Annual	10.3	15
			24-hour	25	35
NO_2	Queens College 2, Queens[2]	µg/m^3	Annual	36	100
			1-hour	126.0	188
Lead	J.H.S. 126, Brooklyn	µg/m^3	3-month	0.012	0.15
Ozone	Queens College 2, Queens	ppm	8-hour	0.075	0.075

Source: DEC, New York State Ambient Air Quality Report (2011).

F. PROBABLE IMPACTS OF THE PROPOSED PROJECT

MOBILE SOURCES

Using the methodology previously described, PM_{10} concentrations with and without the proposed school were predicted for the 2015 Build Year. The values shown in **Table 7-3** are the

highest predicted concentrations for all locations analyzed and include the PM_{10} ambient background concentration. The results indicate that the vehicle trips generated by the proposed school would not result in PM_{10} concentrations that would exceed the NAAQS.

Table 7-3
Maximum Predicted 24-Hour Average PM_{10} Concentrations ($\mu g/m^3$)

Location	Without the Proposed School	With the Proposed School
Seneca Ave and Stockholm St	55.51	55.68

Note: The National Ambient Air Quality Standard for PM_{10} is 150 $\mu g/m^3$, for a 24-hour average.

Future maximum predicted 24-hour and annual average $PM_{2.5}$ concentration increments were calculated for comparison with the interim guidance criteria. The results represent increments between the concentrations with and without the proposed school. The maximum predicted localized 24-hour average and neighborhood-scale annual average incremental $PM_{2.5}$ concentrations are presented in **Table 7-4**. Note that since impacts are assessed on an incremental basis, $PM_{2.5}$ concentrations for the two scenarios are not presented.

Table 7-4
Maximum Predicted $PM_{2.5}$ Increments (in $\mu g/m^3$)

Location	Averaging Period	Maximum Concentration Increment	Interim Guidance Threshold
Seneca Ave and Stockholm St	24-hour	0.11	2 to 5[(1)]
	Annual (neighborhood scale)	0.01	0.1

Notes:
[(1)] 24-hour $PM_{2.5}$ interim guidance criterion, > 2 $\mu g/m^3$ (5 $\mu g/m^3$ not-to-exceed value), depending on the magnitude, frequency, duration, location, and size of the area of the predicted concentrations.

The results show that the annual and daily (24-hour) $PM_{2.5}$ increments are predicted to be well below the interim guidance criteria and, therefore, the emissions from vehicle trips generated by the proposed school would not result in a significant adverse impact on air quality.

HEATING AND HOT WATER SYSTEM SCREENING ANALYSIS

A screening analysis was performed to assess the potential for air quality impacts from the proposed school's heating and hot water systems. The analysis was based on the total proposed school floor area of 65,930 gross square feet, with an exhaust height of approximately 82 feet. Based on this height, the nearest building of a similar or greater height was determined to be beyond 400 feet; therefore, this distance was chosen for the analysis in accordance with the guidance provided in the *CEQR Technical Manual*. The use of natural gas would not result in a significant adverse impact on air quality because the proposed school would be below the maximum permitted size shown in Figure 17-8 in the Air Quality Appendix of the *CEQR Technical Manual.* ✷

A. INTRODUCTION

The proposed school would not generate sufficient traffic to have the potential to cause a significant noise impact (i.e., it would not result in a tripling of Noise passenger car equivalents [Noise PCEs] which would be necessary to cause a 5 dBA increase in noise levels). The principal impacts of the proposed school on ambient noise levels would result from the use of the proposed school's playground. An analysis of these potential impacts is presented, along with an analysis to determine the level of building attenuation necessary to ensure that interior noise levels satisfy applicable interior noise criteria.

B. 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 speed, or "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 discernable 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 8-1**, 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.

COMMUNITY RESPONSE TO CHANGES IN NOISE LEVELS

The average ability of an individual to perceive changes in noise levels is well documented (see **Table 8-2**). Generally, changes in noise levels less than 3 dBA are barely perceptible to most listeners, whereas 10 dBA changes are normally perceived as doublings (or halvings) of noise levels. These guidelines permit direct estimation of an individual's probable perception of changes in noise levels.

Table 8-1
Common Noise Levels

Sound Source	(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 appears to double the loudness, and a 10 dBA decrease halves the apparent loudness.
Sources: Cowan, James P. *Handbook of Environmental Acoustics,* Van Nostrand Reinhold, New York, 1994. Egan, M. David, Architectural Acoustics. McGraw-Hill Book Company, 1988.

Table 8-2
Average Ability to Perceive Changes in Noise Levels

Change (dBA)	Human Perception of Sound
2-3	Barely perceptible
5	Readily noticeable
10	A doubling or halving of the loudness of sound
20	A dramatic change
40	Difference between a faintly audible sound and a very loud sound

Source: Bolt Beranek and Newman, Inc., *Fundamentals and Abatement of Highway Traffic Noise*, Report No. PB-222-703. Prepared for Federal Highway Administration, June 1973.

SOUND LEVEL DESCRIPTORS

Because the sound pressure level unit of dBA describes a noise level at just one moment and very few noises are constant, other ways of describing noise over extended periods have been developed. One way of describing fluctuating sound is to describe the fluctuating noise 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 as $L_{eq(24)}$), conveys 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 the purposes of this project, the maximum 1-hour equivalent sound level ($L_{eq(1)}$) has been selected as the noise descriptor to be used in the noise impact evaluation. $L_{eq(1)}$ is the noise descriptor used in the City Environmental Quality Review (CEQR) standards for vehicular traffic noise impact evaluation, and is used to provide an indication of highest expected sound levels. $L_{10(1)}$ is the noise descriptor used in the CEQR noise exposure standards for vehicular traffic noise. Hourly statistical noise levels (particularly L_{10} and L_{eq} levels) were used to characterize the relevant noise sources and their relative importance at each receptor location.

C. NOISE STANDARDS AND CRITERIA

NEW YORK CITY DEPARTMENT OF ENVIRONMENTAL PROTECTION

The New York City Department of Environmental Protection (NYCDEP) has set external noise exposure standards; these standards are shown in **Table 8-3**. Noise exposure is classified into four categories: acceptable, marginally acceptable, marginally unacceptable, and clearly unacceptable.

Table 8-3
Noise Exposure Guidelines
For Use in City Environmental Impact Review[1]

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
1. Outdoor area requiring serenity and quiet[2]		$L_{10} \leq 55$ dBA	---------- Ldn ≤ 60 dBA ----------		---------- 60 < Ldn ≤ 65 dBA ----------		(1) 65 < Ldn ≤ 70 dBA, (II) 70 ≤ Ldn		---------- Ldn ≤ 75 dBA ----------
2. Hospital, Nursing Home		$L_{10} \leq 55$ dBA		55 < $L_{10} \leq$ 65 dBA		65 < $L_{10} \leq$ 80 dBA		$L_{10} > 80$ dBA	
3. Residence, residential hotel or motel	7 AM to 10 PM	$L_{10} \leq 65$ dBA		65 < $L_{10} \leq$ 70 dBA		70 < $L_{10} \leq$ 80 dBA		$L_{10} > 80$ dBA	
	10 PM to 7 AM	$L_{10} \leq 55$ dBA		55 < $L_{10} \leq$ 70 dBA		70 < $L_{10} \leq$ 80 dBA		$L_{10} > 80$ dBA	
4. School, museum, library, court, house of worship, transient hotel or motel, public meeting room, auditorium, out-patient public health facility		Same as Residential Day (7 AM-10 PM)		Same as Residential Day (7 AM-10 PM)		Same as Residential Day (7 AM-10 PM)		Same as Residential Day (7 AM-10 PM)	
5. Commercial or office		Same as Residential Day (7 AM-10 PM)		Same as Residential Day (7 AM-10 PM)		Same as Residential Day (7 AM-10 PM)		Same as Residential Day (7 AM-10 PM)	
6. 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;
[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 old-age homes.
[3] One may use the FAA-approved L_{dn} contours supplied by the Port Authority, or the noise contours may be computed from the federally approved INM Computer Model using flight data supplied by the Port Authority of New York and New Jersey.
[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 New York City Zoning Resolution, 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).

NEW YORK CEQR NOISE CRITERIA

The *CEQR Technical Manual (January 2012 Edition)*, defines attenuation requirements for buildings based on exterior noise level (see **Table 8-4**). Recommended noise attenuation values for buildings are designed to maintain interior noise levels or 45 dBA or lower for academic uses and are determined based on exterior $L_{10(1)}$ noise levels.

Table 8-4
Required Attenuation Values to Achieve Acceptable Interior Noise Levels

	Marginally Unacceptable				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 dB(A)	(II) 31 dB(A)	(III) 33 dB(A)	(IV) 35 dB(A)	$36 + (L_{10} - 80)$[B] dB(A)

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

In addition, the *CEQR Technical Manual* uses the following criteria to determine whether a proposed project would result in a significant adverse noise impact. The impact assessments compare the proposed project's Build condition $L_{eq(1)}$ noise levels to those calculated for the No Build condition, for receptors potentially affected by the project.

If the No Build levels are less than 60 dBA $L_{eq(1)}$ and the analysis period is not a nighttime period, the threshold for a significant impact would be an increase of at least 5 dBA $L_{eq(1)}$. 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 standards as being between 10 PM and 7 AM), the incremental significant impact threshold would be 3 dBA $L_{eq(1)}$. (If the No Build noise level is 61 dBA $L_{eq(1)}$, the maximum incremental increase would be 4 dBA, since an increase higher than this would result in a noise level higher than the 65 dBA $L_{eq(1)}$ threshold.)

IMPACT DEFINITION

For purposes of impact assessment, this report will utilize a relative noise impact criteria which considers project-related increases in $L_{eq(1)}$ noise levels over future conditions without the project of greater than 5.0 dBA as significant impacts. The 5.0 dBA relative criterion is consistent with increases in noise levels that the public considers noticeable and likely to result in complaints. The $L_{eq(1)}$ descriptor is used in this document to quantify and describe both playground and traffic noise.

D. EXISTING NOISE LEVELS

Existing noise levels were measured on June 5, 2012 for 20-minute periods during the two weekday peak periods – School Arrival (7:00 – 8:30 AM), and Afternoon (2:00 – 3:30 PM) at three at-grade receptor sites (i.e., Receptor Sites 1 through 3) adjacent to the project site. The measured sound levels at Receptor Sites 1 through 3 were used to determine CEQR building attenuation requirements, and sites 1 and 3 were also used to determine baseline noise levels for the school playground analysis. Site 1 was located on Stockholm Street between Seneca Avenue and Cypress Avenue, Site 2 was located on Seneca Avenue between Stockholm Street and

DeKalb Avenue, and Site 3 was located on DeKalb Avenue between Seneca Avenue and Cypress Avenue (see **Figure 8-1**).

Measurements were performed using a Brüel & Kjær Sound Level Meter (SLM) Type 2260, a Brüel & Kjær ½ inch microphone Type 4189, and a Brüel & Kjær Sound Level Calibrator Type 4231. The Brüel & Kjær SLM is a Type 1 instrument according to ANSI Standard S1.4-1983 (R2006). The SLM has a laboratory calibration date within one year of the date of the measurements. The microphone was mounted on a tripod at a height of approximately 5 feet above the ground and was mounted away from any large reflecting surfaces that could affect the sound level measurements. The SLM was calibrated before and after readings with a Brüel & Kjær Type 4231 Sound Level Calibrator using the appropriate adaptor. Measurements at each location were made on the A-scale (dBA). The data were digitally recorded by the SLM and displayed at the end of the measurement period in units of dBA. Measured quantities included L_{eq}, L_1, L_{10}, L_{50}, and L_{90}. A windscreen was used during all sound measurements except for calibration. 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 8-5**.

Table 8-5
Existing Noise Levels at Sites 1 through 3 (dBA)

Site	Measurement Location	Time		L_{eq}	L_1	L_{10}	L_{50}	L_{90}
1	Stockholm between Seneca and Cypress	Weekday	Arrival	61.5	70.8	65.0	58.7	55.0
			Afternoon	60.1	68.5	63.2	57.9	53.8
2	Seneca between Stockholm and DeKalb	Weekday	Arrival	65.0	73.7	68.5	61.7	56.8
			Afternoon	65.1	74.0	69.0	60.6	53.6
3	DeKalb between Seneca and Cypress	Weekday	Arrival	69.7	81.4	72.7	64.8	56.9
			Afternoon	70.4	81.5	73.0	64.0	56.3
Notes: Field measurements were performed by AKRF, Inc. on June 5, 2012.								

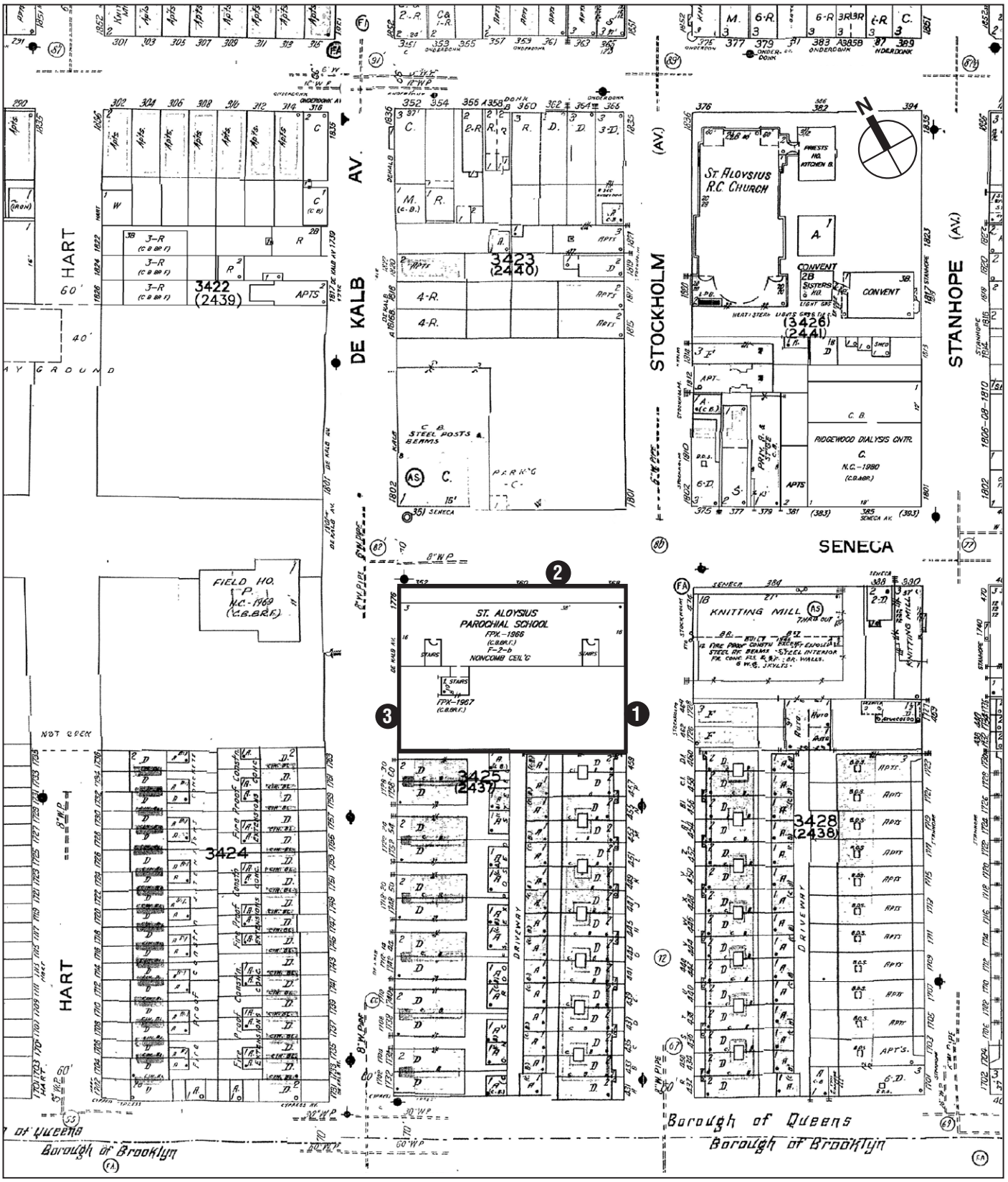
At all Receptor Sites vehicular traffic noise on adjacent roadways was the dominant noise source, although air traffic also contributed to noise levels at the receptor sites. Measured noise levels were moderate to relatively high and reflect the level of vehicular activity on the adjacent streets. In terms of the CEQR criteria, the existing noise levels at Site 1 would be in the "acceptable" category, the existing noise levels at Site 2 would be in the "marginally acceptable" category, and existing noise levels at Site 3 would be in the "marginally unacceptable" category.

E. NOISE FROM THE SCHOOL PLAYGROUND

Table 8-6 shows the maximum hourly playground boundary noise levels for various types of schools. These values are based upon measurements made at a series of New York City school playgrounds for the New York City School Construction Authority (SCA).[1]

[1] SCA Playground Noise Study, AKRF, Inc., October 23, 1992.

8.8.12



Project Site Boundary

1 *Noise Receptor Location*

0 100 200 FEET

SCALE

Noise Receptor Locations

Figure 8-1

Table 8-6
Maximum Hourly Playground Boundary $L_{eq(1)}$ Noise Levels (dBA)

School Type	$L_{eq(1)}$ At Playground Boundary
Early Childhood Center	71.5
Elementary School	71.4
Intermediate School	71.0
High School	68.2

Sources: SCA Playground Noise Study, AKRF, Inc., October 23, 1992.

Since the proposed school will include Early Childhood Center and Elementary School playgrounds, the maximum level of 71.5 dBA was assumed at the boundary of the proposed playground.

Geometric spreading and the consequent dissipation of sound energy with increasing distance from the playground decreases noise levels at varying distances from the playground boundary. Based upon measurements and acoustical principles, hourly noise levels were assumed to decrease by the following values at the specified distances from the playground boundary: 4.8 dBA at 20 feet, 6.8 dBA at 30 feet, and 9.1 dBA at 40 feet. For all distances between 40 and 300 feet, a 4.5-dBA drop-off per doubling of distances from the playground boundary was assumed.

The proposed playground is expected to be located on the southern portion of the project site between DeKalb Avenue and Stockholm Street and extend to the southern property line. **Table 8-7** shows the results combining the projected playground noise levels with the measured existing levels at noise receptor locations adjacent to the proposed playground.

Table 8-7
Noise Levels due to the School Playground (dBA)

Analysis Location	Time	Existing L_{eq}	Approximate Distance (feet)	Playground L_{eq} at Receptor	Combined L_{eq}	Predicted L_{10}[2]	Change
378 Seneca Avenue	Arrival	61.5	53	61.0	64.3	67.1	2.8
	Afternoon	60.1		61.0	63.6	66.4	3.5
1763 DeKalb Ave	Arrival	69.7	83	58.0	70.0	72.8	0.3
	Afternoon	70.4		58.0	70.6	73.4	0.2
1760 DeKalb Ave	Arrival	61.0	10	69.1	69.7	72.5	8.7
	Afternoon	61.7		69.1	69.8	72.6	8.1
459 Stockholm	Arrival	57.7	6	70.1	70.3	73.1	12.6
	Afternoon	58.4		70.1	70.3	73.1	11.9

Notes: [1] Playground L_{eq} is at the boundary. The proposed school would include early childhood and primary school.
[2] Predicted L_{10} is calculated based on SCA Playground Noise Study, AKRF, Inc., October 23, 1992.

With the proposed site plan, the change in noise levels at the school at 378 Seneca Avenue and residences at 1763 DeKalb Avenue during those portions of the school day when the playground is in use would not exceed SCA's 5 dBA impact threshold.

With the proposed site plan, the change in noise levels at the residence at 1760 DeKalb Avenue would range from 8.1 dBA to 8.7 dBA during those portions of the school day when the playground is being used. These noise level increases would constitute a readily noticeable increase and would be considered significant under SCA criteria.

With the proposed site plan, the change in noise levels at the residence at 459 Stockholm Street would range from 11.9 dBA to 12.6 dBA during those portions of the school day when the playground is being used. These noise level increases would constitute a perceived doubling of loudness and would be considered significant under SCA criteria.

The significant noise level increases predicted to occur at 1760 DeKalb Avenue and 459 Stockholm Street during the hours that the proposed playground is being used are primarily a result of the very low existing noise levels at these locations. The resultant noise levels at these properties during the hours that the proposed playground is being used would be expected to be in the low 70s of dBA. While these levels do constitute significant increases in noise level, they are moderate for locations in New York City near heavily trafficked roadways. Furthermore, the times when these elevated noise levels occur would be limited to the daytime hours when the playground is in use on school days, and would not occur during the night-time hours when people are generally sleeping and most sensitive to noise.

The proposed project would nonetheless result in significant adverse noise impacts at 1760 DeKalb Avenue and 459 Stockholm Street. Possible mitigation measures are described in Chapter 14, "Mitigation."

F. NOISE ATTENUATION MEASURES

As shown in **Table 8-4**, the New York City *CEQR Technical Manual* has set noise attenuation quantities for buildings based on exterior $L_{10(1)}$ noise levels in order to maintain interior noise levels of 45 dBA or lower for academic uses. The proposed layout includes a south façade facing the playground area, and therefore may require additional attenuation to account for playground related noise. Noise levels at façades facing the proposed playground were calculated using the above SCA playground analysis.

The results of the building attenuation analysis are summarized in **Table 8-8**.

Table 8-8
CEQR Building Attenuation Requirements with Scheme A

Façade	Maximum Predicted L_{10} (in dBA)	Attenuation Required (in dBA)
North (facing Seneca Avenue)	69.0	N/A[1]
East (facing Stockholm Street)	65.0	N/A[1]
South (facing the play yard)	74.7[2]	31
West (DeKalb Avenue)	73.0	28

Note: [1] "NA" indicates that the maximum measured L_{10} is below 70 dBA. The *CEQR Technical Manual* does not address noise levels this low, therefore there is no minimum attenuation guidance.
[2] Adjusted to account for playground use using the above described methodology.

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. Normally, a building façade consists of wall, glazing, and any vents or louvers associated with the building mechanical systems (HVAC) in various ratios of area. The design for the proposed school building would include the use of well sealed double-glazed windows for all façades and central air conditioning units (a means of alternate ventilation). The proposed building's façades, including these

elements, would be designed to provide a composite Outdoor-Indoor Transmission Class (OITC) rating greater than or equal to the attenuation requirements. The OITC classification is defined by the American Society of Testing and Materials (ASTM E1332-90 [Reapproved 2003]) and provides a single-number rating that is used for designing a building façade including walls, doors, glazing, and combinations thereof. The OITC rating is designed to evaluate building elements by their ability to reduce the overall loudness of ground and air transportation noise. By adhering to these design requirements, the proposed school building will thus provide sufficient attenuation to achieve the CEQR interior noise level guideline of 45 dBA L_{10} for classroom uses.

Based upon the $L_{10(1)}$ values at the project site (shown in **Table 8-8**), designing the proposed project based on the measures outlined above would provide sufficient attenuation to achieve the CEQR interior noise level requirements.

In addition, the proposed school's mechanical systems (i.e., heating, ventilation, and air conditioning systems) would be designed to meet all applicable noise regulations (i.e., Subchapter 5, §24-227 of the New York City Noise Control Code and Section 926 of the New York City Department of Buildings Mechanical Code) and to avoid producing levels that would result in any significant increases in ambient noise levels, and was therefore not analyzed. ✷

A. INTRODUCTION

This chapter considers the proposed project's potential effects on infrastructure. The 2012 *City Environmental Quality Review (CEQR) Technical Manual* outlines the following guidelines for assessments of infrastructure, solid waste, and energy:

- *Water Supply*. A preliminary analysis of a project's impact on the New York City water supply system should be conducted only for actions that would have exceptionally large demand for water, such as power plants, very large cooling systems, or large developments (e.g., those that use more than 1 million gallons per day [mgd]). In addition, actions located at the extremities of the water distribution system should be analyzed (such as the Rockaway Peninsula and Coney Island). If a project does not meet any of these thresholds, no further analysis of water supply is needed.
- *Wastewater Conveyance and Treatment*. Because the City is committed to adequately treating all wastewater generated in the City and to maintaining its wastewater treatment plants at or below the capacity permitted by applicable state and federal permits, orders, and decrees, in combined sewer areas, generally only projects with very large flows (e.g., 400 residential units or 150,000 sf of commercial and/or community facility space or more in Queens) could have the potential for significant impacts on sewage treatment and should be analyzed.
- *Stormwater Management.* An assessment of stormwater is appropriate for projects that result in certain industrial activities; projects that greatly increase the amount of impervious area on a site; projects that would be served by a separate storm system, projects located in partially sewered or unsewered areas; and projects that involve construction of a new stormwater outfall.
- *Solid Waste.* According to the *CEQR Technical Manual*, a solid waste and sanitation services assessment should be conducted if a project would generate solid waste or enacts regulatory changes affecting the management of the City's waste, or if the action involves the construction, operation, or closing of any type of solid waste management facility. The manual also states that projects with a generation rate of less than 100,000 pounds per week are not considered large and do not warrant detailed analysis.
- *Energy.* According to the *CEQR Technical Manual*, because all new structures requiring heating and cooling are subject to the *New York State Energy Conservation Code*, which reflects State and City energy policy, actions resulting in new construction would not create significant energy impacts, and as such do not require a detailed energy assessment. For CEQR purposes, energy impact analysis focuses on an action's consumption of energy.

This chapter discloses the proposed project's water demands and wastewater generation, but as described below, the proposed project would not exceed any of the CEQR thresholds requiring a preliminary assessment of water supply and wastewater and stormwater conveyance and treatment. The proposed project would not have an exceptionally large incremental demand for

water or requirement for wastewater and stormwater conveyance and treatment when compared with the future without the proposed project, and therefore the proposed project would not result in any significant adverse impacts on infrastructure. Similarly, the proposed project would not result in any significant increases in solid waste or energy consumption compared to the existing capacity of the city's solid waste disposal system or energy grid. However, this chapter discloses the proposed project's estimated solid waste generation and energy consumption.

B. EXISTING CONDITIONS

WATER SUPPLY

New York City's water supply system is composed of three watersheds—Croton, Delaware, and Catskill—and extends as far north as the Catskill Mountains. From these watersheds, water is carried to the City via a conveyance system made up of reservoirs, aqueducts, and tunnels. Within the City, a network of underground water pipes distributes water to customers. On average, the New York City water system delivers approximately 1.2 billion gallons per day (bgd) to the five boroughs and Westchester County.The Delaware and Catskill water systems collect water from watershed areas in the Catskill Mountains and deliver it to the Hillview Reservoir in Yonkers. From there, water is delivered to the City through three tunnels, Tunnel Nos. 1, 2, and 3. Tunnel No. 1 carries water through the Bronx and Manhattan to Brooklyn; Tunnel No. 2 travels through the Bronx, Queens, Brooklyn, and then through the Richmond Tunnel to Staten Island; and Tunnel No. 3 (Stage 1) goes through the Bronx and Manhattan, terminating in Queens. Stage 2 of Tunnel No. 2 is under construction in Queens, Brooklyn, and Manhattan.

The project site has readily available access to both domestic water and fire service. As described in Chapter 1, "Project Description," the project site is currently occupied by a former parochial school building that is now occasionally used for parish activities. Therefore, the project site currently generates a negligible demand on the local water supply system.

WASTEWATER CONVEYANCE AND TREATMENT

New York City's sewer system consists of a grid of sewers beneath the streets that send wastewater flows to 14 different plants, known as "waste water treatment plants," or "WWTPs." The areas served by each of these plants are called "drainage basins." Most of this system is a "combined" sewer system, meaning that it carries both sanitary sewage from buildings and stormwater collected in catch basins and storm drains. However, some areas of the City, primarily in Queens and Staten Island, operate with separate systems for sanitary sewage and stormwater. In addition, small areas of Staten Island, Brooklyn, and Queens use septic systems to dispose of sanitary sewage.

The City maintains a "drainage plan" for the proper sewer and drainage in the City that describes the location, course size and grade of each sewer and drain for sewerage districts as well as the size and location of stormwater and wastewater conveyance and treatment facilities within these districts.

Sewers beneath the City's streets collect sewage from buildings as well as stormwater from buildings and catch basins in streets. Collection sewers can be ten inches to two feet in diameter on side streets, and larger in diameter under other roadways. They connect to trunk sewers, generally five to seven feet in diameter, which bring the sewage to interceptor sewers. These large interceptor sewers (often 11 or 12 feet in diameter) bring the wastewater collected from the various smaller mains to the WWTPs for treatment.

New York City's WWTPs treat some 1.2 billion gallons of sewage per day.

The project site is located in the service area of the Newtown Creek WWTP. The Newtown Creek WWTP discharges treated wastewater flows, or "effluent," into the East River. Effluent discharged from the Newtown Creek WPCP, like each of the City's WWTPs, is regulated by through a State Pollutant Discharge Elimination System (SPDES) permit issued by the New York State Department of Environmental Conservation (NYSDEC). The SPDES permit limit for flow at the Newtown Creek WWTP is 310 mgd.

For the conveyance of sanitary sewage, the project site is currently served by combined sewers. Combined sewers carry only sanitary sewage during dry weather and convey all sewage to the WWTP. During rain storms and other precipitation events, the combined sewer carries both sanitary sewage and stormwater runoff. The volume of water during a storm (i.e. large volumes of rainfall runoff) is too great for the WWTP to handle. Therefore, the maximum amount of water that the WWTP can handle is sent to the plant, and the excess mixture of sanitary sewage and runoff is discharged into a receiving water body. As the project site is currently occupied by an underutilized building, it generates an insignificant amount of sanitary sewage.

Based on a review of available New York City Department of Environmental Protection (DEP) sewer system drawings, the project site is mainly served by 12-inch collector mains, which flow to trunk sewers and then to interceptors and finally to the Newtown Creek WWTP.

STORMWATER MANAGEMENT

On undeveloped sites, rainfall is normally absorbed into the ground through permeable surfaces. In urban settings, however, where permeable surfaces are less common, it typically flows across land toward low points—most often, water bodies or storm sewers. Stormwater generally enters the combined sewer system and gets treated at one of the City's WWTPs. Stormwater runoff from the project site normally gets treated at the Newtown Creek WWTP. However, during storm events, a mixture of stormwater and sanitary sewage entering, or already in, the combined sewers discharges untreated through combined sewer outfalls into a waterbody (e.g. the East River). This untreated overflow is known as combined sewer overflow (CSO). The City is under a state order to reduce its combined sewer overflows into all waterways. The CSO discharges into the river through combined sewer outfalls which are located along the waterfront.

SOLID WASTE

In New York City, solid waste from commercial and manufacturing uses is collected by private carters, while residential and institutional refuse is collected by the New York City Department of Sanitation (DSNY). Commercial solid waste is typically hauled to out-of-city landfills. Residential waste was formerly disposed of at Fresh Kills Landfill, which stopped receiving solid waste as of March 22, 2001. DSNY now collects solid waste, delivers it to transfer stations, and from there private carters take it to facilities generally located in Virginia, Ohio, and Pennsylvania. The municipal waste system handles approximately 16,500 tons per day, of which approximately 5,000 tons are recycled. Private carters handle approximately 14,830 tons per week of recyclables and solid waste. The City's solid waste management services are undertaken in accordance with the existing Solid Waste Management Plan (SWMP) (September 2006). Currently, the project site is occupied by an underutilized building and generates a negligible amount of solid waste.

ENERGY

Con Edison delivers electricity to all of New York City (except the Rockaway area in Queens) and almost all of Westchester County. The electricity is generated by Con Edison, as well as a number of independent power companies. In 2009 (the latest year for which data are available), annual electricity usage totaled approximately 57 billion kilowatt hours (KWH), or 194 trillion British Thermal Units (BTUs), in Con Edison's delivery area. In addition, Con Edison supplied approximately 125 trillion BTUs of natural gas and approximately 23 billion pounds of steam, which is equivalent to approximately 27 trillion BTUs. Overall, approximately 346 trillion BTUs of energy are consumed within Con Edison's New York City and Westchester County service area.[1] As the project site is occupied by and underutilized building, it consumes a negligible amount of energy. Utility lines are available near the site.

C. THE FUTURE WITHOUT THE PROPOSED PROJECT

As described in Chapter 1, "Project Description," in the future without the proposed project the project site is expected to remain unchanged. Therefore, the water demand and sanitary sewage generated on the project site will remain the same as in existing conditions. In addition, stormwater discharge from the project site is expected to remain the same as in existing conditions. No changes to the storm sewer system serving the project site would be required.

Similarly, in the future without the proposed project, the project site would not generate solid waste or demand for energy services.

D. PROBABLE IMPACTS OF THE PROPOSED PROJECT

The proposed project would introduce a new approximately 472-seat primary school facility to the project site. The proposed school use would place new demands on the City's infrastructure and solid waste and energy services. This section discusses the approximate total future demand on water supply, and wastewater and stormwater treatment and conveyance, and solid waste and energy services that would be created by the proposed project. It then compares the proposed project's demand on infrastructure, solid waste, and energy services to the demand that would result from existing uses that would remain on the project site in the future without the proposed project.

WATER SUPPLY

As shown in **Table 9-1**, the proposed project would generate a total demand for 15,928 gallons per day (gpd) of water.

Table 9-1
Proposed School's Estimated Water Demand

Use	Size	Domestic demand (gpd)[1]	Air Conditioning (gpd)	Total (gpd)
Primary School	65,930 sf	4,720	11,208	15,928

Notes: 1. gpd = gallons per day
Source: 2012 *CEQR Technical Manual*, Table 13-2, "Water Usage and Sewage Generation Rates for Use in Impact Assessment."

[1] Con Edison of New York, *Annual Report, 2009*.

Compared with the future without the proposed project, the proposed project would create an incremental demand for 15,928 gpd. Overall, the proposed school's incremental demand for water would represent an insignificant increase in the total demand in Queens, and would not overburden the City's water supply system. The proposed project would also comply with the City's water conservation measures as mandated by Local Law 19. Therefore, the proposed project would not result in a significant adverse impact on the water supply system's ability to adequately deliver water to Queens or New York City.

WASTEWATER CONVEYANCE AND TREATMENT

The proposed development is assumed to generate wastewater at a rate commensurate with domestic water consumption, or about 4,720 gpd. This amount of wastewater would not place such a demand on the Newtown Creek WWTP that it would exceed its design capacity or SPDES permit flow limit. Therefore, the proposed project would not result in a significant adverse impact on wastewater conveyance and treatment.

STORMWATER MANAGEMENT

As described in Chapter 1, "Project Description," the majority of the project site would be occupied by the proposed school building or paved. Since conditions on the project site would remain the same in the future without the proposed project, the proposed project would not increase the amount of impervious surface on the project site. The proposed project would utilize roof detention and new detention tanks to comply with current DEP regulations. Stormwater runoff would be stored on site and discharged into the City's sewer system at a rate permitted by DEP. Therefore, there would be no significant adverse impacts on stormwater conveyance or treatment.

SOLID WASTE

Using a solid waste generation rate of 3 pounds per week per student, based on the solid waste generation rate for public elementary schools provided in the *CEQR Technical Manual*, the proposed school would be expected to generate approximately 1,416 pounds of solid waste per week during the school year. To comply with the City's recycling plan, which is mandated by the SWMP, the proposed school would be required to accommodate the source separation of recyclable materials. The proposed school's disposable wastes and recyclable materials would be collected by DSNY. The total waste generated would be negligible compared with the 16,500 tons per day currently handled by DSNY. Therefore, the proposed project would not have a significant effect on New York City's solid waste disposal system and would be consistent with the SWMP.

ENERGY

Based on the rate provided in the *CEQR Technical Manual* for an institutional use, the proposed school is expected to result in annual energy use of 16,529 million BTUs over the future without the proposed project. The electrical demand generated by the proposed project would be minimal and would require no special appurtenances. Con Edison would be able to meet this demand. ✷

Chapter 10: Soil and Groundwater Conditions

A. INTRODUCTION

This chapter addresses environmental conditions at the project site. A Phase I Environmental Site Assessment (ESA) of the project site was completed by Langan Engineering and Environmental Services, P.C. (Langan) on behalf of the New York City School Construction Authority (SCA) in February 2011. The main objective of the Phase I ESA was to identify the presence or likely presence, use, or release of hazardous substances or petroleum products, which are defined in American Society for Testing and Materials (ASTM) Standard Practice E 1527-05 as recognized environmental conditions (RECs). In addition, other environmental issues or conditions such as radon, asbestos-containing materials (ACM), lead-based paint (LBP), and polychlorinated biphenyl (PCB)-containing equipment were evaluated. The Phase I ESA included a site inspection, a review of the existing data on geology and hydrology of the area, and a review of historical maps, federal, state, and local agency records, and other documents to assess past and current uses of the project site and adjacent areas.

The Phase I ESA identified on-site RECs related to a 10,000-gallon fuel oil underground storage tank (UST) with a closed, leaking tank incident, and suspect buried structures and construction debris associated with a former on-site building. Off-site RECs include open and closed spill cases at adjoining and surrounding properties; historical clothing manufacturing, knitting mills, and transit company facilities with repair operations at adjoining and surrounding properties; and petroleum bulk storage at surrounding properties. The Phase I ESA also revealed environmental concerns associated with suspect ACM, LBP, and suspect PCB-containing light ballasts and caulking material.

A Phase II Environmental Site Investigation (ESI) was completed by TRC Engineers, Inc. (TRC) on behalf of the SCA in July 2012 to assess the RECs identified in the Phase I ESA.

B. EXISTING CONDITIONS

The project site is located at 360 Seneca Avenue (Block 3425, Lot 7) in the Ridgewood section of Queens. The project site encompasses an area of approximately 29,000 square feet, and is improved by a two-story building (with basement) with a building footprint of approximately 11,200 square feet, as well as a fenced-in asphalt paved area. The project site was formerly occupied by the St. Aloysius Parochial School until 2011 and is now occasionally used for parish activities. Prior to construction of the parochial school building in 1966, the site was primarily undeveloped, with the exception of a one-story building containing a store on the northwest corner of the property that was constructed between 1936 and 1950.

A Phase II ESI was conducted to determine whether the RECs identified in the Phase I ESA have affected the suitability of the project site for construction of a public school facility. The investigation included a geophysical survey and the completion of eight (8) soil borings, two (2) sub-slab soil vapor sampling points and one (1) soil vapor sampling point. Three (3) soil vapor samples and eight (8) soil samples were collected for laboratory analysis.

In general, fill material consisting of brown sand, silts with fine gravel and red brick was encountered in the soil borings to a depth of approximately 4 feet below the top of the basement slab (btos) at the borings advanced in the basement of the building or 15 feet below ground surface (bgs) at the borings advanced in the paved area. Below 15 feet bgs, native material consisting of sand with gravel was encountered to 20 feet bgs. Refusal was encountered in seven of the soil borings at depths ranging between 3 and 4 feet btos at the borings advanced in the building and between 13 and 20 feet bgs at the borings advanced in the paved area. During the Phase II ESI, groundwater was not encountered at the project site between grade surface and the maximum boring depth of 20 feet bgs. Based on a review of published information, the depth to water is estimated to be approximately 70 to 75 feet bgs. Based on regional and local topography, the hydraulic gradient is expected to be westerly.

The results of the geophysical survey confirmed the presence of the 10,000-gallon UST beneath the paved area on the project site. The geophysical survey identified minor anomalies consistent with utilities lines (sewer, water, and telecommunication lines) in the paved area. There was no evidence of utilities or subsurface structures, which would interfere with the boring locations identified during the geophysical survey.

Discrete soil samples selected for laboratory analysis from five (5) soil borings and were analyzed for New York State Department of Environmental Conservation (NYSDEC) Commissioner Policy 51 (CP-51) Table 3 and Target Compound List (TCL) listed volatile organic compounds (VOCs); CP-51/TCL listed semi-volatile organic compounds (SVOCs); and Target Analyte List (TAL) metals (less Al, Ca, Fe, K, Mg, and Na). Discrete soil samples collected from the remaining three (3) soil borings advanced in the parking lot in the vicinity of the UST were analyzed for TCL/NYSDEC CP-51 Table 3 listed VOCs and SVOCs only. Additionally, in support of pre-design waste classification objectives, the soil samples from four (4) soil borings selected at random were analyzed for TCL pesticides, polychlorinated biphenyls (PCBs), hexavalent chromium, cyanide, and total petroleum hydrocarbons—diesel and gasoline range organics (TPH-DRO/GRO). The three (3) soil vapor samples were analyzed for 26 select VOCs by EPA Method TO-15.

No visual or olfactory indications of contamination were observed in any of the soil samples collected. Additionally, no elevated photoionization detector (PID) readings were detected during field screening of the soil. The results of the analyses of soil samples revealed that SVOCs were detected in one soil sample above Unrestricted Use Soil Cleanup Objectives (SCOs) and/or NYSDEC CP-51 Soil Cleanup Levels (SCLs). TRC attributed the detected SVOC concentrations exceeding the regulatory criteria to the characteristics of fill material at the project site since there was no evidence of contamination observed in the soil samples collected from this soil boring. No VOCs, metals, PCBs or pesticides were detected in the soil samples at concentrations above Unrestricted Use SCOs and/or CP-51 SCLs.

The results of the analyses of the soil vapor samples indicate that 15 of the 26 petroleum and chlorinated solvent compounds analyzed for were detected in one (1) or more samples. The specific compounds detected in soil vapor above comparison levels were not detected at concentrations exceeding their respective regulatory standards in soil samples collected at the site. Therefore, the compounds detected in soil vapor were attributed to an off-site source in the surrounding area. The New York State Department of Health (NYSDOH) has established Air Guideline Values (AGVs) for three of the VOCs analyzed: methylene chloride, tetrachloroethene (PCE), and trichloroethene (TCE). Methylene chloride, PCE, and TCE were not detected at concentrations above their corresponding AGVs in any of the soil vapor samples.

A comparison of contaminant concentrations to the Matrices in the NYSDOH Vapor Intrusion Guidance Document indicates that no further action or taking reasonable and practical actions to identify sources and reduce exposures is required, depending upon corresponding indoor air sample results.

C. THE FUTURE WITHOUT THE PROPOSED PROJECT

In the future without the proposed project, the project site is expected to remain in its current condition.

D. PROBABLE IMPACTS OF THE PROPOSED PROJECT

The proposed project would not result in impacts from contaminated media and building materials. As a preventative measure, a soil vapor barrier would be installed beneath the proposed school building. Any suspect ACM, LBP, and PCB-containing materials affected by the preparation of the project site for use as a public school would be identified prior to construction and properly managed during construction activities. The 10,000-gallon UST, access vault, all associated piping and petroleum-contaminated soil (if any) would be excavated, decommissioned, and/or disposed of in accordance with all federal, state, and local regulations, and the NYSDEC Petroleum Bulk Storage (PBS) registration would be updated to reflect the closed status of the tank. All soil excavated during building construction would be properly managed in accordance with all applicable local, State and Federal regulations. For areas of the project site where exposed soil may exist after building construction (i.e., landscaped areas), a two-foot thick layer of environmentally clean fill would be placed over the soil in these areas. In addition, to minimize the potential for exposure by construction workers and the surrounding public, standard industry practices, including appropriate health and safety measures, would be utilized. ✷

Chapter 11: Greenhouse Gas Emissions

A. INTRODUCTION

This chapter addresses the sources of greenhouse gas (GHG) emissions associated with the proposed school and measures that would be implemented to limit those emissions. There is general consensus in the scientific community that the global climate is changing as a result of increased concentrations of GHGs in the atmosphere. GHGs are those gaseous constituents of the atmosphere, from both natural and anthropogenic (i.e., resulting from the influence of human beings) emission sources, 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 *City Environmental Quality Review (CEQR) Technical Manual,* climate change could 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, the City has established sustainability initiatives and goals for both greatly reducing GHG emissions and adapting to climate change in the City. The goal to reduce citywide GHG emissions to 30 percent below 2005 levels by 2030, and to reduce city government emissions to 30 percent below fiscal year 2006 levels by 2017 was codified by Local Law 22 of 2008, known as the New York City Climate Protection Act (the "GHG reduction goal").[1] Per the *CEQR Technical Manual,* the GHG reduction goal is currently the most appropriate standard by which to analyze a project under CEQR. As a city capital project subject to environmental review, the proposed school requires an assessment of consistency with the City's GHG reduction goals.

As discussed in the following sections, vehicle use associated with the proposed school, operation of the natural gas heating and hot water systems, use of grid electricity, construction activities, production of materials used in the construction of the school building, and generation of waste would result in GHG emissions. With the sustainable design elements that would be included as part of the project, energy efficiency would be maximized, and GHG emissions would be reduced to the extent practicable. Therefore, the proposed school would be consistent with the City's GHG reduction goals.

B. POLICY, REGULATIONS, STANDARDS, AND BENCHMARKS FOR REDUCING GHG EMISSIONS

Countries around the world have undertaken efforts to reduce emissions by implementing both global and local measures that address energy consumption and production, land use, and other sectors. 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

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

lower than 2005 levels by 2050 (pending legislation) via the Copenhagen Accord.[1] Without legislation focused on this goal, the U.S. Environmental Protection Agency (USEPA) is required to regulate GHGs under the Clean Air Act (CAA), and has already begun issuing regulations. The U.S. Department of Transportation (USDOT) and USEPA have established GHG emissions standards for vehicles that will reduce vehicular GHG emissions over time.

There are also regional, state, and local efforts to reduce GHG emissions. In 2009, Governor Paterson issued Executive Order No. 24, establishing a goal of reducing GHG emissions in New York 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]).

New York State also has regulations to cap and reduce carbon dioxide (CO_2) emissions from power plants, as part of the commitment to the Regional Greenhouse Gas Initiative (RGGI), a multistate agreement to reduce the amount of CO_2 from power plants.

Many local governments worldwide, including New York City, are participating in the Cities for Climate Protection 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 and identifies specific initiatives that can result in emission reductions and initiatives targeted at adaptation to climate change impacts. As mentioned, the PlaNYC 2030 goal to reduce citywide GHG emissions to 30 percent below 2005 levels by 2030 was codified by Local Law 22 of 2008. Projects that require a GHG assessment under CEQR are evaluated with this goal as the benchmark.

A number of benchmarks for energy efficiency and green building design have also been developed. For example, the 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 systems, office equipment, lighting, home electronics, and building envelopes.

New York City Local Law 86 of 2005 (LL 86/05) requires certain City capital projects to achieve the United States Green Building Council's (USGBC) Leadership in Energy and Environmental Design (LEED) standards, reduce building energy costs, and reduce potable water use. The LEED system is a benchmark for the design, construction, and operation of high performance green buildings that includes energy efficiency components.

Of particular relevance to the proposed school is the NYC Green Schools Guide and rating system, created by the New York City School Construction Authority (SCA) and the New York City Department of Education (DOE), to guide the sustainable design, construction and operation of new schools, modernization projects and school renovations and to achieve compliance with LL 86/05. The NYC Green Schools Rating System is based on the LEED rating system with enhancements beyond LEED. The enhancements are based on best practices for schools adopted from the Collaborative for High Performing Schools (CHPS) rating systems developed by the states of

[1] Todd Stern, U.S. Special Envoy for Climate Change, letter to Mr. Yvo de Boer, UNFCCC, January 28, 2010.

[2] http://www.nyclimatechange.us/

Washington, Massachusetts and New York and also on SCA best practices. Based on careful analysis and conclusions of an independent review of the NYC Green Schools Guide, the Director of the Office of Environmental Coordination, on behalf of the Mayor, found that the requirements of the NYC Green Schools Rating System are no less stringent than the requirements for achieving a LEED Certified rating. The proposed school design will follow the Green School Guide to meet and exceed the requirements of LL 86/05, furthering the GHG reduction goal.

C. METHODOLOGY

Although the contribution of any single project to climate change is infinitesimal, the combined GHG emissions from all human activity are believed to have a severe adverse impact on 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 the measures that would be implemented to limit the emissions as well as measures that are under consideration.

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

POLLUTANTS OF CONCERN

GHGs are those gaseous constituents of the atmosphere, both natural and anthropogenic, that 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."

The *CEQR Technical Manual* lists six GHGs that could potentially be included in the scope of an environmental impact statement: carbon dioxide (CO_2), nitrous oxide (N_2O), methane, Hydrofluorocarbons (HFCs), Perfluorocarbons (PFCs), and Sulfur Hexafluoride (SF_6). This analysis focuses mostly on CO_2, N_2O, and methane. There are no significant direct or indirect sources of HFCs, PFCs, or SF_6 associated with the proposed project.

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, or metal production; from 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 result in a relatively high impact on global climate change compared

with 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.

To present a complete inventory of all GHGs, component emissions are added together and presented as 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 GHGs discussed here are presented in **Table 11-1**.

Table 11-1
Global Warming Potential (GWP) for Major GHGs

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: IPCC, Climate Change 1995—Second Assessment Report.	

BUILDING OPERATIONAL EMISSIONS

Emissions from electricity and on-site fossil fuel use were calculated using the "carbon intensity factor" provided in the *CEQR Technical Manual* (Table 18-3) for institutional uses (11.42 kg CO_2e/sq ft) and the proposed project floor area of 65,930 gross square feet (gsf). The energy savings that would be achieved through the various sustainability measures that would be implemented (discussed below) are not accounted for in the GHG emissions calculated, as the potential effectiveness of the specific energy efficiency improvements has not yet been determined.

MOBILE SOURCE EMISSIONS

The number of annual vehicle trips by mode (cars, taxis, and school buses) that would be generated by the proposed project was calculated using the transportation planning assumptions developed for the analysis presented in Chapter 6, "Transportation." The assumptions used in the calculation include average daily person trips and delivery trips, the percentage of vehicle trips by mode, and the average vehicle occupancy. Travel distances shown in Table 18-4 of the *CEQR Technical Manual* were used in the calculations of annual vehicle miles traveled by cars. An average one-way taxi trip distance of 7.88 miles was used. This distance, provided in Table 18-5 of the *CEQR Technical Manual*, is based on regional modeling for taxi trips that do not have Manhattan as the trip origin or destination. Table 18-6 of the *CEQR Technical Manual* was used to determine the percentage of vehicle miles traveled by road type and the mobile GHG emissions calculator was used to obtain an estimate of car, taxi, and school bus GHG emissions attributable to the proposed project in 2015, the analysis year. In addition, 4 school buses would drop off and pick up students from school each school day. The annual GHG emissions of 8.13

metric tons of CO_2e per bus were estimated using information from the PlaNYC GHG inventory.[1]

The EPA estimates that the well-to-pump GHG emissions of gasoline and diesel are approximately 22 percent of the tailpipe emissions.[2] 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, as per the *CEQR Technical Manual* guidance the well-to-pump emissions are not considered in the analysis for the proposed project. 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 vehicle miles traveled, which form the basis for the GHG emissions calculations from mobile sources, are presented in **Table 11-2**.

Table 11-2
Annual Vehicle Miles Traveled

Vehicle	VMT
Car	140,476
Taxi	457
Total	**140,933**

CONSTRUCTION EMISSIONS

GHG emissions from construction include both direct emissions, such as emissions from construction equipment and delivery trucks, and emissions embedded in the production of materials, such as emissions from the production of steel, rebar, aluminum, and cement used for construction. Emissions associated with construction have not been estimated explicitly for the proposed project, as the construction of the project and extraction and production of construction materials is not likely to be a significant portion of the GHG emissions associated with the project. Analyses for similar projects have shown that construction emissions are equivalent to the total emissions from project operation 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, following the guidance of the *CEQR Technical Manual*, the GHG emissions from solid waste generation, transportation, treatment, and disposal are not quantified.

D. GHG EMISSIONS WITH THE PROPOSED PROJECT

A summary of GHG emissions for the proposed project, by emission source type, is presented in **Table 11-3**.

[1] PlaNYC, Inventory of the New York City Greenhouse Gas Emissions, April 2007.

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

Table 11-3
Summary of Proposed Project's Annual GHG Emissions
2015 (metric tons CO_2e)

P.S. 320	Building Operations	Mobile	Total
GHG Emissions (metric tons CO_2e)	753	127	880

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. The proposed project would limit the emissions associated with electricity consumption and heating through energy-efficient design, and reduce emissions associated with transportation because of the available alternatives to driving.

E. STRATEGIES THAT WOULD REDUCE GHG EMISSIONS

As discussed, the proposed school would be built according to the New York City Green Schools Guide. Sustainable school design and operation provides many benefits, including conservation of energy, reduced operating costs, a healthy environment, and opportunity to teach environmental responsibility, to demonstrate commitment to sustainability, and reduce GHG emissions. To determine the consistency of a project with the City's overall GHG reduction goal, the project is evaluated in terms of pursuit of energy efficient buildings, clan power, transit-oriented development and sustainable transportation, and use of sustainable construction materials and practices. While the design of the school is not yet final, preliminary designs include a number of components that would help minimize GHG emissions. These are listed below and discussed in the context of PlaNYC goals.

- Energy efficient building envelope and building orientation would reduce cooling and heating requirements.
- Interior daylighting would be maximized.
- Efficient, directed exterior lighting would be used.
- High albedo roofing materials would be used.
- High efficiency heating, hot water, cooling and emergency power systems would be installed.
- Superinsulation would be used to minimize heat loss.
- Motion sensors and lighting and climate controls would help conserve electricity and energy for heating and cooling.
- Efficient lighting and elevators would reduce electricity consumption.
- Third party building commissioning would be conducted to ensure energy performance.
- Natural gas, which is a less GHG intense fuel than oil would be used for heating and hot water systems.
- The project would be designed to support walking and bicycling, providing an alternative to personal vehicle use. Bicycle storage, showers, and changing rooms would be provided.
- Best practices would be employed to reduce construction emissions. As with all SCA projects, the construction of the proposed school would be subject to Local Law 77of 2003,

which requires the use of ultra low sulfur diesel and best available control technology by construction equipment. These measures would reduce particulate matter emissions; while particulate matter is not included in the list of standard greenhouse gasses ("Kyoto gases"), recent studies have shown that black carbon—a constituent of particulate matter—may play an important role in climate change.

- Building materials with recycled content would be used.
- Cement replacements would be used, as well as concrete with optimized cement content.
- Construction waste would be diverted from landfills through reuse and recycle strategies.
- The use of building materials that are extracted and/or manufactured within the region would be considered, as well as the use of rapidly renewable materials.

In addition, the proposed school would include water conserving fixtures and water efficient landscaping that exceed building code requirements and comply with the water conservation measures mandated by LL 86/05. Reducing potable water consumption reduces the energy needed for water delivery and wastewater treatment and thereby indirectly also reduces GHG emissions. Storage and collection of recyclables would be provided for in the building design, reducing GHG emissions associated with waste management.

Overall, the commitment to achieve high energy efficiency for the proposed school building and other measures incorporated in the proposed school would result in lower GHG emissions than would otherwise be generated by a similar project. Therefore, the proposed school would be consistent with the City's GHG emission reduction goal. ✷

A. INTRODUCTION

Construction activities, although temporary in nature, can sometimes result in significant adverse environmental impacts. This chapter summarizes the construction plan for the proposed project and assesses the potential for construction-period impacts. The stages of construction and their associated activities and equipment are described first, followed by the types of impacts likely to occur. The assessment also describes methods that may be employed to minimize construction-period impacts.

As described below, the analysis concludes that the proposed project would not result in extensive construction-related effects with respect to any of the analysis areas of concern. Therefore, no significant adverse impacts are expected to occur as a result of construction.

B. DESCRIPTION OF CONSTRUCTION ACTIVITIES

It is anticipated that construction of the proposed project would require a total of approximately 29 months to complete, although the major external construction activities are expected to be completed within less than 24 months. Based on current plans, construction would begin in 2013 and be completed in 2015. A breakdown of the anticipated construction program is shown below in **Table 12-1.**

Table 12-1
On-Site Construction Activities

Construction Activity	Months of Construction
Mobilization, Demolition, Clearing, Excavation and Foundation	6 Months
Superstructure and Exterior Work	9 Months
Interior Construction and Fit-out	12 Months
Exterior Finishing and Landscaping	3 Months
Note: Some overlap of construction activities is anticipated. **Source:** New York City School Construction Authority.	

Construction would begin with the fencing and screening of the site followed by demolition, excavation and grading. First any economically salvageable materials are removed. Then the building is deconstructed using large equipment. Typical demolition requires solid temporary walls around the building to prevent accidental dispersal of building materials into areas accessible to the general public. As the building is being deconstructed, bulldozers and front-end loaders would be used to load materials into dump trucks. The demolition debris would be sorted prior to being disposed at landfills to maximize recycling opportunities.

Existing trees and stumps would be removed by arborists using chainsaws and tree stump grinders. Soil would be excavated from the project site and removed by truck to a licensed landfill or recycling facility. If soil containing petroleum or other contaminated materials is discovered during excavation activities, it would be segregated and disposed of in accordance

with all applicable Federal, State, and local regulations and guidelines. Additionally, all material that needs to be removed from the site would be disposed of in accordance with applicable requirements. Piles would be driven, as necessary, to support the building, and pile caps would be formed and concrete poured to build the foundations for the building.

Next, the project's structural frame and exterior façade would be erected. Construction of the exterior enclosure, or "shell" of the building would include construction of the building's framework (installation of beams and columns), floor decks, facade (exterior walls and cladding), and roof construction. In the final one to two years of construction, interior finishing would proceed, including electrical work, plumbing, wall and ceiling construction, painting, floorwork, and other finishing items along with the completion of the remaining exterior work, such as utility and façade work. During this time, most work would occur inside, and operation of heavy on-site equipment would be infrequent. As construction nears completion on the interior of the project, final site work would commence and would include construction of the outdoor courtyard and play areas and any landscaping.

The estimated average number of workers on site by phase would be: 40 workers for mobilization, demolition, excavation and foundation; 60 workers for superstructure and exterior work; 100 workers for interior construction and fit-out; and 40 workers for exterior finishing and landscaping.

Typical equipment used for demolition, site clearing, excavation, and foundation work would include excavators, bulldozers, backhoes, chainsaws and tree stump grinders (for tree removal), compaction equipment, tractors, jackhammers, and concrete pumping trucks. Other equipment that would be used include hoist complexes, dump trucks and loaders, concrete trucks, and back hoes. Trucks would deliver concrete and other building materials, and remove excavated material as well as demolition and construction debris. The construction equipment likely to be used during erection of the superstructure would include compressors, cranes, derricks, hoists, bending jigs, and welding machines. During facade and roof construction, hoists may continue to be used. Trucks would remain in use for material supply and construction waste removal. Interior and finishing work would employ a large number of construction workers, and a wide variety of fixtures and supplies would have to be delivered to the site.

The majority of construction activities would take place Monday through Friday, although if necessary, the delivery or installation of certain equipment could occur on weekend days. Hours of construction are regulated by the New York City Department of Buildings (DOB) and apply in all areas of the City. These requirements are reflected in the collective bargaining agreements with major construction trade unions. In accordance with those regulations, almost all work could occur between 7 AM and 6 PM on weekdays, although some workers would arrive and begin to prepare work areas before 7 AM. Occasionally, Saturday or overtime hours would be required to complete time-sensitive tasks. Weekend work requires a permit from the DOB and, in certain instances, approval of a noise mitigation plan from the New York City Department of Environmental Protection (NYCDEP) under the City's Noise Code. The New York City Noise Control Code, as amended in December 2005 and effective July 1, 2007, limits construction (absent special circumstances as described below) to weekdays between the hours of 7 AM and 6 PM, and sets noise limits for certain specific pieces of construction equipment. Construction activities occurring after hours (weekdays between 6 PM and 7 AM and on weekends) may be permitted only to accommodate: (1) emergency conditions, (2) public safety, (3) construction projects by or on behalf of City agencies, (4) construction activities with minimal noise impacts, and (5) undue hardship resulting from unique site characteristics, unforeseen conditions,

scheduling conflicts and/or financial considerations. In such cases, the numbers of workers and pieces of equipment in operation would be limited to those needed to complete the particular authorized task. Therefore, the level of activity for any weekend work would be less than a normal workday. The typical weekend workday would be on Saturday, beginning with worker arrival and site preparation at 7 AM, and ending with site cleanup at 5 PM. Movement of certain oversized materials, to comply with the requirements of the New York City Department of Transportation (NYCDOT), would occur at night.

Much of the proposed project's construction staging would occur within the project site, thereby limiting any effects on surrounding roadways and pedestrian elements. However, certain construction activities may require the temporary closing, narrowing, or otherwise impeding of the streets and sidewalks adjacent to the site.

C. PROBABLE IMPACTS DURING CONSTRUCTION

As with most development in New York City, construction of the proposed project may be disruptive to the surrounding area for limited periods of time throughout the construction period. The following analyses describe the proposed project's temporary effects on transportation systems, air quality, noise, historic resources, hazardous materials, land use and neighborhood character, socioeconomic conditions, community facilities, open space, and infrastructure, as well as the economic benefits associated with the construction.

TRANSPORTATION

As described in the *CEQR Technical Manual*, construction activities may affect several elements of the transportation system, including traffic, transit, pedestrians, and parking. A transportation analysis of construction activities is predicated upon the duration, intensity, complexity and/or location of construction activity.

As described above, most of the proposed project's construction staging would occur within the project site, thereby limiting any effects on surrounding roadways and pedestrian elements. However, certain construction activities may require the temporary closing, narrowing, or otherwise impeding of the street and or/the sidewalks adjacent to the project site. To manage the access and egress of vehicles to and from the project site—specifically, construction-related deliveries—flaggers are expected to be used during construction to control the access and movement of trucks. These potentially affected locations adjacent to the project site are not along areas of high vehicular or pedestrian activity; however, there is a possibility that the B38 bus route which operates on Seneca Avenue and DeKalb Avenue could temporarily be relocated due to construction-related activities. In such an event, adequate access to transit service would be maintained through coordination with NYCDOT and NYCT.

Construction-related closures are anticipated to be the type of routine closure typically addressed by a permit and pedestrian access plan required by NYCDOT's Office of Construction Mitigation and Coordination (OCMC) at the time of closure(s). The SCA would develop a Work Zone Traffic Control Plan (WZTCP) and consult with DOT's OCMC to ensure that access is maintained to nearby residences, businesses and the existing P.S. 305 which is located across the proposed project site on Seneca Avenue between Stanhope Street and Stockholm Street at all times. Furthermore, to ensure that safe vehicular and pedestrian access is provided during the hours of operation of school activities, SCA would coordinate construction activities with P.S. 305 on an on-going basis. For pedestrian control purposes, "flaggers" will be employed at intersections adjacent to the construction zone to provide guidance to pedestrians and to alert or

slow down the traffic. This will ensure that students are provided a safe path to walk to-and-from P.S. 305, away from construction vehicles and equipment. Given that the typical construction peak hours would occur outside of the commuting peak hours, it is anticipated that any temporary traffic disruptions in the surrounding area would not be substantial.

Throughout the construction process, construction workers would travel to and from the site by personal vehicle, bus, and subway. Given that construction worker commuting trips generally occur during off-peak hours, and that there would not be a substantial number of construction workers at the project site on any given day, the construction worker trips are not expected to result in significant adverse impacts to the area's traffic operations, parking supply and utilization, bus loading, or subway station conditions. Therefore, the proposed project's construction activities are not expected to result in significant adverse transportation impacts.

AIR QUALITY AND NOISE

Air quality and noise impacts can be generated by construction vehicles and delivery vehicles traveling to and from a site, as well as by stationary equipment used for on-site construction activities. According to the *CEQR Technical Manual*, an assessment of air quality or noise impacts from construction vehicles is warranted only when quantified transportation analysis is needed for construction activities. As described above, the proposed project's construction activities are not anticipated to result in extended impacts to any transportation systems requiring quantified analysis, and therefore, an assessment of air quality or noise impacts from construction vehicles is not warranted.

With regard to the air quality and noise impacts of other construction activities (such as demolition, rock drilling, and pile driving), the *CEQR Technical Manual* suggests that potential impacts should be analyzed only when construction activities would affect a sensitive receptor over a long period of time. The project site is immediately adjacent to residences, including 1760 DeKalb Avenue and 459 Stockholm Street and directly across the street from P.S. 305. Construction duration as defined by the *CEQR Technical Manual* is broken down into short-term (less than two years) and long-term (two or more years). As described above, the proposed project's major external construction activities, which generate the greatest potential for air quality and noise impacts, would be short-term in nature (lasting less than two years). Since the proposed project would not cause noisy and/or diesel-powered construction equipment to be operating within 1,500 feet of a receptor for a period of time exceeding two years, significant adverse noise impacts are not anticipated, and quantified analyses are not warranted. With respect to air quality, as discussed below, construction-related emissions would be minimized as a result of a number of measures, and quantified analysis is not warranted under New York City Environmental Quality Review (CEQR) requirements. The following sections qualitatively discuss the likely effects of on-site construction activities on air quality and noise, and describe measures to minimize construction-period impacts.

STATIONARY SOURCE AIR QUALITY IMPACTS

Most construction engines are diesel-powered, and have the potential to emit sulfur oxides (SO_2), nitrogen oxides (NO_X) and particulate matter ($PM_{2.5}$ and PM_{10}). Construction activities also generate fugitive dust.

Technologies have been developed to substantially reduce SO_2 and PM emissions. These include ultra low-sulfur diesel fuel (ULSD), diesel particulate filters (DPFs), and cleaner engines (Tier 2 or better). These technologies have become more readily available in New York City as they are required for large, ongoing public projects. The construction activities for the proposed school

will be subject to New York City Local Law 77, which would require the use of best available technology (BAT) for equipment at that time of construction.[1] Based on estimates calculated for construction of other projects, the diesel particulate emission reduction measures can reduce PM emissions by more than 93 percent, on average, as compared with construction emissions without such controls.

Furthermore, as early in the construction period as practicable, diesel-powered equipment would be replaced with electrical-powered equipment, such as electric scissor lifts and electric articulating forklifts (i.e., early electrification). SCA would employ best available technologies and utilize ultra low-sulfur diesel fuel for construction equipment and vehicles, following the requirements for New York City sponsored projects.

All necessary measures would be implemented to ensure that the New York City Air Pollution Control Code regulating construction-related dust emissions is followed. Appropriate fugitive dust control measures would be employed and would include:

- watering off trucks and excavation equipment prior to exiting the site;
- watering the areas surrounding the site (sidewalks, streets, etc.) at the end of every work day;
- watering truck routes within the site as needed or, in cases where a route would remain in the same place for an extended duration, stabilizing, covering with gravel, or temporarily paving the route to avoid the resuspension of dust;
- equipping all trucks hauling loose material with tight fitting tailgates and covering the load prior to leaving the site;
- the use of closed chutes leading to covered bins for material drops during demolition;
- enforcement of an on-site vehicular speed limit of 5 mph;
- the use of water sprays for all excavation, demolition, and transfer of spoils to ensure that materials are dampened as necessary to avoid the suspension of dust into the air; and
- watering or covering loose materials, or stabilizing them with a biodegradable suppressing agent.

To reduce the resulting concentration increments at sensitive receptors, large emissions sources and activities, such as concrete trucks and pumps, would be located away from sensitive receptors to the extent practicable. Additional measures would be taken in accordance with applicable laws, regulations, and building codes. These include the restriction of vehicle idle time to one minute for all vehicles not using the engine to operate a loading, unloading, or processing device (e.g., concrete mixing trucks).

Under both New York State Environmental Quality Review Act (SEQRA) and New York City Environmental Quality Review (CEQR) requirements, the determination of the significance of impacts is based on an assessment of the predicted intensity, duration, geographic extent, and the

[1] New York City Administrative Code § 24-163.3, adopted December 22, 2003, also known as Local Law 77, requires that any diesel-powered non-road engine with a power output of 50 hp or greater that is owned by, operated by or on behalf of, or leased by a city agency shall be powered by ultra low sulfur diesel fuel (ULSD), and utilize the best available technology (BAT) for reducing the emission of pollutants, primarily particulate matter and secondarily nitrogen oxides. NYCDEP is charged with defining and periodically updating the definition of BAT.

number of people who would be affected by the predicted impacts. Guidelines for assessing potential impacts from NO_X, CO, and $PM_{2.5}$ are discussed in Chapter 7, "Air Quality." While it is possible that the construction activities may exceed certain thresholds used for assessing the potential for significant adverse air quality impacts, any exceedance would be limited in extent, duration, and severity. Based on the limited duration of these potential exceedances of threshold values, there would be no potential for significant adverse impacts from construction activities.

STATIONARY SOURCE NOISE IMPACTS

Noise and vibration levels at a given location are dependent on the kind and number of pieces of construction equipment being operated, the acoustical utilization factor of the equipment (i.e., the percentage of time a piece of equipment is operating), the distance from the construction site, and any shielding effects (from structures such as buildings, walls, or barriers). Noise levels caused by construction activities would vary widely, depending on the phase of construction and the location of the construction relative to receptor locations.

A wide variety of measures can be used to minimize construction noise and reduce potential noise impacts. A noise mitigation plan is required as part of the New York City Noise Control Code, and would include:

- Source controls;
- Path controls; and
- Receptor controls.

In terms of source controls (i.e., reducing noise levels at the source or during most sensitive time periods), the following measures for construction would be implemented:

- The contractors would use equipment that meets the sound level standards for equipment (specified in Subchapter 5 of the New York City Noise Control Code) from the start of construction activities and use a wide range of equipment, including construction trucks that produce lower noise levels than typical construction equipment.
- Where feasible, the project sponsors would use construction procedures and equipment (such as generators, concrete trucks, delivery trucks, and trailers) that are quieter than that required by the New York City Noise Control Code.
- As early in the construction period as practicable, diesel-powered equipment would be replaced with electrical-powered equipment, such as electric scissor lifts and electric articulating forklifts (i.e., early electrification).
- All contractors and subcontractors would be required to properly maintain their equipment and have quality mufflers installed.

In terms of path controls (e.g., placement of equipment and implementation of barriers between equipment and sensitive receptors), the following measures for construction would be implemented:

- Perimeter noise barriers would be constructed that satisfy New York City Noise Control Code requirements.
- To the extent feasible, noisy equipment, such as generators, cranes, trailers, concrete pumps, concrete trucks, and dump trucks, would be located away from and shielded from sensitive receptor locations.

For impact determination purposes, significant adverse noise impacts are based on whether maximum predicted incremental noise levels at sensitive receptor locations off-site would be greater than the impact criteria suggested in the *CEQR Technical Manual* for two consecutive years or more. The impact criteria are explained in detail in Chapter 8, "Noise." While increases exceeding the CEQR impact criteria for two years or less may be noisy and intrusive, they are not considered to be significant adverse noise impacts. The residential and institutional buildings in the immediate vicinity of the project site generally contain double-glazed windows and/or alternative ventilation (i.e., air conditioning), which would greatly reduce interior noise levels compared with exterior noise levels and may result in interior noise levels of 45 dBA or less. In addition, except under special circumstances night work is not expected, and any exceedences of the CEQR criteria at sensitive locations would occur during day. Therefore, no long-term, significant adverse noise impacts are expected from construction activities.

HISTORIC AND CULTURAL RESOURCES

There are no known architectural resources—properties listed on, or determined eligible for listing on, the State and National Registers of Historic Places (S/NR), National Historic Landmarks, New York City Landmarks and Historic Districts (NYCL), or properties pending such designation—on or within 90 feet of the project site. Therefore, no adverse construction-related impacts on architectural resources are expected as a result of the proposed project.

As described in Chapter 3, "Historic and Cultural Resources," the disturbance memorandum prepared for the project site concludes the site has no sensitivity for archaeological resources dating to either the precontact or historic periods. The disturbance memorandum was submitted to the New York State Office of Parks, Recreation, and Historic Preservation (OPRHP) for review and comment on July 27, 2012. Therefore, construction of the proposed project is not expected to adversely affect archaeological resources.

SOIL AND GROUNDWATER CONDITIONS

Chapter 10, "Soil and Groundwater Conditions," describes the findings of the Phase I Environmental Site Assessment (ESA) and the Phase II Environmental Site Investigation (ESI) that were conducted for the project site.

Demolition and excavation activities could disturb hazardous materials and increase pathways for human exposure. The SCA and/or its contractors would develop management plans (e.g., soil management plan, groundwater management plan, construction health and safety plan, etc.) to address any hazardous materials that may be encountered during construction of the school. The management plans prepared or reviewed by SCA would include measures to protect the health and safety of construction workers, school staff and students, and the public in general during construction and at the time of occupancy. Specific measures that would be implemented to avoid impacts are as follows:

- The 10,000-gallon UST, access vault, all associated piping and petroleum-contaminated soil (if any) would be excavated, decommissioned, and/or disposed of in accordance with all federal, state, and local regulations, and the New York State Department of Environmental Conservation Petroleum Bulk Storage registration would be updated to reflect the closed status of the tank.
- A comprehensive asbestos survey of the affected areas would be conducted prior to demolition. If materials prove to contain asbestos, they would be properly removed and

disposed of in accordance with all applicable regulations by a licensed asbestos abatement contractor.

- Any demolition activities with the potential to disturb lead-based paint would be performed in accordance with the applicable Occupational Safety and Health Administration regulation (OSHA 29 CFR 1926.62 - Lead Exposure in Construction).
- As a preventative measure, a soil vapor barrier would be installed beneath the proposed school building to prevent potential soil vapor intrusion into the building. For areas of the project site where exposed soils may exist after building construction (i.e., landscaped areas), a two-foot thick layer of environmentally clean fill would be placed over the soils.
- Any excavated soil requiring off-site disposal would be managed in accordance with applicable requirements, and, as necessary, tested in accordance with the requirements of the intended receiving facility. Transportation of all material leaving the site would be in accordance with applicable requirements covering licensing of haulers and trucks, placarding, truck routes, manifesting, etc.

In addition, to minimize the potential for construction workers' exposure, standard industry practices, including appropriate health and safety measures, will be utilized.

LAND USE AND NEIGHBORHOOD CHARACTER

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 site. There would also be noise, sometimes intrusive, from site clearing and building construction as well as trucks and other vehicles backing, loading, and unloading.

The area surrounding the project site is predominantly residential. There would be periods during which construction activities would be more obtrusive than what is typical in a residential area; however, those periods of time would be limited, and would not result in significant or long-term adverse impacts on the local land use patterns or character of the nearby area.

SOCIOECONOMIC CONDITIONS

The *CEQR Technical Manual* suggests that if a project entails construction of a long duration that could affect the access to and therefore viability of a number of businesses, and the failure of those businesses has the potential to affect neighborhood character, then a preliminary assessment for construction impacts on socioeconomic conditions should be conducted. The proposed project would not have such effects. As described above, construction-related street or sidewalk closures are anticipated to be the type of routine closure typically addressed by a permit and pedestrian access plan required by NYCDOT's OCMC at the time of closure(s). The proposed project's construction activities would not impede access to the commercial properties (the Ridgewood Dialysis Center or the Associated supermarket) located across Seneca Avenue from the project site, and therefore would not have any significant adverse impacts on socioeconomic conditions.

The proposed project's construction would create direct benefits resulting from expenditures on labor, materials, and services, as well as indirect benefits created by expenditures by material suppliers, construction workers, and other employees involved in the direct activity. Construction would also contribute to increased tax revenues for the City and State, including those from personal income taxes. Area businesses may also expect increased sales from construction worker spending (i.e., coffee, food, convenience products).

COMMUNITY FACILITIES AND SERVICES

According to the *CEQR Technical Manual*, a construction impact assessment should be conducted for any community facility that would be directly affected by construction (e.g., if construction would disrupt services provided at the facility or close the facility temporarily). Construction associated with the proposed project would not have the potential to disrupt services or temporarily close any community facility. As mentioned above, SCA would coordinate construction activities with P.S. 305 (located across Seneca Avenue from the project site) to ensure that safe vehicular and pedestrian access is provided to P.S. 305 during the hours of operation. Therefore, the proposed project's construction activities would not have direct effects on community facilities, and no further analysis is warranted.

OPEN SPACE

According to the *CEQR Technical Manual*, a construction impacts analysis for open space should be conducted if an open space resource would be used for an extended period of time for construction-related activities, such as construction staging, or if access to the open space would be impeded for an extended period during construction activities. The proposed project would not have such effects. The proposed project's construction activities would not require the use of public open space, nor would construction affect access to or from a public open space. Therefore, there would be no significant adverse impacts to open space resources from construction, and no further assessment is warranted.

INFRASTRUCTURE

Prior to the start of construction, all utilities that may be present on site and that may be affected by construction activities would be relocated in accordance with all applicable New York City regulations.

The proposed project would receive some combination of electric and gas service via extensions of the existing Con Edison distribution system. During the superstructure stage of construction, some sidewalk and on-street construction activities would be required to connect the proposed buildings to existing utility networks. This may require short-term sidewalk excavations ranging from approximately 50 to 150 feet in length. The construction activities that would be required to connect the proposed project to existing energy systems are part of Consolidated Edison's normal operations for providing services to new customers, and occur on a regular basis throughout the city. ✷

Chapter 13: Public Health

A. INTRODUCTION

The *City Environmental Quality Review (CEQR) Technical Manual* states that a public health assessment may not be necessary for many proposed actions, but a thorough consideration of health issues should be documented.

As detailed below, a screening assessment was performed to examine the proposed development's potential to significantly impact public health concerns related to its construction and operation. The initial screening assessment determined that a full assessment of the proposed development's potential impacts on public health is not necessary: the proposed project would not be expected to exceed accepted City, State, or Federal public health standards in the areas of air quality, construction, solid waste management practices, odors, and noise. Therefore, the proposed project would not result in significant adverse impacts on public health.

B. ANALYSIS

In determining whether a public health assessment is appropriate, the following has been considered:

- Whether increased vehicular traffic or emissions from stationary sources would result in significant air quality impacts—the potential for these impacts from the proposed project is examined in Chapter 7, "Air Quality." The results show that construction of the proposed project would not result in any potentially significant adverse air quality impacts from mobile sources. In addition, no stationary source air quality impacts would result from the proposed development's heating, ventilation, and air conditioning (HVAC) equipment. Finally, there would be no potential impacts on the proposed school from any stationary industrial sources.
- Whether there is an increased potential for exposure to contaminants in soil or dust during construction—the proposed project has this potential; however, the magnitude of the impact is not expected to be substantially different from that at most other urban sites. As noted in Chapter 10, "Soil and Groundwater Conditions," measures would be employed to avoid adverse impacts during excavation for the proposed development. A Health and Safety Plan would be implemented during all earthwork to ensure that any subsurface disturbance does not result in unnecessary or unacceptable hazards to the workers or those in the surrounding community. All appropriate federal, state, and local regulations and engineering controls would be closely followed to ensure that there would be no impacts from any potential contaminants (e.g., petroleum-contaminated soil and excess fill, including demolition debris) encountered before and during all construction activities. With implementation of all these measures, no significant adverse impacts related to hazardous materials are expected to occur.

- Whether the proposed project could result in solid waste management practices that could attract vermin and result in an increase in pest populations (e.g., rats, mice, cockroaches, and mosquitoes)—No solid waste management practices are proposed beyond those at most public school uses in the City. These practices would include all contemporary solid waste collection and containment practices and conformance with the laws of the New York City Board of Health.
- Whether new odor sources would be created—the proposed project would not result in new odor sources.
- Whether the proposed project would result in potentially significant adverse impacts on sensitive receptors from noise—as discussed in Chapter 8, "Noise," the proposed project would not generate sufficient traffic to have the potential to cause a significant noise impact. However, noise from the school playground would result in significant adverse impacts at two adjacent residences, 1760 DeKalb Avenue and 459 Stockholm Street. As discussed in Chapter 14, "Mitigation," the noise impacts could be mitigated through the installation of through-the-wall air conditioning units at 1760 DeKalb Avenue and window air conditioning units at 459 Stockholm Street. The maximum noise levels predicted by the noise analysis range from 72.5 to 73.1 dBA at the residences. Furthermore, these elevated noise levels would occur only during the daytime hours when the playground is in use and only on school days. Given the moderate level of the noise generated by the playground, and relative infrequence of its use, the proposed playground would not have the potential to result in a significant public health impact at the adjacent residences or any other nearby sensitive noise receptor locations.
- Overall, the proposed project would not result in significant adverse public health impacts related to air quality, hazardous materials, groundwater, or unusual solid waste management practices that could attract vermin or be a source of odors. Significant adverse noise impacts would be mitigated. In addition, the proposed project would not result in any exceedances of accepted federal, state, or local standards. For the reasons discussed above, a full assessment of the proposed project's potential impacts on public health is not necessary, and no significant adverse public health impacts are expected as a result of the proposed project. ✷

A. INTRODUCTION

The technical analyses presented in Chapters 2 through 13 examine the potential for significant adverse impacts resulting from the proposed school facility. Where significant adverse impacts have been identified, measures that would minimize or avoid them have been considered.

B. TRANSPORTATION

TRAFFIC

As discussed in Chapter 6, "Transportation," capacities at most of the approaches for the intersections bordering the project site would be sufficient to accommodate the traffic volume increases in the future. However, based on the CEQR impact criteria, the proposed project would result in significant adverse traffic impacts at the following two intersection approaches/lane groups during the peak hours analyzed:

- The northbound approach of Seneca Avenue and Stockholm Street during the weekday AM and PM peak hours; and
- The northbound approach of Cypress Avenue and Stockholm Street during the weekday AM peak hour.

The specific improvement measures proposed to mitigate the impacted intersections are summarized in **Table 14-1** and discussed in detail below:

Table 14-1
Recommended Mitigation Measures

Intersection	AM Peak Hour	PM Peak Hour
Seneca Avenue and Stockholm Street	Install All-Way stop control.	Install All-Way stop control.
Cypress Avenue and Stockholm Street	Install All-Way stop control.	Install All-Way stop control.

SENECA AVENUE AND STOCKHOLM STREET

The impact at the northbound approach during the weekday AM and PM peak hours could be mitigated by changing the operation from a Two-Way to an All-Way stop control at this intersection.

CYPRESS AVENUE AND STOCKHOLM STREET

The impact at the northbound approach during the weekday AM peak hour could be mitigated by changing the operation from a Two-Way to an All-Way stop control at this intersection.

As summarized in **Table 14-2**, with these measures in place, all of the impacted intersection approaches/lane groups would be fully mitigated.

Table 14-2
2015 No Build, Build and Mitigated Build Conditions
Traffic Level of Service Analysis

Intersection/ Approach	2015 No Build				2015 Build				2015 Mitigated Build			
	Lane Group	v/c Ratio	Delay (sec)	LOS	Lane Group	v/c Ratio	Delay (sec)	LOS	Lane Group	v/c Ratio	Delay (sec)	LOS
Weekday AM Peak Hour												
Seneca Avenue and Stockholm Street												
Eastbound	LT	0.02	8.1	A	LT	0.05	8.2	A	LT	-	9.8	A
Westbound	-	-	-	-	-	-	-	-	TR	-	10.5	B
Northbound	LTR	0.24	15.0+	C	LTR	0.78	80.2	F+	LTR	-	9.0	A
	Intersection		-	-	Intersection		-	-	Intersection		10.0-	A
Cypress Avenue and Stockholm Street												
Eastbound	LT	0.02	9.5	A	LT	0.02	9.8	A	LT	-	9.4	A
Westbound	-	-	-	-	-	-	-	-	TR	-	12.0	B
Northbound	LTR	0.48	34.0	D	LTR	0.55	41.1	E+	LTR	-	9.4	A
	Intersection		-	-	Intersection		-	-	Intersection		11.0	B
Weekday PM Peak Hour												
Seneca Avenue and Stockholm Street												
Eastbound	LT	0.01	7.7	A	LT	0.04	7.8	A	LT	-	10.2	B
Westbound	-	-	-	-	-	-	-	-	TR	-	9.0	A
Northbound	LTR	0.28	15.1	C	LTR	0.93	106.6	F+	LTR	-	8.9	A
	Intersection		-	-	Intersection		-	-	Intersection		9.5	A
Cypress Avenue and Stockholm Street												
Eastbound	LT	0.03	8.0	A	LT	0.03	8.2	A	LT	-	11.8	B
Westbound	-	-	-	-	-	-	-	-	TR	-	10.8	B
Northbound	LTR	0.35	16.9	C	LTR	0.37	18.0	C	LTR	-	9.8	A
	Intersection		-	-	Intersection		-	-	Intersection		11.0	B

Notes: L = Left Turn, T = Through, R = Right Turn, LOS = Level of Service
+ Denotes a significant adverse traffic impact

C. NOISE

As discussed in Chapter 8, "Noise," the noise generated from the proposed school's playground would result in significant adverse noise impacts at 1760 DeKalb Avenue and 459 Stockholm Street. With the proposed site plan, the change in noise levels at the residence at 1760 DeKalb Avenue would range from 8.1 dBA to 8.7 dBA during those portions of the school day when the playground is being used, and the change in noise levels at the residence at 459 Stockholm Street would range from 11.9 dBA to 12.6 dBA during those portions of the school day when the playground is being used. These noise level increases would be considered significant under New York City School Construction Authority (SCA) criteria.

The potential for significant adverse noise impacts at 1760 DeKalb Avenue could be fully mitigated if through-the-wall air conditioning units were provided for each living room or bedroom on the north façade of the building, for a total of approximately four to six air conditioning units. With the through-the-wall air conditioning and the existing double glazed windows, the northern façade of 1760 DeKalb Avenue would be expected to provide approximately 30 dBA of window/wall attenuation. This would result in a building façade capable of maintaining interior noise levels less than the CEQR interior $L_{10(1)}$ noise level guideline of 45 dBA for residential uses even when the playground is in use.

Since 459 Stockholm Street has very few windows facing the proposed playground, and the windows are double glazed, the potential for significant adverse noise impacts at 459 Stockholm Street could be fully mitigated if window air conditioning units were installed in each living room or bedroom on the north façade of the building, which would be approximately one to two

air conditioning units. With the window air conditioning, the very few existing double glazed windows, and the masonry wall, the northern façade of 459 Stockholm Street would be expected to provide approximately 30 dBA of window/wall attenuation. This would result in a building façade capable of maintaining interior noise levels less than the CEQR interior $L_{10(1)}$ noise level guideline of 45 dBA for residential uses even when the playground is in use. ✷

A. INTRODUCTION

This chapter considers three alternatives to the proposed project and evaluates whether these alternatives would minimize or avoid adverse impacts as compared to the proposed project.

This chapter considers a No Build Alternative to the proposed project, under which the proposed school facility would not be built, and the project site would remain unchanged from current conditions.

The chapter then discusses a second alternative, under which the New York City School Construction Authority (SCA) would continue the previous educational use and programming of the project site (Building Renovation Alternative). Under this alternative, the existing school building would be renovated to accommodate a new public primary school to serve Community School District (CSD) 24, with the capacity of approximately 250 seats. As with the previous use, the paved area at the rear of the existing building would contain a row of accessory parking at the southernmost edge of the site, accessed from DeKalb Avenue, and a playground area would be constructed in the area between the school building and the parking. This playground area would be smaller than the playground area provided with the proposed project.

The chapter also considers a third alternative, under which the proposed primary school facility would be built, but the outdoor playground areas would be set back from the southern property line to avoid the potential for any significant adverse noise impacts to adjacent residences (Reduced Playground Alternative). As a result of these setbacks, the playground area would be approximately 54 percent smaller than the playground area provided with the proposed project.

B. NO BUILD ALTERNATIVE

Under the No Build Alternative, the proposed school building would not be constructed. The project site would remain in its current state—occupied by an underutilized, former parochial school building fronting on Seneca Avenue and a paved area at the rear of the building. Like the proposed project, this alternative would not result in any significant adverse impacts with respect to land use, zoning and community character, historic and cultural resources, urban design and visual resources, shadows, transit, pedestrians, parking, air quality, infrastructure and energy, greenhouse gas emissions, soil and groundwater conditions, public health, or construction impacts.

Unlike the proposed project, with the No Build alternative there would be no potential to result in noise impacts from the playground areas and no additional traffic trips would be generated.

LAND USE, ZONING, PUBLIC POLICY, AND COMMUNITY CHARACTER

Under this alternative, no new school facility would be constructed, and the project site would remain in its current state. Like the proposed project, the No Build Alternative would not result

in significant adverse impacts to land use, zoning, public policy, or community character. However, unlike the proposed project, the No Build Alternative would not provide a much needed new school facility. The project site would remain underutilized, and there would be no increase in activity on the site that would result from the proposed project.

HISTORIC AND CULTURAL RESOURCES

Under this alternative, the project site would remain in its current state. Like the proposed project, the No Build Alternative would not result in any adverse impacts to known or potential architectural resources within the study area. Under this alternative, the site would not be disturbed; however, as described in Chapter 3, "Historic and Cultural Resources," the proposed project would not have significant adverse impacts on archaeological resources. Thus, neither the No Build Alternative nor the proposed project would result in significant adverse impacts on archaeological resources.

URBAN DESIGN AND VISUAL RESOURCES

The urban design and visual character of the study area would remain unchanged under the No Build Alternative. The project site would retain its existing appearance with an underutilized, two-story building and parking lot. As described in Chapter 4, "Urban Design and Visual Resources," the proposed project would not result in any significant adverse impacts to urban design and visual resources. Thus, neither the No Build Alternative nor the proposed project would result in any significant adverse impacts to urban design and visual resources.

SHADOWS

Under the No Build Alternative, there would be no new development on the project site and therefore there would be no changes to shadows cast from the site. As described in Chapter 5, "Shadows," the proposed project would not result in any significant adverse shadow impacts; thus, neither this alternative nor the proposed project would result in any significant adverse shadows impacts.

TRANSPORTATION

In the No Build Alternative, there would be no new students, staff, or teachers traveling to the site, and the significant adverse traffic impacts would not occur at the following:

- The northbound approach of Seneca Avenue and Stockholm Street during the weekday AM and PM peak hours; and
- The northbound approach of Cypress Avenue and Stockholm Street during the weekday AM peak hour.

However, as described in Chapter 14, "Mitigation," the traffic impacts with the proposed project could be mitigated by installing All-Way stop controls at these two intersections. Neither this alternative nor the No Build Alternative would result in any significant adverse transit, pedestrian, or parking impacts.

AIR QUALITY

The No Build Alternative would not result in any additional air pollutant emissions at the proposed site. There would also be no additional vehicle trips to and from the proposed site.

Therefore, like the proposed project, the No Build Alternative would not result in a significant adverse impact on air quality.

NOISE

With the No Build alternative, the increase in noise resulting from the proposed playground areas would not occur and there would be no significant adverse noise impacts. By comparison, the playground areas with the proposed project would have the potential to result in significant adverse noise impacts at two adjacent residences, 1760 DeKalb Avenue and 459 Stockholm Street. However, as discussed in Chapter 14, "Mitigation," the noise impacts could be mitigated through the installation of through-the-wall air conditioning units at 1760 DeKalb Avenue and window air conditioning units at 459 Stockholm Street.

INFRASTRUCTURE

As no new development would occur with the No Build alternative there would be no additional water or energy used at the site, or wastewater or solid waste generated at the site. Like the proposed project, the No Build Alternative would have no significant adverse infrastructure impacts.

SOIL AND GROUNDWATER CONDITIONS

With the No Build Alternative, no new development would take place on the project site. Like the proposed project, the No Build Alternative would have no significant adverse impacts with respect to soil and groundwater conditions.

GREENHOUSE GAS (GHG) EMISSIONS

As no new development would occur with the No Build alternative, there would be no GHG emissions from vehicle use associated with the proposed school, operation of the natural gas backup hot water boiler, use of grid electricity to supplement on-site renewable electricity production, generation of waste, construction activities, or use of construction materials whose production is GHG intensive. The No Build alternative would not generate GHG emissions and would therefore not have an effect on the City's GHG reduction goal. Like the proposed project, the No Build Alternative would have no significant adverse impacts with respect to GHG emissions.

CONSTRUCTION

The No Build Alternative would avoid the temporary construction impacts attributable to the proposed project. However, in addition to being relatively short-term, the construction effects of the proposed project would be addressed (e.g., through dust-control measures and adherence to noise regulations). The No Build Alternative would avoid the temporary increase in truck traffic and construction-related noise, but would not provide the much needed new school facility.

PUBLIC HEALTH

As no new development would occur with the No Build alternative, this alternative would not exceed accepted City, state, or federal public health standards in the areas of air quality, construction, solid waste management practices, odors, and noise. Like the proposed project, the No Build Alternative would not result in significant adverse impacts on public health.

C. BUILDING RENOVATION ALTERNATIVE

Under this alternative, the project site would accommodate a new public primary school organization; however, rather than constructing a new four-story, approximately 65,930-gross-square-foot (gsf) school building, the SCA would renovate the former parochial school building on the project site for new public school use. The project site is currently occupied by a two-story, approximately 33,500-sf former parochial school building fronting on Seneca Avenue. At the rear of the existing building there is a paved area which was formerly used as an accessory parking area as well as a schoolyard/recreational area for the parochial school. A row of parking was provided along the southernmost edge of the site, and vehicular access to the site was provided from DeKalb Avenue. The area between the building and the parking area was often used as a schoolyard/recreational area.

Under the Building Renovation Alternative, the existing school building would be renovated to accommodate a new public primary school to serve Community School District (CSD) 24, with the capacity of 250 seats. As with the previous use, the main school entrance would be located on Seneca Avenue, the paved area at the rear of the existing building would contain a row of accessory parking at the southernmost edge of the site, accessed from DeKalb Avenue, and a playground area would be constructed in the area between the school building and the parking. This playground area would be approximately 10,100 square feet (sf), or 16 percent smaller than the playground area provided with the proposed project.

With 250 seats, the Building Renovation Alternative would provide a little more than half the capacity of the proposed project, which would provide 472 seats. Under this alternative, the school building would contain 12 classrooms and two specialty instruction rooms, while the proposed project would contain 24 classrooms and three specialty instruction rooms. Unlike the proposed project, the existing building would not be able to accommodate the gymnatorium or kitchen facility, but would instead include a combined cafeteria/exercise room.

Overall, it is expected that this alternative would have similar impacts to the proposed project. As with the proposed project, the Building Renovation Alternative would not result in any significant adverse impacts with respect to land use, zoning and community character, historic and cultural resources, urban design and visual resources, shadows, transit, pedestrians, parking, air quality, infrastructure and energy, greenhouse gas emissions, soil and groundwater conditions, public health, or construction impacts.

Although the Building Renovation Alternative has a smaller capacity than the proposed project, this alternative would result in the same significant adverse traffic impacts as the proposed project. However, with the proposed mitigation measures, no significant adverse traffic impacts would occur as a result of the proposed project or the Building Renovation Alternative.

Unlike the proposed project, the Building Renovation Alternative would not result in a significant adverse noise impact at 1760 DeKalb Avenue. However, both the proposed project and the Building Renovation Alternative would result in a significant adverse noise impact at 459 Stockholm Street. As with the proposed project, this noise impact could be mitigated through the installation of window air conditioning units at 459 Stockholm Street.

LAND USE, ZONING, PUBLIC POLICY, AND COMMUNITY CHARACTER

Under this alternative, the existing two-story, approximately 33,500-sf school building would be renovated to accommodate a new public primary school with the capacity of 250 seats. Like the

proposed project, the Building Renovation Alternative would provide additional primary school seats in CSD 24. However, because the Building Renovation Alternative would utilize the existing building rather than construct a new school facility, the Building Renovation Alternative would provide a little more than half the capacity of the proposed project, which would provide 472 seats. The Building Renovation Alternative would continue the previous educational use on the project site and be compatible with surrounding residential and institutional uses. As with the proposed project, the Building Renovation Alternative would not result in significant adverse impacts to land use, zoning, public policy, or community character.

HISTORIC AND CULTURAL RESOURCES

Under the Building Renovation Alternative, the existing building would be renovated to accommodate a new 250-seat public primary school. As described in Chapter 3, "Historic and Cultural Resources," the existing building does not appear to meet the eligibility criteria for State and/or National Register listing. Therefore, like the proposed project, the Building Renovation Alternative would not result in any adverse impacts to known or potential architectural resources within the study area. Under this alternative, the site would not be disturbed; however, as described in Chapter 3, the proposed project is not expected to result in significant adverse impacts on archaeological resources. Thus, neither the Building Renovation Alternative nor the proposed project would result in significant adverse impacts on archaeological resources.

URBAN DESIGN AND VISUAL RESOURCES

With this alternative, the existing two-story, approximately 33,500-sf school building would be renovated to accommodate a new public primary school and the paved area at the rear of the existing building would contain a row of accessory parking at the southernmost edge of the site, accessed from DeKalb Avenue, and a playground area between the school building and the parking. As with the proposed project, the Building Renovation Alternative would be expected to positively affect the character of the project site and surrounding area by providing a new school use and playground area that would add pedestrian activity to the project site. The Building Renovation Alternative, like the proposed project, would add a compatible institutional use to a site that is currently underutilized, would enliven the streetscape, and be consistent with the height of the adjacent school building and compatible with the surrounding residential and commercial buildings. Therefore, like the proposed project, the Building Renovation Alternative would not result in any significant adverse urban design or visual resources impacts.

The Building Renovation Alternative would continue the previous educational use on the project site and be compatible with surrounding residential and institutional uses. As with the proposed project, the Building Renovation Alternative would not result in significant adverse impacts to land use, zoning, or community character.

SHADOWS

Under the Building Renovation Alternative, the existing two-story school building would be renovated and there would be no changes to shadows cast from the site. As described in Chapter 5, the proposed project would not result in any significant adverse shadow impacts; thus, neither this alternative nor the proposed project would result in any significant adverse shadows impacts.

TRANSPORTATION

As with the proposed project, the Building Renovation Alternative would have the potential to generate additional traffic trips. As the Building Renovation Alternative has a smaller capacity than the proposed project, this alternative would generate 53 percent of the trips that would be generated by the proposed project. Nevertheless, the Building Renovation Alternative would result in the same significant adverse traffic impacts as the proposed project. However, with the proposed mitigation measures, no significant adverse traffic impacts would occur as a result of the proposed project or this alternative.

AIR QUALITY

Neither the Building Renovation Alternative nor the proposed project would result in any significant adverse impacts on air quality. The maximum peak hour vehicle trips at any intersection would be lower with the Building Renovation Alternative than with the proposed project. Therefore, like the proposed project, this alternative would not result in carbon monoxide (CO) or particulate matter (PM) concentrations that would exceed applicable standards or thresholds. Like the proposed project, the school in the Building Renovation Alternative would rely on natural gas for heat and hot water systems and based on the *CEQR Technical Manual* screening analysis, described in Chapter 7, "Air Quality," it would not have the potential for a significant adverse impact.

NOISE

Both the proposed project and the Building Renovation Alternative would result in a significant adverse noise impact. Under the Building Renovation Alternative, there would be a row of accessory parking along the southern edge of the site, along with the driving lane for vehicles accessing the parking spaces, and the playground areas would be located between the parking and the school building. Under this alternative, the playground area may be located approximately 29 feet from the property line that abuts the residences at 1760 DeKalb Avenue and 459 Stockholm Street.[1] With this playground setback distance, no significant adverse impact would result at 1760 DeKalb Avenue. At 459 Stockholm Street, with this playground setback distance, the noise from the playground would still result in noise level increases of up to 6.8 dBA, which would exceed the SCA significant noise level increase criteria of 5 dBA. As with the proposed project, this noise impact could be mitigated through the installation of window air conditioning units at 459 Stockholm Street.

INFRASTRUCTURE

Like with the proposed project, the Building Renovation Alternative would increase demand for water, sanitation and solid-waste services. However, the increased demand would be minimal as compared to city-wide demand and would be met by existing infrastructure and utility systems. Like the proposed project, the Building Renovation Alternative would have no significant adverse infrastructure impacts.

[1] Assumes 19-foot-long parking spaces and a 10-foot-wide driving lane for vehicles accessing the parking spaces.

SOIL AND GROUNDWATER CONDITIONS

The building renovations and site improvements that would occur under the Building Renovation Alternative would be in accordance with applicable regulations. Therefore this alternative, like the proposed project, would not result in any significant adverse soil and groundwater impacts.

GREENHOUSE GAS (GHG) EMISSIONS

The Building Renovation Alternative would utilize the existing building rather than construct a new, larger school facility, and would provide a little more than half the capacity of the proposed project. Thus, GHG emissions from vehicle use associated with this alternative would be less than the emissions with the proposed project. The energy consumption for heating and electricity, and generation of waste, would also be lower with the Building Renovation Alternative, resulting in lower GHG emissions. With the Building Renovation Alternative, the existing building would be reused and the emissions associated with construction activities and use of construction materials would be avoided. As described in Chapter 11, "Greenhouse Gas Emissions," with the sustainable design elements that would be included as part of the design of the proposed school, the proposed project would be consistent with the City's GHG reduction goals. Under the Building Renovation Alternative it may not be possible to incorporate as many sustainable design elements as would be possible with construction of a new school building; however, it is expected that the Building Renovation Alternative, through beneficial reuse of an existing structure would be consistent with the City's GHG reduction goals.

CONSTRUCTION

Under the Building Renovation Alternative, the existing building would be renovated to accommodate an approximately 250-seat public primary school. The construction period would be shorter than required for the proposed project, extending approximately 18 months rather than the 29-month construction period required for the proposed project. However, with the proposed project, the construction effects would be relatively short-term—with the major external construction activities expected to be completed within less than 24 months—and the construction effects of the proposed project would be addressed (e.g., through dust-control measures and adherence to noise regulations). Therefore, neither the Building Renovation Alternative nor the proposed project would result in any significant adverse construction impacts.

PUBLIC HEALTH

The Building Renovation Alternative would not be expected to exceed accepted City, state, or federal public health standards in the areas of air quality, construction, solid waste management practices, odors, and noise. Like the proposed project, the Building Renovation Alternative would not result in significant adverse impacts on public health.

D. REDUCED PLAYGROUND ALTERNATIVE

Under this alternative, the proposed four-story, approximately 65,930- gsf building containing approximately 472 primary school seats would be constructed. The only change as compared to the proposed project would be the size and location of the playground areas. Under the Reduced Playground Alternative, the playground area would be set back from the southern property line

(see **Figure 15-1**). Specifically, the playground area would be set back by at least 22 feet from the property line where it abuts the residence at 1760 DeKalb Avenue, and would be set back by at least 44 feet from the property line where it abuts the residence at 459 Stockholm Street. These setbacks would be landscaped but would not include recreational space. As a result of these setbacks, the playground area would be approximately 5,533 sf, and approximately 54 percent smaller than the playground area provided with the proposed project.

Overall, it is expected that this alternative would have similar impacts to the proposed project. As with the proposed project, the Reduced Playground Alternative would not result in any significant adverse impacts with respect to land use, zoning and community character, historic and cultural resources, urban design and visual resources, shadows, transit, pedestrians, parking, air quality, infrastructure and energy, greenhouse gas emissions, soil and groundwater conditions, public health, or construction impacts.

As with the proposed project, the Reduced Playground Alternative would have the potential to generate additional traffic trips. However, with the proposed mitigation measures, no significant adverse traffic impacts would occur as a result of the proposed project or Reduced Playground Alternative.

Unlike the proposed project, the Reduced Playground Alternative would not have the potential to result in any significant adverse noise impacts. However, as noted above, the provision of the setbacks required to eliminate the potential for significant adverse noise impacts to the residences directly south of the project site would result in an overall playground area substantially reduced in size as compared with the proposed project.

LAND USE, ZONING AND COMMUNITY CHARACTER

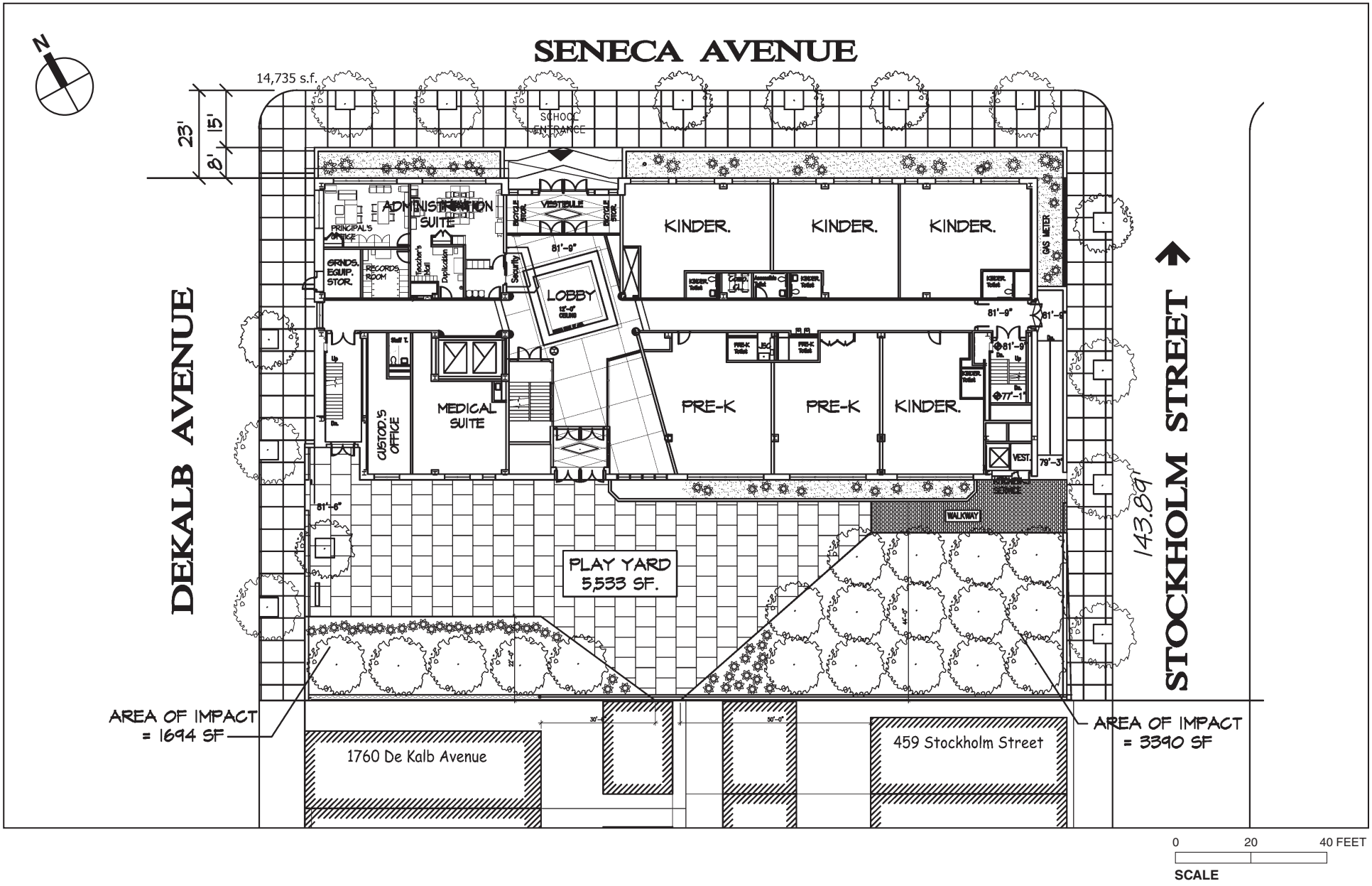
As with the proposed project, under the Reduced Playground Alternative a new four-story, approximately 65,930- gsf building containing approximately 472 primary school seats would be constructed. The only change as compared to the proposed project would be the size and location of the playground areas. Under this alternative, the playground area would be set back from the southern property line. As with the proposed project, The Reduced Playground Alternative would be compatible with surrounding residential and institutional uses. Neither the proposed project nor the Reduced Playground Alternative would result in significant adverse impacts to land use, zoning, or community character.

HISTORIC AND CULTURAL RESOURCES

The Reduced Playground Alternative would result in the same structure as the proposed project; the only change as compared with the proposed project would be the size and location of the playground areas. Like the proposed project, the Reduced Playground Alternative would not result in any adverse impacts to known or potential architectural resources within the study area. This alternative would result in similar ground disturbance as the proposed project; however, as described in Chapter 3, the proposed project is not expected to result in significant adverse impacts on archaeological resources. Thus, neither the Reduced Playground Alternative nor the proposed project would result in significant adverse impacts on archaeological resources.

URBAN DESIGN AND VISUAL RESOURCES

As described above, the Reduced Playground Alternative involves one notable difference in the site plan as compared to the proposed project—under this alternative, the playground area would be set



Reduced Playground Alternative - Conceptual Site Plan

Figure 15-1

back from the southern property line by at least 22 feet where it abuts the residence at 1760 DeKalb Avenue and by at least 44 feet where it abuts the residence at 459 Stockholm Street. These setbacks would be landscaped but would not include recreational space. With both the proposed project and the Reduced Playground Alternative, the new school building would be expected to positively affect the character of the project site or surrounding area by redeveloping it with a new school building and playground area that would add new pedestrian activity to the project site. Like the proposed project, the Reduced Playground Alternative would add a compatible institutional use to a site that is currently underutilized, would enliven the streetscape, and be consistent with the height of the adjacent school building and compatible with the surrounding residential and commercial buildings. Therefore, like the proposed project, the Reduced Playground Alternative would not result in any significant adverse urban design or visual resources impacts.

SHADOWS

As noted above, the Reduced Playground Alternative would result in the same structure as the proposed project; the only change as compared to the proposed project would be the size and location of the playground areas. As described in Chapter 5, the proposed project would not result in any significant adverse shadow impacts; thus, neither this alternative nor the proposed project would result in any significant adverse shadows impacts.

TRANSPORTATION

As with the proposed project, the Reduced Playground Alternative would have the potential to generate additional traffic trips. However, with the proposed mitigation measures, no significant adverse traffic impacts would occur as a result of the proposed project or Reduced Playground Alternative.

AIR QUALITY

The Reduced Playground Alternative would result in the same structure as the proposed project; the only change as compared to the proposed project would be the size and location of the playground areas. Neither the Reduced Playground Alternative nor the proposed project would result in any significant adverse impacts on air quality. The Reduced Playground Alternative and the proposed project would have the same maximum peak hour vehicle trips. Therefore, like the proposed project, this alternative would not result in carbon monoxide (CO) or particulate matter (PM) concentrations that would exceed applicable standards or thresholds. As with the proposed project, Reduced Playground Alternative would not have the potential for a significant adverse air quality impacts from the proposed school's heating and hot water systems.

NOISE

Unlike the proposed project, the Reduced Playground Alternative would not have the potential to result in any significant adverse noise impacts. As described above, with the Reduced Playground Alternative, the playground area would be set back by at least 22 feet from the property line where it abuts the residence at 1760 DeKalb Avenue, and by at least 44 feet from the property line where it abuts the residence at 459 Stockholm Street. These setbacks would be landscaped but would not include recreational space. However, the provision of these setbacks would result in an overall playground area substantially reduced in size as compared with the proposed project.

INFRASTRUCTURE

Like with the proposed project, the Reduced Playground Alternative would increase demand for water, sanitation and solid-waste services. However, the increased demand would be minimal as compared to city-wide demand and would be met by existing infrastructure and utility systems. Like the proposed project, the Reduced Playground Alternative would have no significant adverse infrastructure impacts.

SOIL AND GROUNDWATER CONDITIONS

Any development proposed for the project site would be developed in accordance with applicable regulations. Therefore the Reduced Playground Alternative, like the proposed project, would not result in any significant adverse soil and groundwater impacts.

GREENHOUSE GAS (GHG) EMISSIONS

The GHG emissions and strategies to reduce those emissions would be the same with the proposed project and the Reduced Playground Alternative, as the overall number of project generated vehicle trips, on-site fuel use for heating, and use of off-site produced electricity would be the same. Like the proposed project, the Reduced Playground Alternative would be consistent with the City's GHG reduction goals.

CONSTRUCTION

The Reduced Playground Alternative would result in the same structure as the proposed project and like the proposed project, construction activities would extend approximately 29 months. The construction effects would be relatively short-term—with the major external construction activities expected to be completed within less than 24 months—and the construction effects would be addressed (e.g., through dust-control measures and adherence to noise regulations). Therefore, neither the Reduced Playground Alternative nor the proposed project would result in any significant adverse construction impacts.

PUBLIC HEALTH

The Reduced Playground Alternative would not be expected to exceed accepted City, state, or federal public health standards in the areas of air quality, construction, solid waste management practices, odors, and noise. Like the proposed project, the Reduced Playground Alternative would not result in significant adverse impacts on public health. ✷

Chapter 16: Unavoidable Adverse Impacts

Unavoidable adverse impacts are defined as those that meet the following two criteria:

- There are no reasonably practicable mitigation measures to eliminate the impact.
- 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.

Possible mitigation measures are described in Chapter 14, "Mitigation." As discussed in that chapter, the proposed project would result in significant adverse traffic impacts at two intersection approaches/lane groups during the peak hours analyzed. However, the specific improvement measures proposed would mitigate all the potential significant adverse traffic impacts associated with the proposed project.

As discussed in Chapter 14, the noise generated from the proposed school's playground would result in significant adverse noise impacts at 1760 DeKalb Avenue and 459 Stockholm Street. The potential for significant adverse noise impacts at 1760 DeKalb Avenue could be fully mitigated if through-the-wall air conditioning units were installed in each living room or bedroom on the north façade of the building, which would be approximately four to six air conditioning units. With the through-the-wall air conditioning and the existing double glazed windows, the northern façade of 1760 DeKalb Avenue would be expected to provide approximately 30 dBA of window/wall attenuation. This would result in a building façade capable of maintaining interior noise levels less than the CEQR interior $L_{10(1)}$ noise level guideline of 45 dBA for residential uses even when the playground is in use.

Since 459 Stockholm Street has very few windows facing the proposed playground, and the windows are double glazed, the potential for significant adverse noise impacts at 459 Stockholm Street could be fully mitigated if window air conditioning units were installed in each living room or bedroom on the north façade of the building, which would be approximately one to two air conditioning units. With the window air conditioning, the very few existing double glazed windows, and the masonry wall, the northern façade of 459 Stockholm Street would be expected to provide approximately 30 dBA of window/wall attenuation. This would result in a building façade capable of maintaining interior noise levels less than the CEQR interior $L_{10(1)}$ noise level guideline of 45 dBA for residential uses even when the playground is in use.

If the proposed mitigation measures (i.e., provision of through the wall air conditioning units at 1760 DeKalb Avenue and provision of window air conditioning units at 459 Stockholm Street) were not provided, the noise impacts at these residences would remain unmitigated. ✷

Chapter 17: Growth-Inducing Aspects of the Proposed Project

The proposed project would introduce a new 472-seat primary school facility to the Ridgewood section of Queens, which has a growing residential population. The proposed school project is intended to serve students from the surrounding community and relieve pressure on local schools. The proposed project is not expected to induce growth in the area. ✷

Chapter 18: Irreversible and Irretrievable Commitment of Resources

There are manmade resources that would be expended with the proposed project. They are considered irretrievably and irreversibly committed, since reuse for some purpose other than the project is either not possible or is highly unlikely.

These resources include the land area used, as well as the materials, energy, and human effort required to construct the project. The actual construction materials used (concrete and metal, etc.) are included. In addition, there would also be the added demand of energy to operate the proposed facility; however, these are not expected to be significant. Furthermore, the proposed project's design will include a number of specific components that would help minimize the project's energy use. ✷

Chapter 19: Response to Comments on the DEIS

A. INTRODUCTION

This document summarizes and responds to comments on the Draft Environmental Impact Statement ("DEIS"), issued by the New York City School Construction Authority (SCA) on August 22, 2012. Oral and written comments were received during the public hearing held on September 10, 2012. Written comments were accepted from issuance of the Draft EIS through the public comment period which ended September 25**,** 2012.

Section B lists the individuals that provided relevant comments on the DEIS. Section C contains a summary of these relevant comments and a response to each. These summaries convey the substance of the comments made, but do not necessarily quote the comments verbatim. Comments are organized by subject matter.

B. LIST OF INDIVIDUALS WHO COMMENTED ON THE DEIS

INDIVIDUALS

1. Lynn Botfeld, Principal, P.S. 305 Learners and Leaders, oral comments (Botfeld)
2. Patricia Grayson, Chair, Community Board 5 Education Committee, oral comments (Grayson)

C. COMMENTS AND RESPONSES

TRANSPORTATION

Comment 1: P.S. 305 has two distinct arrival times and two separate dismissal times. Two days a week the arrival time is at 8:00 for half of the school, the other days the arrival time is at 8:50 for the entire school. Approximately half the school is dismissed at 3:10 every day, and the other half the students go to the YMCA after school program in the school building, and they depart at 5:45. Did the EIS transportation analysis accurately capture the existing traffic conditions—particularly the pedestrian traffic—generated in the study area during each of these arrival and departure times? (Botfeld)

Response: The EIS transportation analysis accurately captured the background traffic conditions in the study area during the morning (arrival) and afternoon (departure) times. As per the criteria outlined in the *2012 CEQR Technical Manual*, the analysis hours for transportation assessment are selected based on the peak periods of activity generated by the proposed project, rather than by the

other existing land uses in the area. Since at this time the proposed school is not anticipated to include after-school activities, its peak transportation activities would occur during the typical school-related morning and afternoon periods, i.e., the weekday AM (7-9 AM) and PM (2-4 PM) peak periods. Hence, these peak periods were selected for establishing the background conditions as well as for assessing the impact of the proposed project on area's transportation conditions.

Comment 2: When the Saint Aloysius parochial school was open on the site, there were so many issues with traffic in the area. When you did a survey of traffic conditions, no one was around. Traffic conditions on Dekalb Avenue are terrible. (Grayson)

Response: The traffic and pedestrian count surveys in the study area were conducted in May 2012 during the time when city schools were in session. Thus, any activities generated by the existing land uses in the study area—including the vehicular and pedestrian activities generated by P.S. 305—were accounted for in establishing the background transportation conditions.

MITIGATION

Comment 3: I would like to see a traffic light as opposed to a stop sign on Dekalb Avenue and Seneca Avenue. (Botfeld, Grayson)

Response: As per the criteria outlined in the *2012 CEQR Technical Manual*, for mitigation purposes, a traffic impact is considered fully mitigated when the level-of-service for the impacted traffic approach/movement in the With-Action conditions (with mitigation measures in place) compared to the No-Action condition can no longer be identified as a significant adverse traffic impact. The range of traffic mitigation measures outlined in the *2012 CEQR Technical Manual* encompass five categories: a) low-cost, readily implementable measures; b) moderate-cost, fairly readily implementable measures; c) higher capital cost measures; d) enforcement measures; and e) trip reduction or travel demand management (TDM) measures. Per *2012 CEQR Technical Manual* guidance, mitigation analysis would typically start with the identification of low-cost, readily implementable measures, and if these are not sufficient, proceed to the higher cost measures.

As identified in the DEIS, the impact at the northbound approach of Seneca Avenue/Stockholm Street intersection during the weekday AM and PM peak hours could be fully mitigated by implementing the readily available low-cost mitigation measure of changing the operation from a Two-Way to an All-Way stop control. Since the implementation of this measure would fully mitigate the impact (per the *CEQR* criteria discussed above), the installation of traffic light—a more costly measure—is not warranted at this intersection for traffic mitigation.

Appendix A
State Historic Preservation Office (SHPO) Correspondence

OFFICE OF PARKS · RECREATION · HISTORIC PRESERVATION
NEW YORK STATE

Andrew M. Cuomo
Governor

Rose Harvey
Commissioner

New York State Office of Parks, Recreation and Historic Preservation

Historic Preservation Field Services Bureau • Peebles Island, PO Box 189, Waterford, New York 12188-0189
518-237-8643
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August 29, 2012

Christopher Persheff
NYCSCA
30-30 Thomson Ave
Long Island City, New York 11101

Re: NYCSCA
Proposed P.S. Q320 at 360 Seneca Ave
360 Seneca Ave/QUEENS, Queens County
12PR03170

Dear Mr. Persheff:

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

July 27, 2012

Ruth L. Pierpont
State Historic Preservation Office
NYS Office of Parks, Recreation and Historic Preservation
P.O. Box 189, Peebles Island
Waterford, New York 12188-0189

Chris Persheff
Operations Manager
Real Estate Services

cpersheff@nycsca.org

Re: New, Approximately 472-Seat Primary School Facility
360 Seneca Avenue, Ridgewood, Queens

Dear Ms. Pierpont:

Enclosed please find three copies of the Preliminary Assessment/Disturbance Record that was prepared by AKRF, Inc. on behalf of the New York City School Construction Authority (SCA) in connection with the above-referenced project. The SCA has proposed site selection of a religious owned site located on Block 3425, Lot 7, in Queens, for the development of a new, approximately 472-seat primary school facility in Community School District No. 24. We are submitting this report for your review and comment.

As described in greater detail in the report, the study area has been heavily disturbed as a result of previous landscape modifications and construction activities. The report further concludes that the site is not sensitive for historic period archeological resources due to previous excavation and construction activities within the study area. Therefore, AKRF, Inc. recommends that no further archeological investigations be conducted.

If you have any questions or require any additional information, please contact me at (718) 472-8228 or by email at cpersheff@nycsca.org. Thank you for your assistance on this project.

Sincerely,

Chris Persheff
Operations Manager, Real Estate Services

Encl.

c: File
Kenrick Ou
Alicia Wolff, AKRF
Elizabeth Meade, AKRF