

A. INTRODUCTION

The proposed project would result in a new building reaching approximately 321 feet in height including rooftop mechanical structures. Therefore, this chapter examines whether the proposed building would cast new shadows on any publicly accessible sunlight-sensitive resources and assesses the potential effects of any such new shadows. Sunlight-sensitive resources can include parks, playgrounds, gardens and other publicly accessible open spaces; sunlight-dependent features of historic resources; and important natural features such as water bodies.

The analysis concludes that the proposed building would cast new shadows on certain landscaped areas, walkways and benches located around and between the buildings of the St. Nicholas Houses superblock for about two hours at the end of the March 21/September 21 analysis day and for most of the December 21 analysis day. The analysis concludes that these new shadows would not result in significant adverse impacts. In addition, incremental shadows from the proposed project would fall on a portion of the Adam Clayton Powell Jr. Malls at the end of the spring, summer and fall analysis days but would not result in significant adverse impacts on these resources.

Although it is not considered a publicly accessible open space according to the methodology of the *CEQR Technical Manual*, the schoolyard of Public School (P.S.) 154 (Harriet Tubman School), which is located on West 126th Street across from the site of the proposed project, is also considered in this analysis. The proposed building would cast shadows on the P.S. 154 schoolyard for approximately four hours in the winter and early summer and up to six hours and ten minutes in the spring and fall.

However, as described below, shadows would move across the schoolyard and at no time would it be fully covered by new incremental shadow. In addition, the schoolyard is not available for use by the general public and the times that the schoolyard is in active use are limited. With the exception of the northwest corner, the entire area is paved and none of the features of the space are considered sunlight-dependent. Therefore, the proposed project would not result in a substantial reduction in the usability of this open space as a result of increased shadow and there would not be a significant adverse impact. The area in the northwest corner, separated by fencing and containing trees, would not experience substantial new shadow on any analysis day, and there would not be significant shadow impacts on the vegetation in this space.

Overall, the analysis concludes that the proposed project would not result in significant adverse shadow impacts.

B. DEFINITIONS AND METHODOLOGY

DEFINITIONS

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

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

- *Public open space* (e.g. parks, beaches, playgrounds, plazas, schoolyards, greenways, landscaped medians with seating). Public open space is defined in the *CEQR Technical Manual* as "open space that is accessible to the public on a constant and regular basis." This includes open spaces that are available during designated daily periods, but does not include things such as outdoor schoolyards that are not made available to the public during non-school hours. Planted areas within unused portions of roadbeds that are part of the Greenstreets program are also considered sunlight-sensitive resources.
- *Features of architectural resources that depend on sunlight for their enjoyment by the public.* Only the sunlight-sensitive features need be considered, as opposed to the entire resource. Such sunlight-sensitive features might include: design elements that depend on the contrast between light and dark (e.g. recessed balconies, arcades, deep window reveals); elaborate, highly carved ornamentation; stained glass windows; historic landscapes and scenic landmarks; and features for which the effect of direct sunlight is described as playing a significant role in the structure's importance as a historic landmark.
- *Natural resources* where the introduction of shadows could alter the resource's condition or microclimate. Such resources could include surface water bodies, wetlands, or designated resources such as coastal fish and wildlife habitats.

Non-sunlight-sensitive resources include:

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

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

METHODOLOGY

First, a preliminary screening assessment must be conducted to ascertain whether a project's shadow could reach any sunlight-sensitive resources at any time of year. The preliminary screening assessment consists of three tiers of analysis. The first tier determines a simple radius

around the proposed building representing the longest shadow that could be cast. If there are sunlight-sensitive resources within this radius, the analysis proceeds to the second tier, which reduces the area that could be affected by project shadow by accounting for the fact that shadows can never be cast between a certain range of angles south of the project site due to the path of the sun through the sky at the latitude of New York City. If the second tier of analysis does not eliminate the possibility of new shadows on sunlight-sensitive resources, a third tier of screening analysis further refines the area that could be reached by project shadow by looking at specific representative days of the year and determining the maximum extent of shadow over the course of each representative day.

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

C. PRELIMINARY SCREENING ASSESSMENT

A base map was developed showing the location of the proposed project and the surrounding street layout. In coordination with the open space and historic and cultural resources assessments presented in other chapters of this EIS, potentially sunlight-sensitive resources were identified and are shown on the map.

TIER 1 SCREENING ASSESSMENT

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

According to the *CEQR Technical Manual*, the longest shadow that a structure can cast at the latitude of New York City occurs on December 21, the winter solstice, at the start of the analysis day at 8:51 AM, and is equal to 4.27 times the height of the structure.

Therefore, at a maximum height of 321 feet above curb level, including rooftop mechanical structures, the proposed hotel and residential building could cast a shadow up to 1,371 feet in length (305 x 4.27). Using this length as the radius, a perimeter was drawn around the project site (see **Figure 6-1**). Since a number of sun-sensitive resources lay within the perimeter or longest shadow study area, the next tier of screening assessment was conducted.

TIER 2 SCREENING ASSESSMENT

Because of the path that the sun travels across the sky in the northern hemisphere, no shadow can be cast in a triangular area south of any given project site. In New York City this area lies between -108 and +108 degrees from true north. **Figure 6-1** illustrates this triangular area south of the project site. The complementing area to the north within the longest shadow study area represents the remaining area that could potentially experience new project generated shadow.

Several resources with sunlight-sensitive features are located within the remaining shadow study area. Therefore, additional assessment was conducted.

TIER 3 SCREENING ASSESSMENT

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

REPRESENTATIVE DAYS FOR ANALYSIS

Following the guidance of the *CEQR Technical Manual*, shadows on the summer solstice (June 21), winter solstice (December 21) and spring and fall equinoxes (March 21 and September 21, which are approximately the same in terms of shadow patterns) are modeled, to represent the range of shadows over the course of the year. An additional representative day during the growing season is also modeled, generally the day halfway between the summer solstice and the equinoxes, i.e. May 6 or August 6, which have approximately the same shadow patterns.

TIMEFRAME WINDOW OF ANALYSIS

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

TIER 3 SCREENING ASSESSMENT RESULTS

Figure 6-2 illustrates the range of shadows that would occur, in the absence of intervening buildings, from the proposed building on the four representative days for analysis. As they move east and clockwise over the landscape, the shadows are shown occurring approximately every two hours from the start of the analysis day (one and a half hours after sunrise) to the end of the analysis day (one and a half hours before sunset).

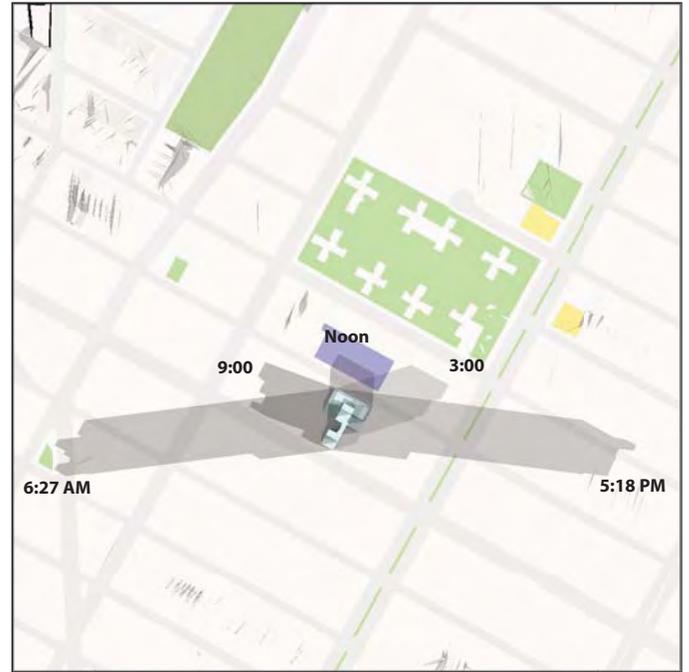
On the March 21/September 21 analysis day, the proposed building's shadow would be long enough to pass across the P.S. 154 schoolyard in the middle of the day, portions of the St. Nicholas Houses open spaces and the St. Nicholas Playground South in the afternoon, and the Adam Clayton Powell Jr. Malls in the late afternoon. The shadow might be long enough to reach the south façade of the Metropolitan Baptist Church at the end of the analysis day.

On the May 6/August 6 analysis day the proposed building's shadow could reach the P.S. 154 schoolyard in the middle of the day and the Adam Clayton Powell Jr. Malls in the afternoon; no other resources could be affected on this analysis day.

5.3.12



March 21/Sept. 21



May 6/August 6



June 21



December 21

Note: Daylight Saving Time not used.

- Publicly-Accessible Open Space
- Historic Resource with Sun-Sensitive Feature
- P.S. 154 School Yard

Similarly, on the June 21 analysis day the proposed building's shadow could reach the P.S. 154 schoolyard in the middle of the day and the Adam Clayton Powell Jr. Malls in the afternoon.

On the December 21 analysis day the proposed building's shadow would be long enough to reach the William B. Washington Memorial Garden to the northwest, the P.S. 154 schoolyard, the St. Nicholas Houses open spaces, and at the end of the analysis day, the St. Nicholas Playground North and the south façade of the Salem Methodist Episcopal Church.

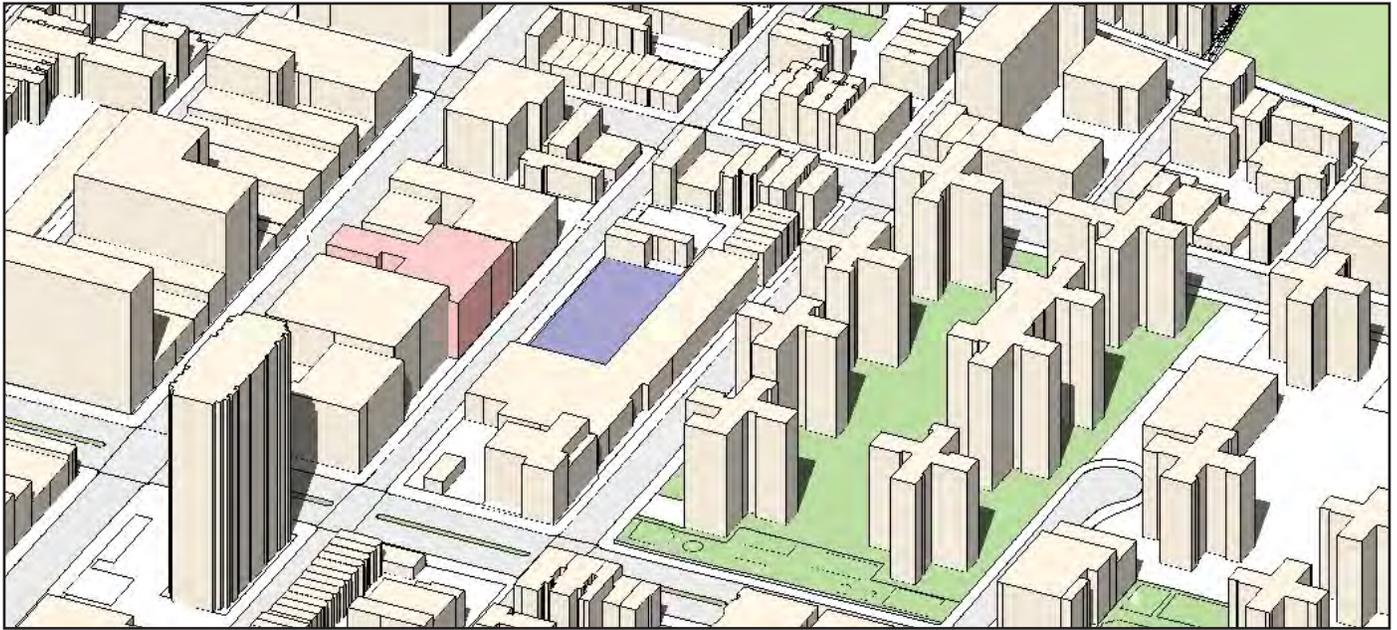
In summary, the Tier 3 screening assessment concluded that, in the absence of intervening buildings, shadows from the proposed building could reach the P.S. 154 schoolyard on all four analysis days, portions of the St. Nicholas Houses open spaces and the two associated playgrounds on Adam Clayton Powell Jr. Boulevard on the March 21/September 21 and December 21 analysis days, some of the Adam C. Powell Jr. Malls on three of the four analysis days, and the south façade of the Salem Methodist Episcopal Church briefly at the end of the December 21 analysis day. The Tier 3 assessment also concluded that the proposed building's shadow might be long enough to reach the south façade of the Metropolitan Baptist Church at the end of the March 21/September 21 analysis day. Therefore, following the methodology of the *CEQR Technical Manual*, further assessment is required for these resources.

D. DETAILED SHADOW ANALYSIS

The purpose of the detailed analysis is to determine the extent and duration of new incremental shadows that fall on a sunlight-sensitive resource as a result of the proposed project. To evaluate the extent and duration of new shadow that would be added to a sunlight-sensitive resource as a result of the proposed project, the detailed shadows analysis establishes a baseline condition (future No Build) to which the future condition with the proposed project (future Build) is compared. Because existing buildings may already cast shadows on a sun-sensitive resource, the proposed project may not result in additional, or incremental, shadows upon that resource.

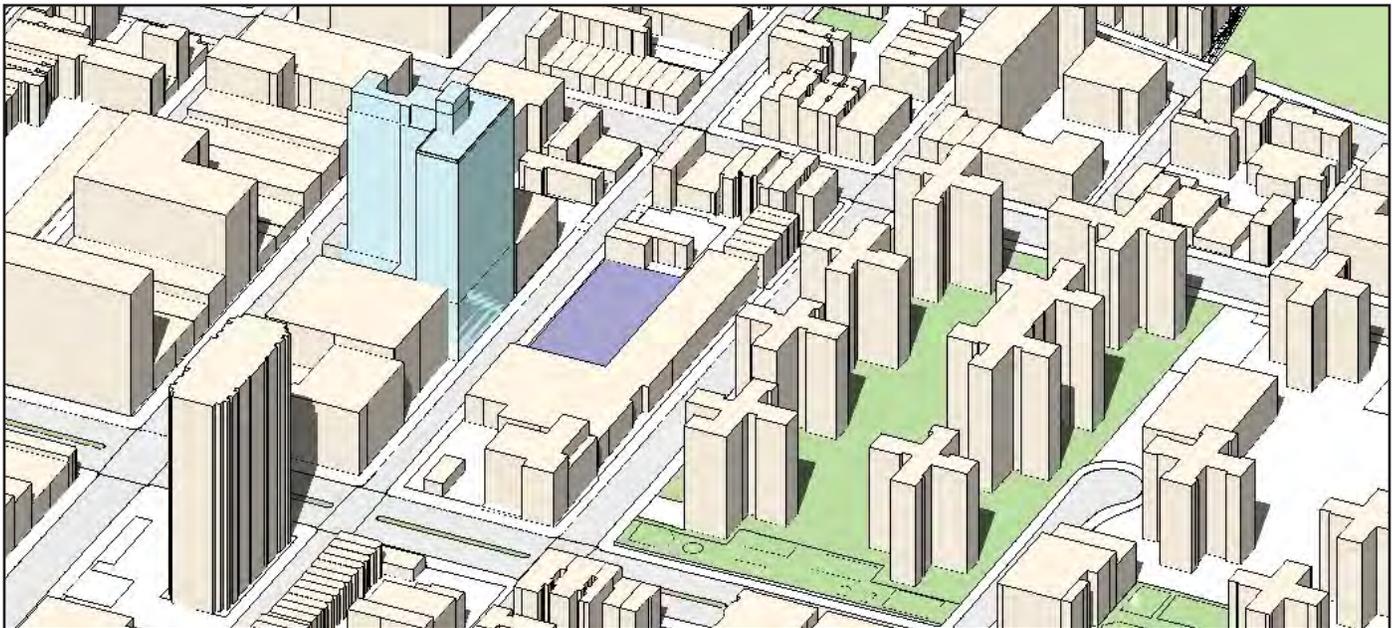
In order to carry out the detailed shadow analysis, the three-dimensional computer model used for the Tier 3 screening assessment was augmented by adding the existing buildings in the study area. **Figure 6-3** shows views of the computer model used in the detailed analysis. Shadow analyses were performed for each of the representative days and analysis periods indicated in the Tier 3 assessment.

Table 6-1 summarizes the results of the detailed analysis. It shows the entry and exit times and total duration of project-generated incremental shadow on each affected resource. **Figures 6-4 through 6-14** document the results of the analysis by providing graphic representations or "snapshots" of times when incremental shadow would fall on a sun-sensitive resource. The figures illustrate the extent of additional, incremental shadow at that moment in time, highlighted in red, and also show existing shadow and remaining areas of sunlight.



- Existing Building on Project Site
- Publicly Accessible Open Space
- P.S. 154 School Yard

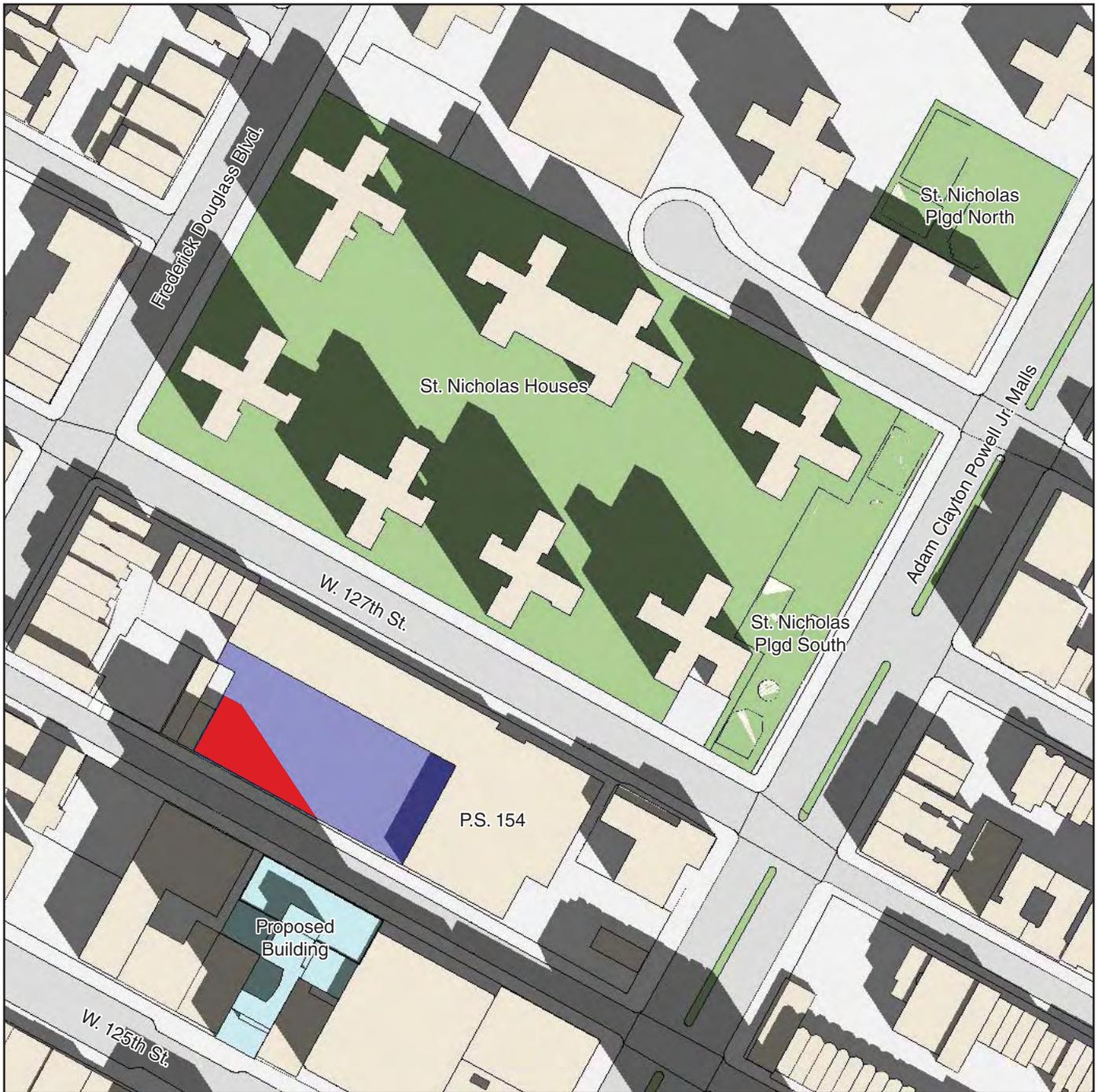
Future No Action Condition
View Southwest



- Proposed Building
- Publicly Accessible Open Spaces
- P.S. 154 School Yard

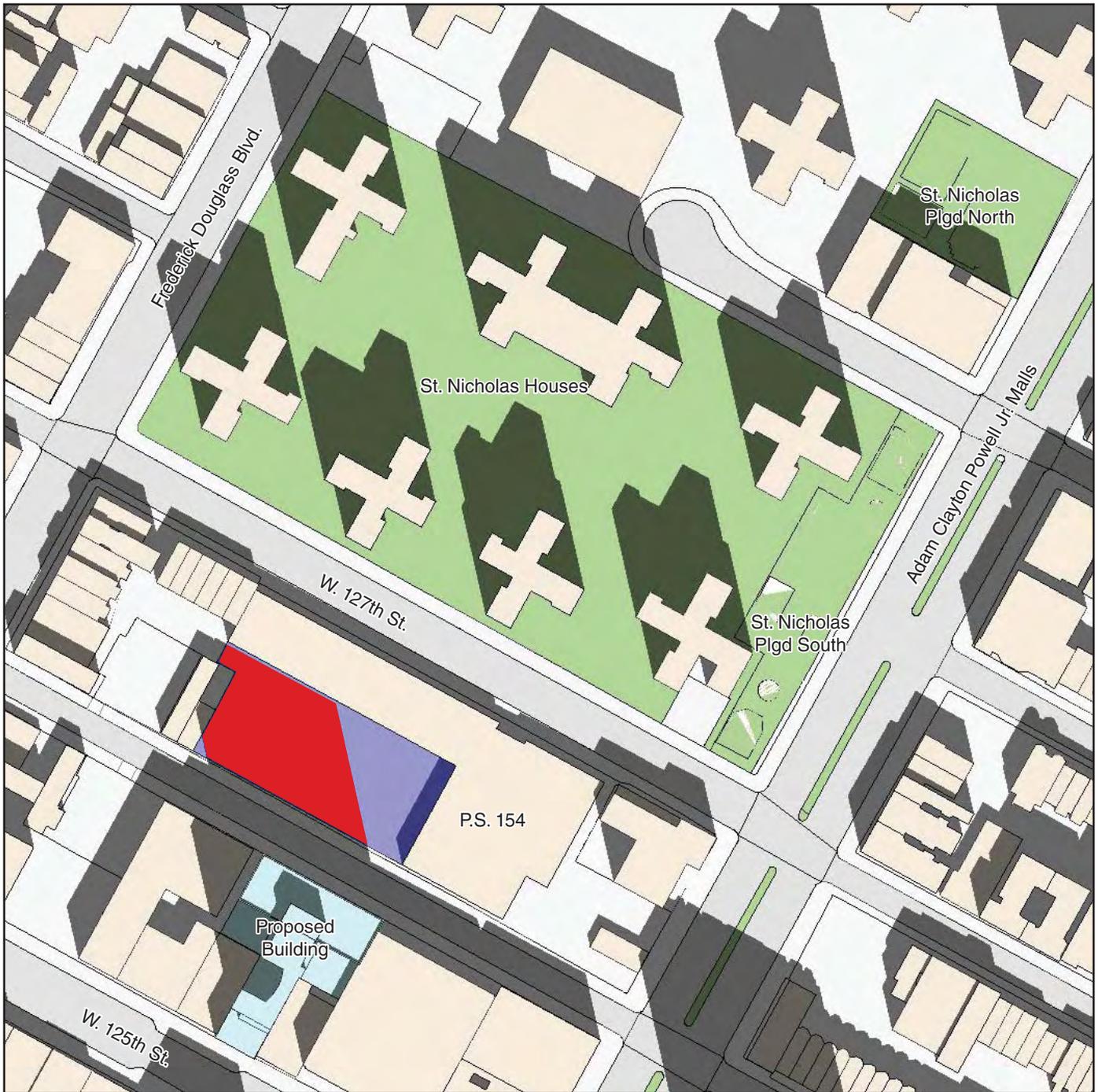
Future with Proposed Project
View Southwest

Three-Dimensional Computer Model
for Detailed Analysis
Figure 6-3



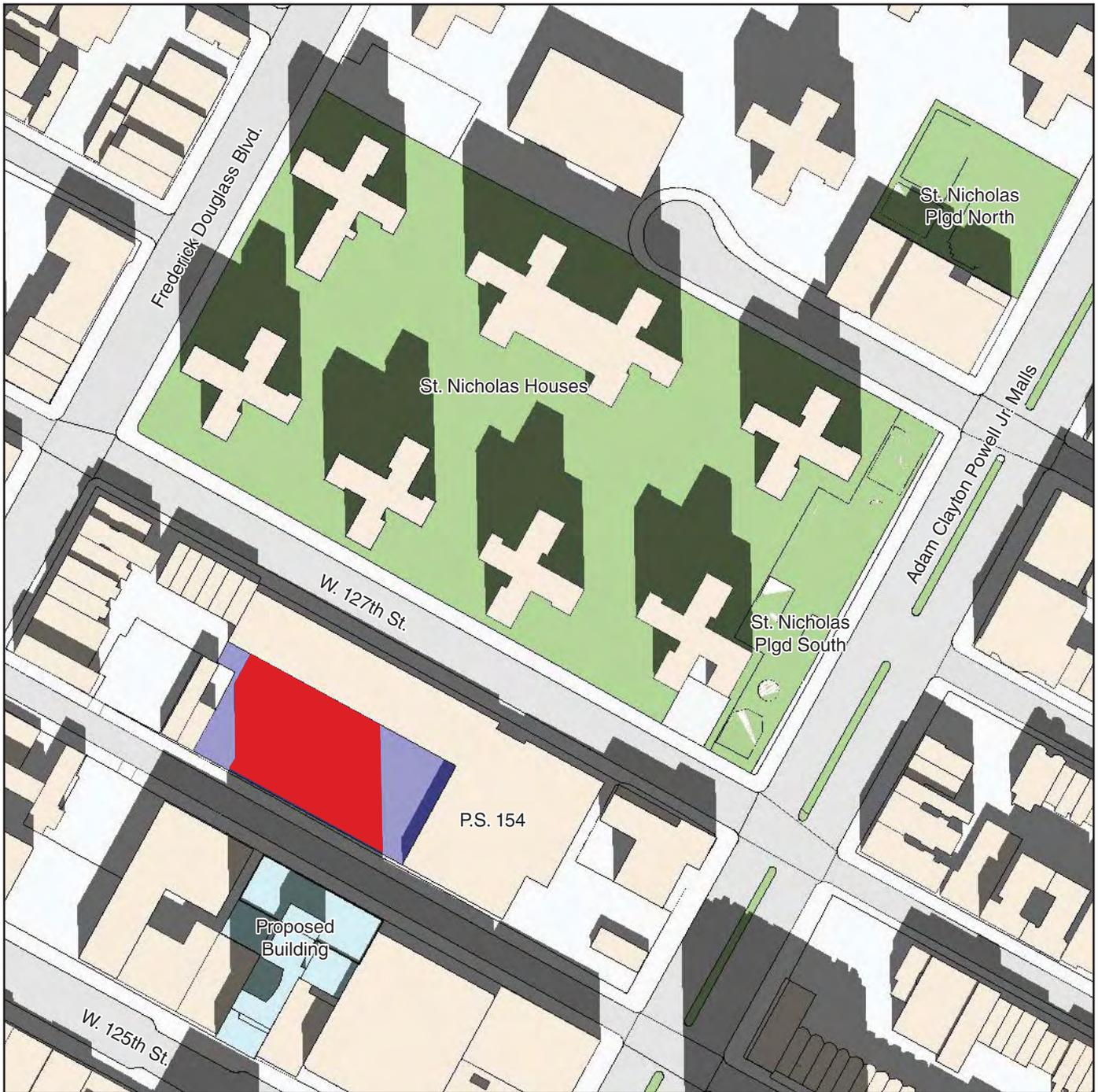
Note: Daylight Saving Time not used.

- Publicly-Accessible Open Space
- Incremental Shadow
- P.S. 154 School Yard



Note: Daylight Saving Time not used.

- Publicly-Accessible Open Space
- Incremental Shadow
- P.S. 154 School Yard



Note: Daylight Saving Time not used.

- Publicly-Accessible Open Space
- Incremental Shadow
- P.S. 154 School Yard



Note: Daylight Saving Time not used.

- Publicly-Accessible Open Space
- Incremental Shadow
- P.S. 154 School Yard



Note: Daylight Saving Time not used.

- Publicly-Accessible Open Space
- Incremental Shadow
- P.S. 154 School Yard



Note: Daylight Saving Time not used.

- Publicly-Accessible Open Space
- Incremental Shadow
- P.S. 154 School Yard



Note: Daylight Saving Time not used.

- Publicly-Accessible Open Space
- Incremental Shadow
- P.S. 154 School Yard



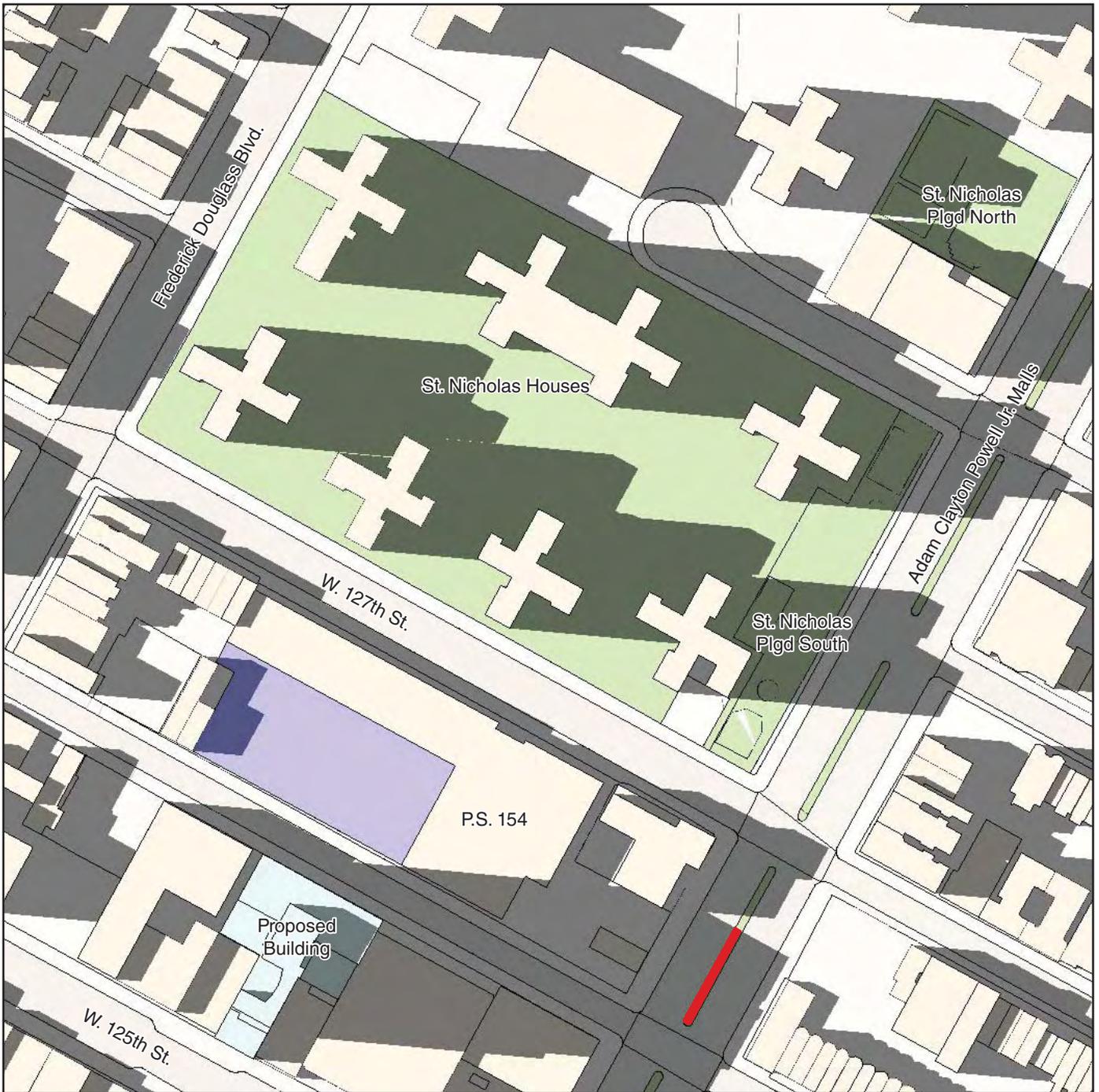
Note: Daylight Saving Time not used.

- Publicly-Accessible Open Space
- Incremental Shadow
- P.S. 154 School Yard



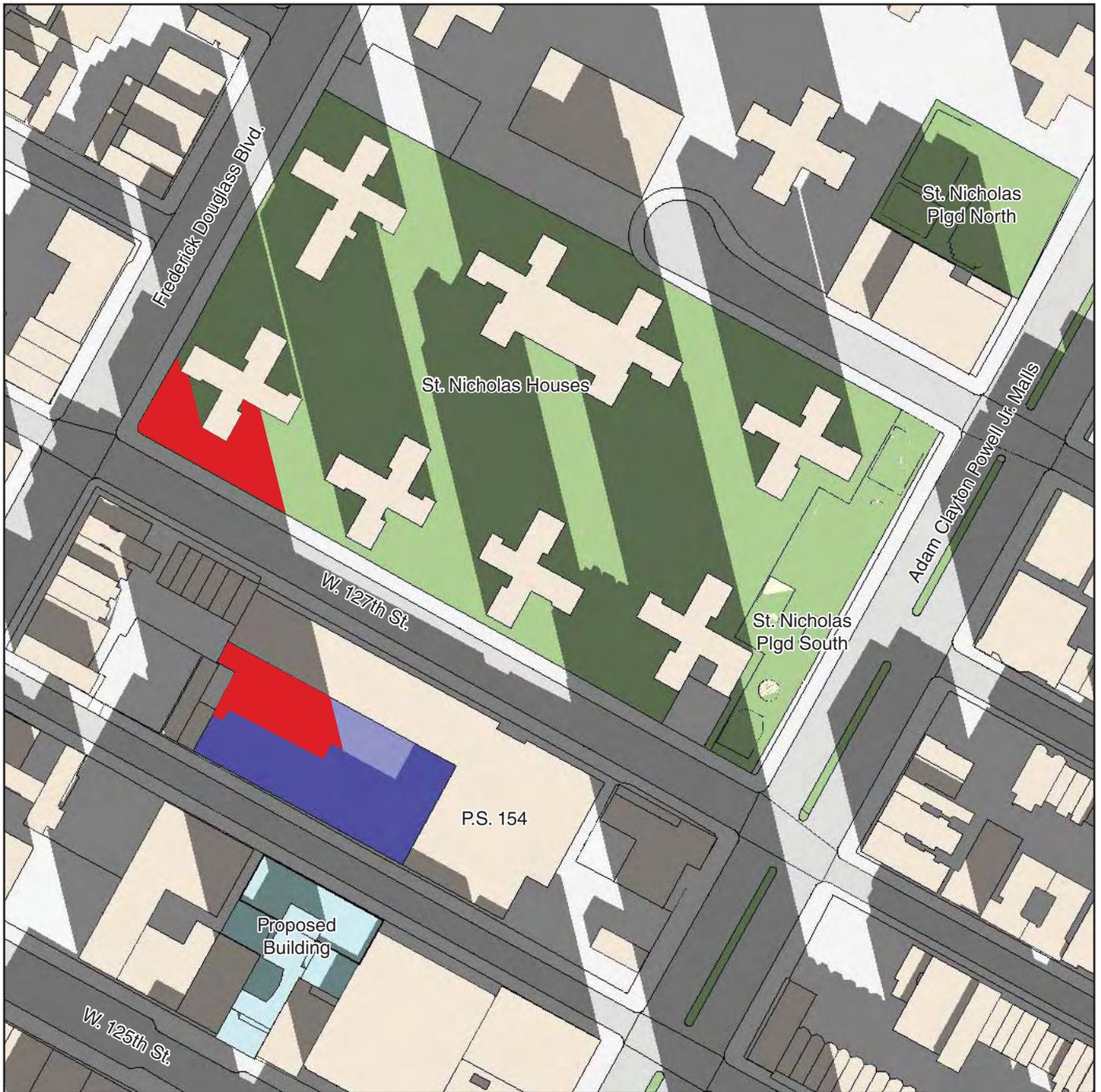
Note: Daylight Saving Time not used.

- Publicly-Accessible Open Space
- Incremental Shadow
- P.S. 154 School Yard



Note: Daylight Saving Time not used.

- Publicly-Accessible Open Space
- Incremental Shadow
- P.S. 154 School Yard



Note: Daylight Saving Time not used.

- Publicly-Accessible Open Space
- Incremental Shadow
- P.S. 154 School Yard

**Table 6-1
Incremental Shadow Durations**

	March 21 / Sept. 21 7:36 AM-4:29 PM	May 6 / August 6 6:27 AM-5:18 PM	June 21 5:57 AM-6:01 PM	December 21 8:51 AM-2:53 PM
Open Space Resources				
St. Nicholas Houses open spaces	2:25 PM–4:00 PM Total: 1 hr 35 min	—	—	10:10 AM–2:53 PM Total: 4 hr 43 min
St. Nicholas Houses – Playground South	3:10 PM–4:29 PM Total: 1 hr 19 min	—	—	—
St. Nicholas Houses – Playground North	—	—	—	2:30 PM–2:53 PM Total: 23 min
Adam Clayton Powell Jr. Malls	3:50 PM–4:29 PM Total: 39 min	4:00 PM–5:18 PM Total: 1 hr 18 min	4:10 PM–6:01 PM Total: 1 hr 51 min	—
Schoolyard				
P.S. 154 schoolyard	9:50 AM–4:00 PM Total: 6 hr 10 min	10:50 AM–4:20 PM Total: 5 hr 30 min	11:40 AM–4:00 PM Total: 4 hr 20 min	9:30 AM–1:20 PM Total: 3 hr 50 min
Notes: Table indicates entry and exit times and total duration of incremental shadow for each sunlight-sensitive resource. Daylight saving time is not used—times are Eastern Standard Time, per <i>CEQR Technical Manual</i> guidelines. However, in reality, Eastern Daylight Time is in effect for the March/September, May/August and June analysis periods. Therefore, add one hour to the given times to determine the actual clock time.				

RESOURCES OF CONCERN

The **St. Nicholas Houses** are a New York City Housing Authority (NYCHA) housing development comprising 13 residential 14-story buildings and publicly accessible open space areas and playgrounds on a superblock between West 127th and West 131st Streets, and Frederick Douglass and Powell Boulevards. **St. Nicholas Playground South** is on the east side of the superblock along Powell Boulevard between West 127th and 129th Streets, and contains paved basketball, handball and other ball courts. The smaller **St. Nicholas Playground North**, at Powell Boulevard and West 130th Street, has playground equipment and a water feature. The southern side of the superblock along West 127th Street has fenced-off landscaped areas and walkways with benches in some spots. The large open interior area of the southern half of the superblock has two playground areas and an area with seating and trees.

The **Adam Clayton Powell Jr. Malls** are planted medians in the Boulevard. They do not have benches at the intersections.

The schoolyard of **P.S. 154 (Harriet Tubman School)** is located on West 126th Street midblock between Fredrick Douglass Boulevard and Adam Clayton Powell Boulevard, directly north across West 126th Street from the proposed building. The schoolyard has ball court areas and two clusters of playground equipment; it is completely paved and has no vegetation except for a small area in the northwest corner (fenced off from the main area) that has some plantings. The schoolyard is not available for use by the general public and is accessible only from the rear of the school—a high fence along West 126th Street includes gated entrances that are locked. It is primarily used by the school on days when school is in session, weather permitting. Based on

field observations, peak activity occurs between 10:30 AM and 12:30 PM, with much lower or no utilization at other times.

RESOURCES THAT WOULD NOT EXPERIENCE INCREMENTAL SHADOW

Due to existing shadow from intervening buildings (accounted for in the detailed analysis but not in the screening-level analyses) the analysis concluded that the William B. Washington Memorial Garden and the south-facing windows of the Salem Methodist Episcopal Church would not receive project-generated incremental shadow. In addition, the analysis showed that incremental project generated shadow would not reach the south and west facing windows of the Metropolitan Baptist Church.

MARCH 21/SEPTEMBER 21

Shadow from the proposed building would move onto the southwest corner of the P.S. 154 schoolyard at 9:50 AM. Shadows would move clockwise and eastward and by noon the incremental shadow would fall across the center of the schoolyard, leaving the eastern and western portions of the space in direct sunlight (see **Figures 6-4, 6-5 and 6-6**). The shadow would continue to move eastward, falling across more than half of the space by 1:00 PM (see **Figure 6-7**). By about 2:00 PM about a third of the schoolyard would be in shadow from the proposed building, on the eastern side, while the western two thirds would be in sun. By 3:00 PM only the eastern quarter of the space would be in incremental shadow while most of the rest of the space would be in sun. From 3:00 PM to 4:00 PM the area of incremental shadow would shrink and finally move off the eastern edges of the space, merging with lengthening existing shadows (see **Figure 6-8**).

The fenced-off portion of the schoolyard in the northwest would experience about an hour and a half of new shadow, between 11:30 AM and 1:00 PM, though each individual tree would experience less than that total duration as the shadow moved across that space.

From 2:25 PM to 4:00 PM shadow from the upper portion of the proposed building would pass across an area containing walkways, benches and fenced-off lawn and trees near the southeasternmost building of the St. Nicholas Houses. The new shadow would fall on a small area and other sunlit areas of benches and landscaped areas would remain nearby (see **Figure 6-8**). New shadow from the upper portion of the proposed building would also fall across a portion of one of the Adam Clayton Powell Jr. Malls, between West 127th and 128th Streets, for the final 39 minutes of the analysis day.

MAY 6/AUGUST 6

On the May 6/August 6 analysis day, shadows are shorter than in March and September; the proposed building's shadow would move across the P.S. 154 schoolyard from 10:50 AM to 4:20 PM but would not cover as large an area as it did earlier in the spring and in September. Moving clockwise, the incremental shadow would enter the schoolyard from the south and pass across the southern portion of the space (see **Figure 6-9 and 6-10**). By 12:30 PM the shadow would fall across the southeastern part of the schoolyard, covering about a third of the space (see **Figure 6-10**). At 2:30 PM about a quarter of the space, in the southeastern section, would still be in incremental shadow. After 3:30 PM the area of new shadow would be very small, finally exiting at 4:20 PM (see **Figure 6-11**).

Victoria Theater

On May 6 and August 6, the proposed building's shadow would not be long enough to reach the St. Nicholas Houses open spaces or playgrounds.

For the final hour and 18 minutes of the analysis day, from 4:00 PM to 5:18 PM, new shadow would fall on a portion of the Adam Clayton Powell Jr. Mall between West 126th and 127th Streets (see **Figure 6-11**).

JUNE 21

Shadow patterns on June 21 are similar to those on May 6/August 6; shadows are even shorter, but fall further to the south at the beginning and end of the analysis day.

The proposed building's shadow would not enter the southern edge of the P.S. 154 schoolyard until 11:40 AM. It would then move across the southeastern portion of the space during the early afternoon, never covering even a quarter of the total space (see **Figure 6-12**). It would exit the southeast corner at 4:00 PM. The proposed building's shadow would never reach the area in the northwest corner with the trees.

For the final hour and 51 minutes of the analysis day, from 4:10 PM to 6:01 PM, new shadow would fall on a portion of the Adam Clayton Powell Jr. Mall between West 126th and 127th Streets (see **Figure 6-13**).

DECEMBER 21

On December 21, shadows are longest, but move more quickly than in other seasons. The southern and eastern portions of the P.S. schoolyard are already in existing shadows throughout the day, and most of the northern portion as well in the afternoon. The proposed building's shadow would move west to east across the northern portion of the schoolyard between 9:30 AM and 1:20 PM, covering a large area for most of this period but leaving an area of remaining sunlight in the northern part (see **Figures 6-14 and 6-15**).

The proposed building's shadow would move across the southern portions of the St. Nicholas Houses open spaces for most of the analysis day. The shadow would enter the southwest corner of the superblock at 10:10 AM and move eastward over the course of the late morning and early afternoon across the landscaped areas, walkways and benches along West 127th Street and between the St. Nicholas buildings comprising the southernmost row of the development (see **Figures 6-14 and 6-15**). In the early afternoon incremental shadow would fall between the St. Nicholas buildings onto interior open space within the development (see **Figures 6-16 and 6-17**). For the final 23 minutes of the analysis day the proposed building's shadow would fall on a small portion of the St. Nicholas Playground North.

E. CONCLUSIONS

The proposed building would cast new shadows on the P.S. 154 schoolyard in the middle of the day throughout the year, ranging in duration from approximately four to six hours depending on the season. Incremental shadows would also fall on a small section of the St. Nicholas Houses superblock containing landscaped areas, walkways and benches for an hour and 35 minutes in the late afternoon of the March 21/September 21 analysis day. For the final hour and 20 minutes of the March 21/September 21 analysis day a small area of new shadow would fall on the St. Nicholas Playground South. On the December 21 analysis day when shadows are longest the proposed building's shadow would sweep west to east across the southern half of the St.



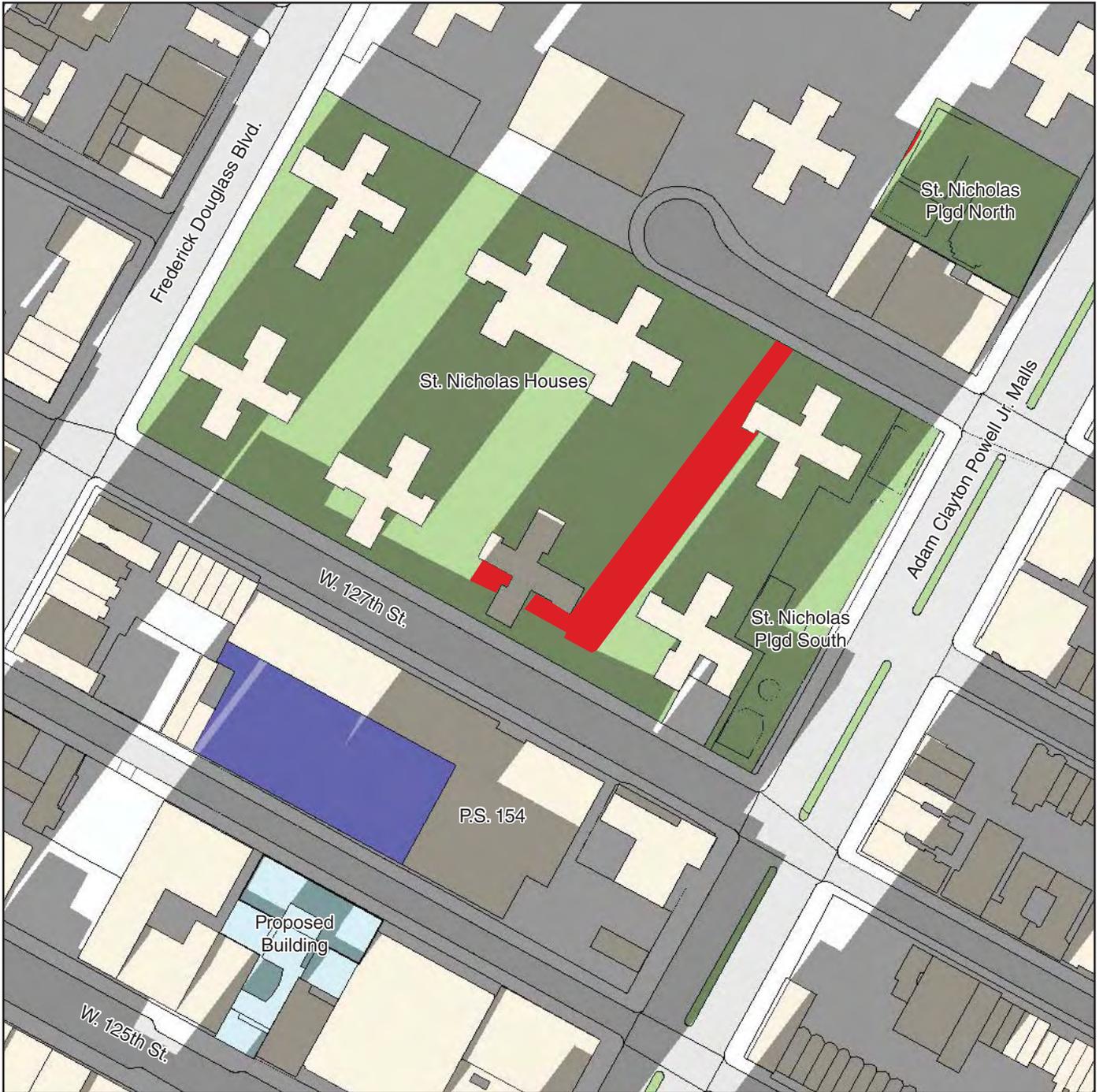
Note: Daylight Saving Time not used.

- Publicly-Accessible Open Space
- Incremental Shadow
- P.S. 154 School Yard



Note: Daylight Saving Time not used.

- Publicly-Accessible Open Space
- Incremental Shadow
- P.S. 154 School Yard



Note: Daylight Saving Time not used.

- Publicly-Accessible Open Space
- Incremental Shadow
- P.S. 154 School Yard

Nicholas Houses superblock for most of the day, falling intermittently on different areas containing landscaping, benches, walkways and playgrounds. Finally, incremental shadows from the proposed project would fall on one of the Adam Clayton Powell Jr. Malls for the final 40 minutes of the March 21/September 21 analysis day, and on another one of the Malls for about an hour and 20 minutes on May 6/August 6 and about an hour and 50 minutes on June 21.

According to the *CEQR Technical Manual*, a significant shadow impact generally occurs when an incremental shadow of 10 minutes or longer falls on a sunlight sensitive resource and results in one of the following:

Vegetation

- A substantial reduction in sunlight available to a sunlight-sensitive feature of the resource to less than the minimum time necessary for its survival (when there was sufficient sunlight in the future without the proposed project).
- A reduction in direct sunlight exposure where the sensitive feature of the resource is already subject to substandard sunlight (i.e., less than minimum time necessary for its survival).

Historic and Cultural Resources

- A substantial reduction in sunlight available for the enjoyment or appreciation of the sunlight sensitive features of a historic or cultural resource.

Open Space Utilization

- A substantial reduction in the usability of open space as a result of increased shadow (should cross reference with information provided in the Open Space analysis, regarding anticipated new users and the open space's utilization rates throughout the affected time periods).

For Any Sunlight-Sensitive Feature of a Resource

- Complete elimination of all direct sunlight on the sunlight-sensitive feature of the resource, when the complete elimination results in substantial effects on the survival, enjoyment, or, in the case of open space or natural resources, the use of the resource.

The area in the southeast corner of the St. Nicholas Houses superblock that would experience an hour and 20 minutes of new project-generated shadows in the afternoon of the March 21/September 21 analysis day would be in direct sunlight for virtually the entire remainder of the analysis day. Therefore, the new shadow would not cause significant adverse impacts on the vegetation there. For users wanting to sit in sun on the benches, there would be other sunlit areas containing benches adjacent to this area during the period when incremental shadow would fall there. Therefore, the new shadow would not cause significant impacts on the use of the space. Similarly, when new shadow would fall on a portion of the St. Nicholas Playground South for an hour and nine minutes at the end of the March 21/September 21 analysis day, other portions of the playground, and other nearby playgrounds, would be in sun.

The two Adam Clayton Powell Jr. Malls that would be shaded by the project in the late afternoons in the spring, summer and fall would be in direct sunlight for most of the remaining portion of those analysis days. The plantings would receive plenty of sunlight on these days, and therefore the project would not cause significant adverse impacts on these resources.

New project-generated shadows would fall on the P.S. 154 schoolyard for four hours in the winter and early summer, and for approximately five to six hours in the spring and fall. The

Victoria Theater

detailed analysis shows that although the extent of new shadow would be large at times, shadows would move across the schoolyard and at no time would it be fully covered by new incremental shadow. In addition, the schoolyard is not available for use by the general public and the times that the schoolyard is in active use are limited. For the milder-weather analysis days (March/September and May) and times of day when the space experiences peak activity (between 10:30 AM and 12:30 PM) sunlight would continue to fall on portions of the schoolyard. With the exception of the northwest corner, the entire play area is paved and none of the features of the space are considered sunlight-dependent. Therefore, the proposed project would not result in a substantial reduction in the usability of this open space as a result of increased shadow and there would not be a significant adverse impact. The area in the northwest corner, separated by fencing and containing trees, would not experience substantial new shadow on any analysis day, and there would not be significant shadow impacts on the vegetation in this space.

For these reasons the proposed project would not result in significant adverse shadows impacts.*