

Seaside Park and Community Arts Center

Chapter 4: Shadows

A. INTRODUCTION

This chapter assesses the potential for the proposed project to result in incremental shadows long enough to reach any nearby publicly accessible open spaces or other sunlight-sensitive resources. As described in Chapter 1, “Project Description,” the proposed amphitheater would feature a removable tensile roof cover, which would reach a maximum height of approximately 94 feet (80 feet above Boardwalk level).¹ The roof and support trusses would remain up for the duration of the concert season (May to October), and would be removed during the off-season. During concerts, the proposed amphitheater would also have additional sound reduction features, including a deployable tensile canopy extension and acoustical curtains. However, these features would not result in any additional impacts on shadows, given their location to the north of sunlight-sensitive features (as discussed below, any area lying to the south of a site in the triangular area between -108 degrees from true north and +108 degrees from true north cannot be shaded by a proposed project). As the proposed removable tensile roof cover would be greater than 50 feet in height and would be located adjacent to several sunlight-sensitive resources, a shadow assessment is required by *City Environmental Quality Review (CEQR) Technical Manual* guidelines and is provided in this chapter.

B. PRINCIPAL CONCLUSIONS

The proposed project would cast incremental shadows on the Riegelmann Boardwalk on May 6/August 6 and June 21 and Coney Island Beach on June 21. On both analysis days, incremental shadow coverage at both open spaces would be minimal in terms of size and duration. As neither the Riegelmann Boardwalk nor Coney Island Beach contain vegetation, and the extent of shadows would be limited throughout the year, the incremental project-generated shadows would not adversely affect the utilization or enjoyment of either open space. Therefore, the proposed project would not result in a significant adverse shadows impact on any nearby sunlight-sensitive resources.

C. METHODOLOGY

First, a preliminary screening assessment must be conducted to ascertain whether the shadows resulting from the proposed project could reach any sunlight-sensitive resource at any time of year. The preliminary screening assessment consists of three tiers of analysis. The first tier identifies the longest shadow study area based on the height of the proposed project. 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-generated shadows by accounting for a specific range of angles that can never receive shade in New York City due to the path of the sun in the northern hemisphere. If the second tier of analysis does not eliminate the possibility of new shadows on sunlight-sensitive resources, a third tier

¹ This shadows analysis was based on a previous design with a larger roof cover, which is more conservative for shadows analysis purposes. Updates to the shadows analysis to reflect the change in design will be made between Draft and Final EIS, as necessary.

of screening analysis further refines the area that could be reached by looking at specific representative days of the year and determining the maximum extent of shadows 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 shadows analysis is required to determine the extent and duration of the incremental shadow resulting from the proposed 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 result of the analysis and assessment are documented with graphics, a table of incremental shadow durations, and narrative text.

D. THE FUTURE WITHOUT THE PROPOSED PROJECT (NO-ACTION)

As discussed in Chapter 1, “Project Description,” and Chapter 2, “Land Use, Zoning, and Public Policy,” based on the 2009 *Coney Island Rezoning* FEIS, in the future without the proposed project, it is estimated that approximately 223,118 square feet (sf) (223 DUs) of residential floor area, 93,978 sf of commercial space, and 1.27 acres of publicly accessible open space would be added to the development site. All residential and commercial development would occur on the eastern portion of the development site (Lots 130, 142), while the western portion would be developed as Highland View Park. The 2009 FEIS analyzed the potential for this scenario to result in new shadows on sunlight-sensitive resources, and concluded that no significant adverse shadow impacts would result.

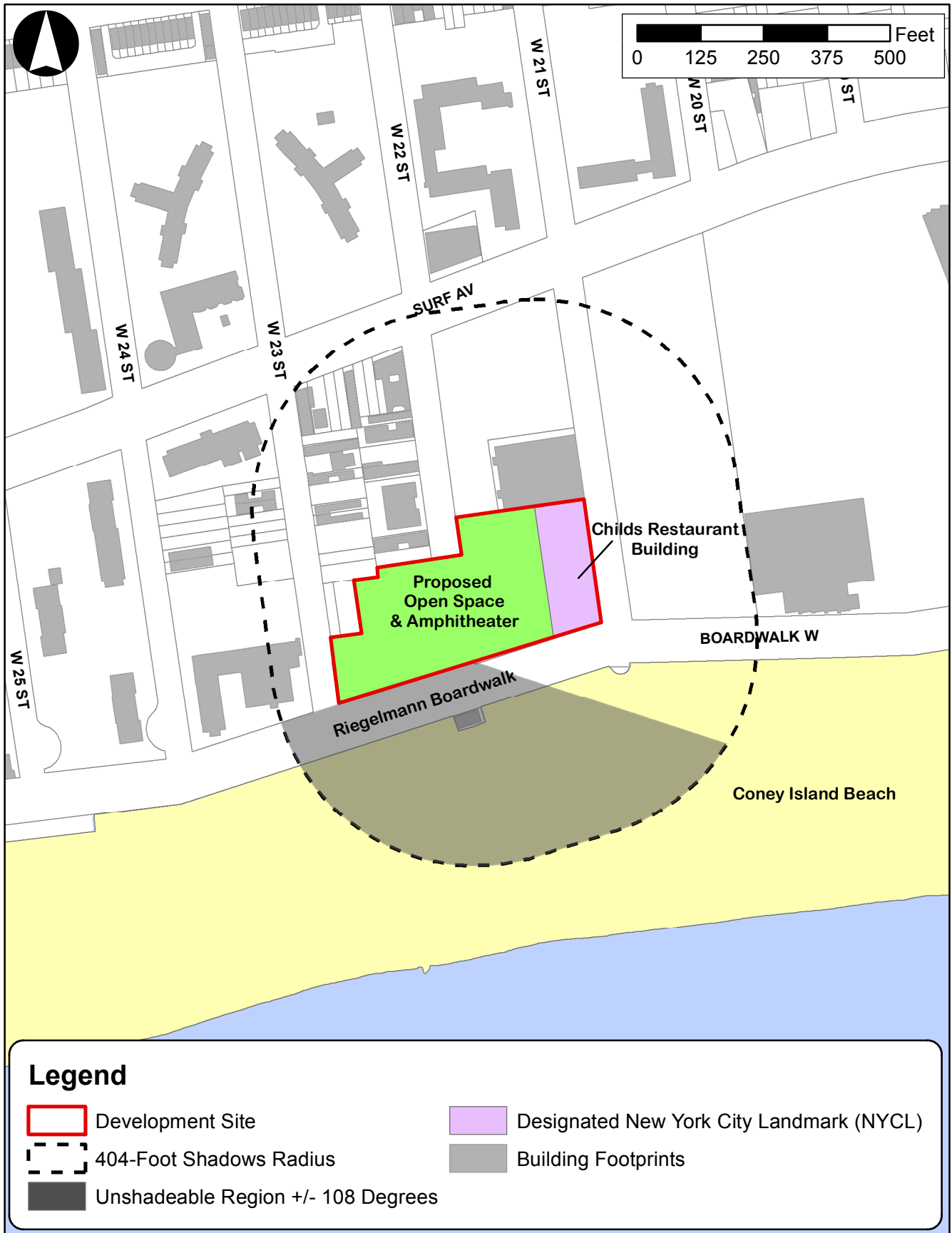
E. THE FUTURE WITH THE PROPOSED PROJECT (WITH-ACTION)

In the future with the proposed project, the development site would be developed with approximately 60,000 sf of commercial space and 2.41 acres of publicly accessible open space that would include a 5,100 seat amphitheater. All commercial development would take place in the form of restoration and adaptive reuse of the (Former) Childs Restaurant Building (Lot 130), while the area to the west would be developed as open space. As described in Chapter 1, “Project Description,” the proposed amphitheater would feature a removable tensile roof cover, which would reach a maximum height of 64 feet (52 feet above Boardwalk level), the same height as the stage house roof cover in the adjacent (Former) Childs Restaurant Building). However, the shadows analysis in this chapter is based on a previous design with a larger and taller roof cover, which is more conservative for shadows analysis purposes. This scenario represents the reasonable worst-case for shadows and will be compared with the No-Action scenario in order to determine the extent and duration of incremental project-generated shadows. During the off-season when concerts and other events are not taking place, the tensile roof cover and support trusses would be removed.

F. PRELIMINARY SCREENING ASSESSMENT

Tier 1 Screening Assessment

A base map was developed (see Figure 4-1) showing the location of the development site, the surrounding street layout, and all potentially sunlight-sensitive resources (publicly accessible open spaces, architectural resources, natural resources, and greenstreets). According to the *CEQR Technical*



Manual, the longest shadow a structure will cast in New York City, except for periods close to dawn or dusk, is 4.3 times its height. The height of the proposed removable tensile roof cover (94 feet assumed for shadows analysis purposes) was used to determine the maximum shadow radius of 404 feet (Tier 1 Assessment).

Within this longest shadow area, there are two existing publicly accessible open spaces, one proposed publicly accessible open space, and one New York City Landmarks Preservation Commission (LPC)-designated historic resource. Therefore, further screening is warranted in order to determine whether they would be affected by any project-generated shadows.

Tier 2 Screening Assessment

For the Tier 2 screening assessment, according to the *CEQR Technical Manual*, shadows cast by proposed projects fall to the north, east, and west. In New York City, the shadow area is between -108 degrees from true north and +108 degrees from true north. Conversely, any area lying to the south of a site in the triangular area beyond these angles cannot be shaded by a proposed project. The purpose of the Tier 2 screening is to determine whether the sunlight-sensitive resources identified in the Tier 1 screening lie within the portion of the longest shadow study area that potentially can be shaded by the proposed project.

Figure 4-1 presents the results of the Tiers 1 and 2 screening assessments, i.e., the portion of the longest shadow study area lying within -108 degrees from the true north and +108 degrees from true north as measured from southernmost portions of the projected development sites. As illustrated in Figure 4-1, there are two existing publicly accessible open space resources that fall within the maximum shadow radius including the Riegelmann Boardwalk and Coney Island Beach.

The LPC-designated (Former) Childs Restaurant Building (Block 7071, Lot 130) is the only historic resource located within the maximum shadow radius. The building was designed by Dennison & Hirons in the Spanish Colonial Revival style and has unique maritime-themed motifs such as fish, seashells, seaweed, and ships in poly-chromed terra-cotta adorning the southern and eastern facades. As these features are not considered sunlight sensitive, i.e., possessing design elements that are part of a recognized architectural style that depends on the contrast between light and dark, and do not face the development site, the potential for adverse shadow impacts can be screened out and no further analysis of historic resources is warranted.

It should be noted that the proposed open space component of the proposed project, comprising the western portion of the development site, is also located within the longest shadow study area. However, per *CEQR Technical Manual* guidelines, shadows on project-generated open space are not considered significant under CEQR and their assessment for shadow impacts is not required. Therefore, this analysis only provides qualitative discussion of the proposed project's potential shadow impacts on the proposed park.

Tier 3 Screening Assessment

Based on the results of the Tier 2 screening assessment, a Tier 3 screening assessment was performed to determine if shadows resulting from the proposed project can reach either of the sunlight-sensitive resources at any time between 1.5 hours after sunrise and 1.5 hours before sunset on representative analysis days. The proposed project represents the worst-case scenario for environmental analysis and

was used for all three-dimensional computer modeling of shadows. As shadows from the proposed project would reach both of the sunlight-sensitive open space resources identified in the Tier 2 screening assessment on one or more of the four representative analysis days, a detailed shadow analysis is required.

G. DETAILED ANALYSIS OF SHADOW IMPACTS

Resources Affected By Project-Generated Shadows

Per the shadow assessment provided below, the proposed project would increase shadow coverage at the Riegelmann Boardwalk on two analysis days and at Coney Island Beach on one analysis day. No shadows would be cast during the winter months, when the tensile roof cover and support trusses would be removed during the off-season.

Riegelmann Boardwalk

The Riegelmann Boardwalk extends along the project area's entire southern boundary. The 80-foot wide boardwalk is most fully utilized during the summer, but continues to be used during the remainder of the year for walking, running, and sitting. Amenities on the boardwalk include public restrooms, benches, and some small sun shelters.

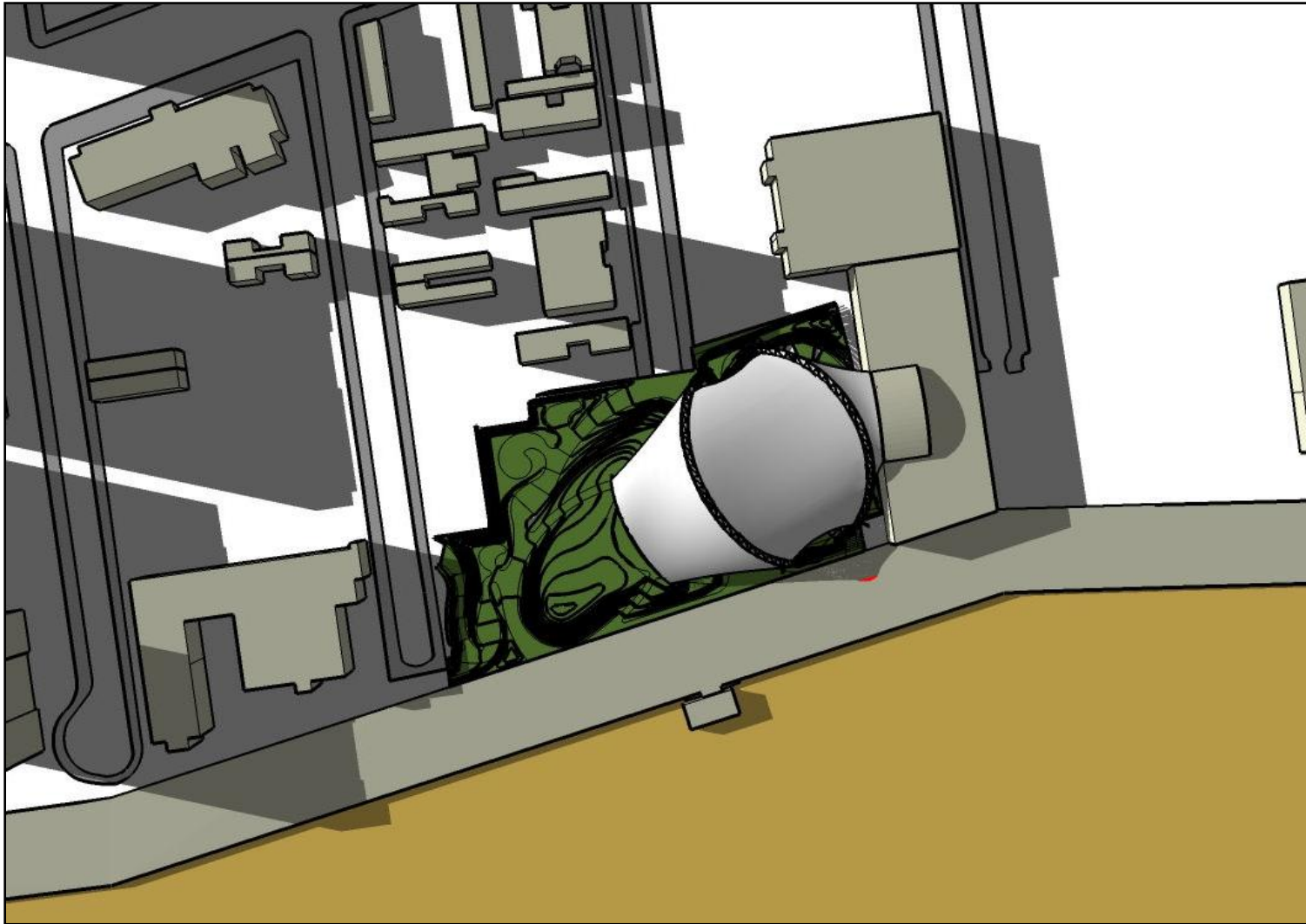
Coney Island Beach

The Coney Island Beach is located immediately to the south of the Riegelmann Boardwalk and extends along the project area's entire southern boundary. During the summer months, the beach provides for a variety of passive and active recreation activities, including sunbathing and swimming; spray showers and volleyball nets are located on the upland portion of the beach, closest to the boardwalk. Like the boardwalk, the beach is less-used in the winter months, but continues to provide opportunities for running or walking along the water's edge.

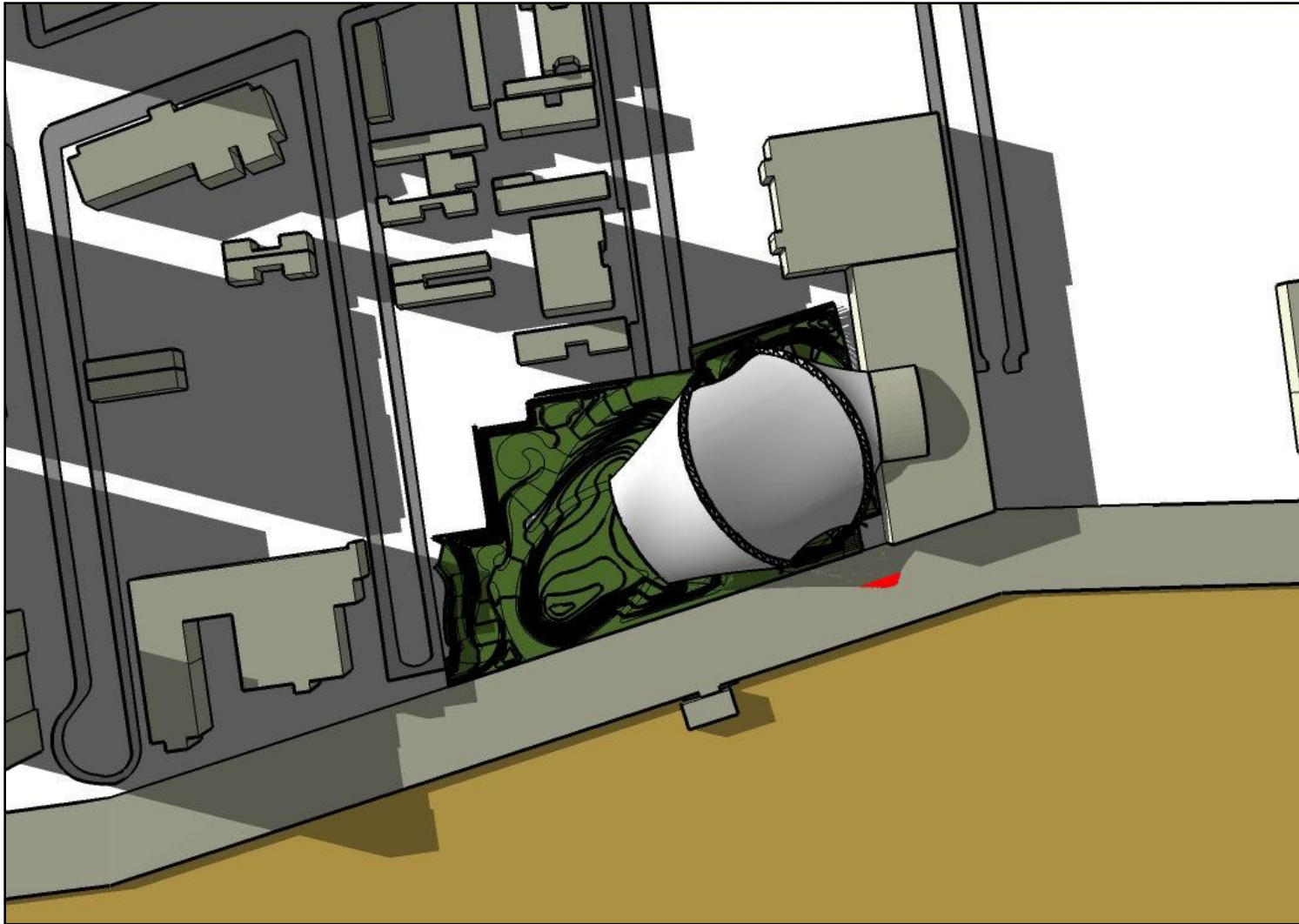
Shadows Analysis

Per *CEQR Technical Manual* guidelines, shadow analyses were performed for the two existing open space resources identified above on four representative days of the year: March 21/September 21, the equinoxes; May 6, the midpoint between the summer solstice and the equinox (and equivalent to August 6); June 21, the summer solstice and the longest day of the year; and December 21, the winter solstice and shortest day of the year. These four representative days indicate the range of shadows over the course of the year. CEQR guidelines define the temporal limits of a shadow analysis period to fall from an hour and a half after sunrise to an hour and a half before sunset. As discussed above, the results of the shadow analysis show the incremental difference in shadow impact between the No-Action and With-Action scenarios (see Table 4-1).

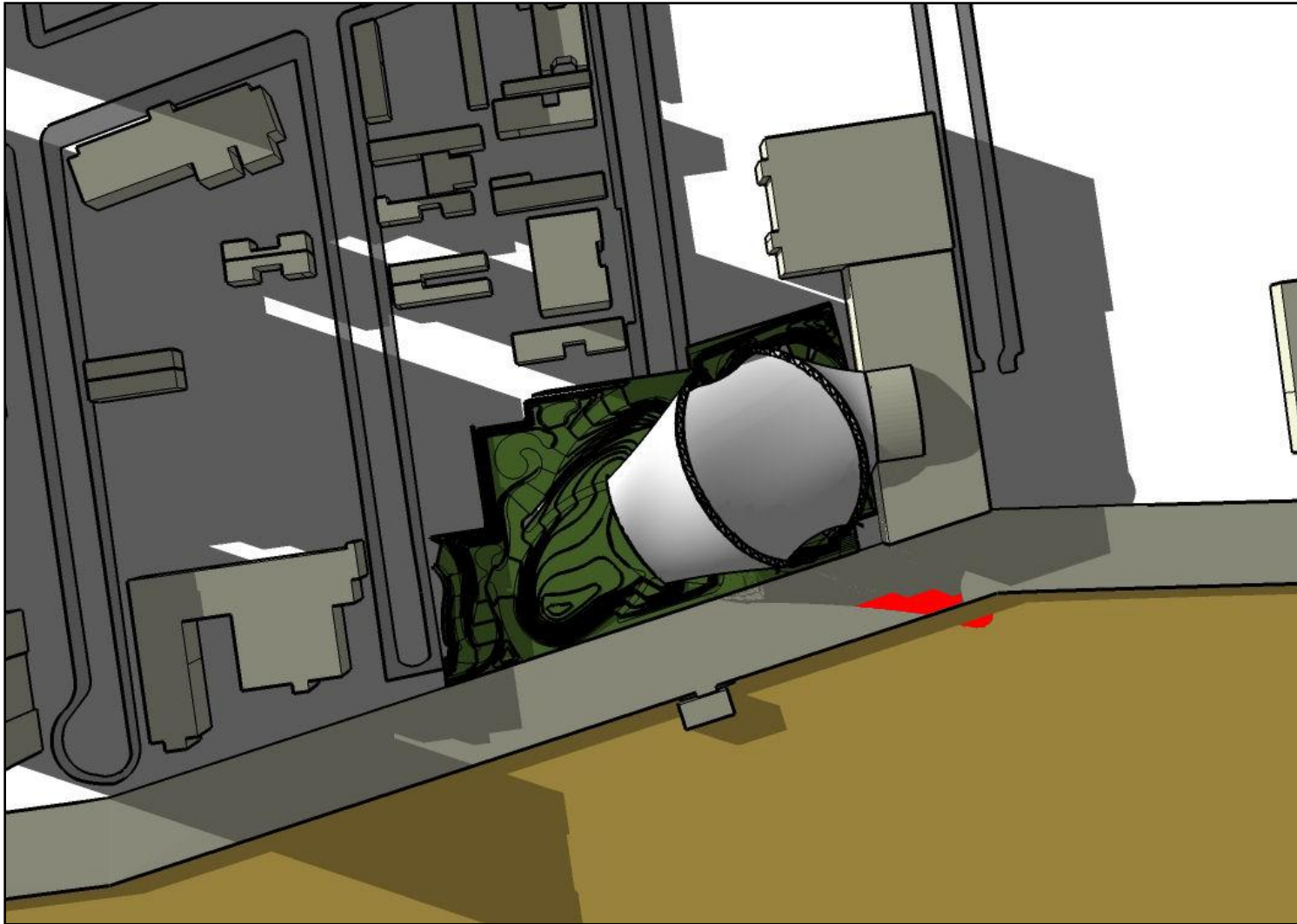
As shown in Table 4-1, the proposed project would increase shadow coverage at the Riegelmann Boardwalk on the May 6 and June 21 analysis dates and on Coney Island Beach on the May 6 analysis date. Figures 4-2, 4-3, and 4-4 show representative shadow views for the two open space resources of concern.



This shadows analysis was based on a previous design with a larger roof cover, which is more conservative for shadows analysis purposes. Updates to the shadows analysis to reflect the change in design will be made between Draft and Final EIS, as necessary.



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**TABLE 4-1
Duration of Shadows on Open Space Resources (Increment Compared to No-Action Conditions)**

Resource	Analysis Date			
	March 21/September 21 7:36 AM – 4:29 PM	May 6/August 6 6:27 AM – 5:18 PM	June 21 5:57 PM – 6:01 PM	December 21 8:51 AM – 2:53 PM
Riegelmann Boardwalk				
Beginning – Ending Time	--	5:04 – 5:18	5:10 – 6:01	--
Duration (hours:minutes)	--	0:14	0:51	--
Coney Island Beach				
Beginning – Ending Time	--	--	5:56 – 6:01	--
Duration (hours:minutes)	--	--	0:05	--

Note: All times are Eastern Standard Time; Daylight Savings Time was not accounted for per CEQR Technical Manual guidelines.

It should be noted that, per the *CEQR Technical Manual*, all times reported herein are Eastern Standard Time and do not reflect adjustments for daylight saving time that is in effect from mid-March to early November. As such, the times reported in this chapter for May 6 and June 21 need to have one hour added to reflect the Eastern Daylight Saving Time.

March 21 (September 21)

On the equinoxes, no shadows from the proposed project would reach either the Riegelmann Boardwalk or Coney Island Beach.

May 6 (August 6)

On May 6, the time period for shadows analysis begins at 6:27 AM and continues until 5:18 PM. On the midpoint between the equinoxes and the solstices, the proposed project would not cast any shadows on Coney Island Beach.

RIEGELMANN BOARDWALK

The proposed development would cast incremental shadows on the Riegelmann Boardwalk beginning at 5:04 PM and continuing until the end of the analysis period at 5:18 PM, for a duration of 14 minutes. As shown in Figure 4-2, the majority of the boardwalk would not be shaded and only a very small portion immediately adjacent to the development site would be cast in shade. The boardwalk would experience no incremental shadow coverage throughout the morning and afternoon.

June 21

On June 21 the time period for shadows analysis begins at 5:57 AM and continues until 6:01 PM. On the summer solstice, which is the day of the year with the longest period of daylight, the sun is most directly overhead and generally shadows are shortest and move across the widest angular range from west to east.

RIEGELMANN BOARDWALK

The proposed project would cast incremental shadows on the Riegelmann Boardwalk beginning at 5:10 PM and continuing until the end of the analysis period at 6:01 PM, for a duration of 51 minutes. As shown in Figures 4-3 and 4-4, the majority of the boardwalk would not be shaded and only a small

portion would be affected. The boardwalk would experience no incremental shadow coverage throughout the morning and afternoon.

CONEY ISLAND BEACH

The proposed project would cast incremental shadows on the Coney Island Beach beginning at 5:56 PM and continuing until 6:01 PM, for a duration of 5 minutes. As shown in Figure 4-4, the majority of the beach would not be shaded and only a small northern portion would be cast in shade. The beach would experience no incremental shadow coverage at all other times of day.

December 21

No shadows would be cast during the winter months, when the tensile roof cover and support trusses would be removed during the off-season. As such, on the winter solstice, when the sun is lowest in the sky and shadows are at their longest, there would be no shadows cast on either the Riegelmann Boardwalk or Coney Island Beach.

Assessment

Riegelmann Boardwalk

The proposed project would cast incremental shadows on the Riegelmann Boardwalk for approximately 14 minutes on May 6/August 6 and 51 minutes on June 21. Shadow coverage would be limited to relatively small areas of the boardwalk and would only occur in the late evening before sunset. There would be no incremental shadows cast on the boardwalk on the other two representative analysis days.

Project-generated incremental shadows would only occur on the May 6/August 6 and June 21 analysis days and would not be large enough in extent or long enough in duration to result in significant adverse shadow impacts. On these analysis days, only a very small area of the boardwalk would receive incremental shade as a result of the proposed project (see Figures 4-2, 4-3, 4-4). As the boardwalk does not contain vegetation, and the extent of shadows would be limited throughout the year, the incremental shadows generated as a result of the proposed project would not adversely affect the utilization or enjoyment of the Riegelmann Boardwalk.

Coney Island Beach

The proposed project would cast incremental shadows on Coney Island Beach for approximately five minutes on June 21. Shadow coverage would be limited to a relatively small area of the beach and would only occur in the late evening before sunset. There would be no incremental shadows cast on the beach on the other three representative analysis days.

Project-generated incremental shadows would only occur on the June 21 analysis day and would not be large enough in extent or duration to result in significant adverse shadow impacts. On June 21, only a very small area of the beach would receive incremental shade as a result of the proposed project (see Figure 4-4). As the beach does not contain vegetation, and the extent of shadows would be limited throughout the year, the incremental shadows generated as a result of the proposed project would not adversely affect the utilization or enjoyment of Coney Island Beach.

Proposed Open Space Component Of Proposed Development

The proposed Seaside Park would experience large areas of direct sunlight for most of the analysis day in all seasons. Shadows would generally be limited to the northern portion of the park during the early mornings, but would exit by early afternoon, leaving the open space almost completely in sun. It is important to note that during the off-season when concerts and other events are not taking place, the tensile roof cover and support trusses would be removed. Therefore, even in the winter months, the park is expected to receive ample sunlight for active and passive recreational use.