Chapter 6: Shadows

A. INTRODUCTION

Sunlight and shadows affect people and their use of open space all day long and throughout the year, although the effects vary by season. Sunlight supports vegetation and enhances architectural features, such as stained glass windows and carved detail on historic structures. Conversely, shadows can affect plant growth and sustainability of landscape features, and the visibility and architectural significance of building features.

This chapter examines whether the proposed project would cast new shadows on any sunlight-sensitive publicly accessible resources or other resources of concern, and assesses the potential effects of any such new shadows. Public open spaces, historic, cultural, and natural resources are all potentially sunlight-sensitive resources, and, therefore, this chapter is closely linked to the information presented in other sections of this Supplemental Environmental Impact Statement (SEIS), such as Chapter 5, "Open Space." The analysis updates changes in background conditions since the 2001 *FEIS* and assesses whether any changed background conditions and the differences in program elements between the proposed development program and those assessed in the 2001 *FEIS* for the project block would result in any significant adverse impacts to shadows that were not previously addressed in the 2001 *FEIS*.

According to the 2012 *CEQR Technical Manual*, a shadows assessment is required only if the project would result in structures (or additions to existing structures) of 50 feet or more, or be located adjacent to or across the street from a sunlight-sensitive resource. As described in Chapter 1, "Project Description," the proposed actions would result in the construction of a new mixed-use building and midblock community facility use building on projected development site 1 (the western and midblock portions of the site) and the conversion of the existing mini-storage facility on projected development site 2. This proposed mixed-use building would reach a maximum height of approximately 448 feet above curb level (elevation approximately 470 feet) including the rooftop mechanical structures and screenwall. Therefore, a shadows analysis is required. The proposed one-story midblock community facility building and the addition of 3 stories to the existing mini-storage facility would not result in an increase of more than 50 feet in height or be adjacent to a sunlight-sensitive resource and do not need to be assessed for potential shadow impacts.

In the future without the proposed project, the project site would be developed with a new, five-story, 95-foot high building that would conform with existing zoning and the other 2001 approvals for the project block (the permitted building). Shadows from the proposed mixed-use building would be compared to shadows from the 95-foot high building of the permitted building to determine any incremental shadows resulting from the proposed project.

PRINCIPAL CONCLUSIONS

The analysis shows that project-generated incremental shadow would fall on portions of the Hudson River, Hudson River Park, and the Route 9A Walkway/Bikeway in the mornings of all seasons. Three other resources would experience incremental shadow in one season only: The plaza at 555 West 57th would receive 20 minutes of new shadow at the end of the June 21 analysis day; areas of Riverside Park South would experience approximately an hour of project-generated shadow on the December 21 analysis day, in the late morning; and the Parcel "O" Plaza—a newly developed, publicly accessible plaza at Freedom Place South and West 62nd Street—would experience incremental shadow during the final 53 minutes of the December 21 analysis day.

In the future without the proposed project, the 95-foot high building that would be built on the project site would be bulkier in the second through fifth stories in comparison to the proposed mixed-use building. Consequently, the proposed actions would result in approximately 30 to 40 minutes of reduced shadows on some small areas of Hudson River Park, the Route 9A Bikeway, and the Hudson River in some seasons.

The analysis concludes that, as with the project analyzed in the 2001 *FEIS*, the incremental shadow would be limited in extent and duration on nearby sun-sensitive resources and would therefore not result in significant adverse impacts. The proposed project would not result in any significant adverse impacts to shadows that were not previously addressed in the 2001 *FEIS*.

B. SUMMARY OF 2001 FEIS FINDINGS

The 2001 *FEIS* found that some incremental shadow would fall on portions of Hudson River Park and Riverside Park South—both of which were in development or planning phases in 2001—for short periods early in the late spring and summer seasons, and concluded that the limited duration and seasonality of the new shadows would not cause significant adverse impacts.

C. DEFINITIONS AND METHODOLOGY

ANALYTICAL FRAMEWORK

As discussed in Chapter 1, "Project Description," the analyses in this SEIS compare conditions in the future without the proposed project to conditions in the future with the proposed project. The future without the proposed project scenario in all technical areas assumes that none of the discretionary actions now being sought by the applicant are approved. Absent those approvals, it is assumed that development on the projected development sites would be within the envelope of the development analyzed in the 2001 *FEIS*, but with a commercial building containing approximately 331,300 gross square feet (gsf) of office use, 67,500 gsf of retail use and 538 public parking spaces on projected development site 1. (Absent the approvals, there would be no change in the assumed development of projected development site 2—the existing mini-storage building would remain.) The assumption regarding projected development site 1 is based on the fact that the applicant has applied for a building permit for such a building. The permitted building can be constructed under the land use approvals granted in 2001 without further discretionary approvals or actions. It would be smaller than that which is permitted under current zoning, and, accordingly, assuming that development on projected development site 1 as a basis for comparing the impacts of the proposed project to the future without the proposed project is

more conservative than using the more fully built out development scenario that was analyzed in the 2001 *FEIS*.

DEFINITIONS

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

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

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

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

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

A significant adverse shadow impact generally occurs, according to the 2012 *CEQR Technical Manual*, 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. This includes the following situations:

- Substantial reduction in sunlight where the sensitive use is already subject to substandard sunlight (i.e., less than minimum time necessary for its survival).
- Reduction in sunlight available to a sensitive use for less than the minimum time necessary for its survival (when there was sufficient sunlight in the future without the proposed project).
- Substantial reduction in the usability of the open space as a result of increased shadow.

- Substantial reduction in sunlight available for the use, enjoyment, or appreciation of the sunlight-sensitive features of an historic resource.
- Complete elimination of all direct sunlight on the sunlight-sensitive resource for longer than 10 minutes at any time of the year.

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, taking into account existing buildings and their shadows. 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.

D. PRELIMINARY ASSESSMENT

A base map was developed showing the location of the project block and the surrounding street layout (see **Figure 6-1**). In coordination with the information regarding open space, historic and cultural resources, and natural resources presented in other sections of this SEIS, potentially sunlight-sensitive resources were identified and shown on the map.

TIER 1 SCREENING ASSESSMENT

For the Tier 1 assessment, the longest shadow that the proposed mixed-use building could cast is calculated, and, using this length as the radius, a perimeter is drawn around the proposed building footprint. 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 2012 *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 very start of the analysis day at 8:51 AM, and is equal to 4.3 times the height of the structure.

Therefore, at a maximum height of 448 feet above curb level, including rooftop mechanical structures, the proposed mixed-use building could cast a shadow up to 1,926 feet in length (448 x 4.3). 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.

A number of resources with sunlight-sensitive features are located within the remaining shadow study area, and the analysis therefore proceeded to the Tier 3 screening assessment.

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 when 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.

REPRESENTATIVE DAYS FOR ANALYSIS

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 1.5 hours after sunrise and 1.5 hours before sunset. At times earlier or later than this timeframe window of analysis, the sun is down near the horizon and the sun's rays reach the Earth at very tangential angles, diminishing the amount of solar energy and producing shadows that are very long, move fast, and generally blend with shadows from existing structures until the sun reaches the horizon and sets. Consequently, shadows occurring outside the timeframe window of analysis are not considered significant under CEQR, and their assessment is not required.

TIER 3 SCREENING ASSESSMENT RESULTS

Figure 6-2 illustrates the range of shadows that would occur from the hexahedron-shaped 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). The Tier 3 assessment serves to indicate which resources could

be reached by project-generated shadow and require further analysis; existing shadows cast by intervening buildings are not considered.

On March 21 and September 21, shadow from the proposed building would fall on portions of Hudson River Park's planned Pier 97 open space and adjacent upland area, and the Route 9A Bikeway at the start of the analysis day. No other sunlight-sensitive resources would be affected on this day.

On May 6 and August 6, areas of Hudson River Park—specifically Clinton Cove and Pier 97—and the Route 9A Bikeway could be affected by project-generated shadow in the morning. At the end of the analysis day, the proposed building's shadow would be long enough to reach the residential plaza at 515 West 59th Street, although it is likely that intervening buildings would already be casting shadows on that space at that time.

On June 21, the proposed building's shadow would fall across parts of Clinton Cove and the Route 9A Bikeway in the morning, and would be long enough to reach the publicly accessible plazas at 555 West 57th Street (the portion along West 58th Street) and at the entrance to St. Luke's-Roosevelt Hospital Center at the end of the analysis day.

On December 21, project-generated shadow would fall to the northwest in the morning, potentially (absent existing shadows) on portions of the Route 9A Bikeway and Riverside Park South. In the afternoon, the proposed building's shadow would fall toward the northeast and would be long enough reach the Parcel "O" open space and West End Towers Plaza.

Project-generated shadow would also be long enough to reach a small area of the Hudson River on all four analysis days.

No other sun-sensitive resources could be affected by project-generated shadow. A detailed analysis was conducted to determine the extent and duration of project-generated incremental shadow on Hudson River Park's Clinton Cove and Pier 97, the Route 9A Bikeway, the plazas at 515 West 59th Street, 555 West 57th Street and St. Luke's-Roosevelt Hospital Center, Riverside Park South, the Parcel "O" open space, West End Towers Plaza, and the Hudson River.

E. DETAILED ANALYSIS

The purpose of the detailed analysis is to determine the extent and duration of incremental shadows on sunlight-sensitive resources and to assess their effects. A three-dimensional computer model of the baseline condition was developed, containing existing buildings and future developments in the area expected to be completed by the 2015 Build year. In the future without the proposed project, projected development site 1 would be developed with the permitted building, a new, five-story, 95-foot high building that would conform with existing zoning and approvals for the project block, and the permitted building was also added to the baseline computer model. The future condition with the proposed building and its shadows are compared to the baseline shadows to determine the incremental shadows that would result with the proposed project. **Figure 6-3** shows views of the computer model, with both proposed project and the permitted building in the future without the proposed project.

Shadow analyses were performed for each of the representative days and analysis periods indicated in the Tier 3 assessment. The analysis showed that project-generated incremental shadow would fall on portions of the Hudson River, Hudson River Park, and the Route 9A Bikeway in the mornings of all four analysis days. Three other resources would experience incremental shadow on one of the four analysis days only: The plaza at 555 West 57th Street

would receive 20 minutes of new shadow at the end of the June 21 analysis day; areas of Riverside Park South would experience approximately an hour of project-generated shadow on the December 21 day, in the late morning; and the Parcel "O" Plaza would experience incremental shadow during the final 53 minutes of the December 21 analysis day.

Project-generated shadow did not fall on the 515 West 59th Street plaza, the St.-Luke's-Roosevelt Hospital Center plaza, or West End Towers Park at any time of year due to intervening buildings.

OPEN SPACE RESOURCES OF CONCERN

Two areas of **Hudson River Park** would be affected by project-generated shadow: Clinton Cove and Pier 97. The Clinton Cove section of Hudson River Park opened in 2005 and is located along the waterfront between Pier 94 (near West 54th Street) and Pier 97 (near West 57th Street). This area includes an esplanade with benches, lawns, shade trees, and a public boat house at the waterfront. Pier 97, formerly a New York City Department of Sanitation facility, is currently being rebuilt as a public pier. Amenities on Pier 97 will include courts for active recreation, a playground and a lawn. Pier 97 will also be used to berth historic ships. The adjacent strip between West 57th and 58th Streets, between the Route 9A Bikeway and the river, will also be re-purposed as public park area.

The **Route 9A Walkway/Bikeway**, stretching from Battery Park to West 59th Street between Route 9A and Hudson River Park, provides off-street paved paths for active recreational activities such as running, biking, and rollerblading. The walkway/bikeway continues northward through Riverside Park South.

Riverside Park South stretches along the Hudson River from West 59th Street north to West 72nd Street. This park contains numerous amenities, including: multi-purpose athletic fields, baseball fields, handball and basketball courts, playgrounds, a 740-foot-long recreational pier, overlook terraces/esplanades/promontories, landscaped areas, and walkways and bikeways. The pier extends into the Hudson River at approximately West 70th Street and can be used for fishing, sunbathing or other passive activities. The approximately 20-foot-wide esplanade runs along the entire length of the Riverside South development and connects to the existing esplanade at Riverside Park to the north and to the Hudson River Park esplanade to the south.

555 West 57th Street is a through-block office building with a BMW automobile showroom on the ground floor. Narrow, rectangular outcroppings of elevated terrace-like plaza flank the West 58th and 57th Street entrances. A few wood benches and tiny planters are the only amenities in these spaces.

A newly developed, publicly accessible plaza at Freedom Place South and West 62nd Street is referred to in this document as **Parcel "O" Plaza** due to its association with the recent Riverside South development. Most of the southwestern half of this open space is hard-surfaced plaza, with some planted areas, and most of the northeastern half is grass, trees and plantings.

NATURAL RESOURCES OF CONCERN

The Hudson River is an important natural feature, as it provides habitat for an array of aquatic flora and fauna.

MARCH 21/SEPTEMBER 21 (FIGURES 6-4 AND 6-5)

At the start of the analysis day, the proposed building's shadow falls westward, with incremental shadow falling on portions of the Hudson River, Hudson River Park's Pier 97 and adjacent upland area, and the Route 9A Bikeway. Small areas of Hudson River Park and the Bikeway would also experience less shadow at this time with the proposed building, in comparison to the future without the proposed project. Incremental shadow would exit the river and park at about 8:45 AM, and the walkway/bikeway around 9:00 AM. No other project-generated incremental shadow would fall on sun-sensitive resources on this analysis day.

Table 6-1
Incremental Shadow Durations

Analysis day and timeframe window	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 SPACES				
Hudson River Park - Clinton Cove	—	6:27 AM–7:40 AM Total: 1 hr 13 min	5:57 AM–7:20 AM Total: 1 hr 23 min	—
Hudson River Park - Pier 97 and upland area	7:36 AM–8:45 AM Total: 1 hr 9 min *Reduced:* *7:36 AM–8:05 AM* *Total: 29 min*	—	—	— *Reduced:* *9:25 AM–9:55 AM* *Total: 30 min*
Route 9A Bikeway	8:20 AM–9:05 AM Total: 45 min *Reduced:* *7:50 AM–8:25 AM* *Total: 35 min*	6:27 AM–7:45 AM Total: 1 hr 18 min	6:15 AM–7:25 AM Total: 1 hr 10 min *Reduced:* *6:05 AM–6:30 AM* *Total: 25 min*	— *Reduced:* *9:25 AM–10:05 AM* *Total: 40 min*
555 West 57th Street plaza	—	—	5:40 PM–6:00 PM Total: 20 min	—
Riverside Park South	—	—	—	9:55 AM–10:50 AM 11:20 AM–11:35 AM Total: 1 hr 10 min
Parcel "O" Plaza	—	—	—	2:00 PM–2:53 PM Total: 53 min
NATURAL FEATURES				
Hudson River	7:36 AM–8:45 AM Total: 1 hr 9 min	6:27 AM–7:30 AM Total: 1 hr 3 min	5:57 AM–6:50 AM Total: 53 min	8:51 AM–10:35 AM Total: 1 hr 44 min *Reduced:* *8:51 AM–9:20 AM* *Total: 29 min*

Notes: Table indicates entry and exit times and total duration of incremental shadow for each sunlight-sensitive resource. "Reduced" durations refer to shadow that the permitted building would cast, which would not be cast by the proposed building. Daylight saving time is not used.

MAY 6/AUGUST 6 (FIGURES 6-6 AND 6-7)

At the start of this analysis day at 6:27 AM the proposed building's shadow would fall to the southwest across portions of the Clinton Cove area of Hudson River Park as well as the Hudson River and the Route 9A Bikeway. The incremental shadow would move off the river after an hour, and would exit the park and bikeway fifteen minutes after that, at around 7:45 AM. No other project-generated incremental shadow would fall on sun-sensitive resources on this analysis day.

JUNE 21 (FIGURES 6-8 AND 6-9)

Similar to the May 6/August 6 analysis day, the proposed building's shadow would fall to the southwest at the start of the June 21 analysis day across portions of the Clinton Cove area of Hudson River Park as well as the Hudson River and the Route 9A Bikeway. The incremental shadow would move off the river less than an hour later at about 6:50 AM, and would exit the park and bikeway by 7:25 AM.

For the final 20 minutes of the analysis day, from 5:40 PM to 6:00 PM, a very small triangle of remaining sunlight on the West 58th Street side of the 555 West 57th Street plaza would be in shadow in the Build scenario but would not be in shadow in the future without the proposed project.

DECEMBER 21 (FIGURES 6-10 TO 6-17)

On December 21, when shadows are longest, the proposed building's shadow would fall to the northwest at the start of the analysis day at 8:51 AM, shading portions of the Hudson River. Other, smaller areas of the river would experience a reduction in shadow, compared with the future without the proposed project. From approximately 9:30 AM to 10:00 AM small areas of Hudson River Park and the bikeway would also experience less shadow with the proposed project. At about 10:00 AM the proposed building's shadow would begin to move across a portion of Riverside Park South. The incremental shadow would move completely off the river by 10:35 AM. Just before 11:00 AM incremental shadow would move off Riverside Park South and onto the Route 9A viaduct; then, back onto a small portion of Riverside Park South for 15 more minutes between 11:20 AM and 11:35 AM.

For the final 53 minutes of the analysis day, from 2:00 PM to 2:53 PM, incremental shadow would fall on the Parcel "O" Plaza. This plaza contains five benches in the central part of the open space (see Figure 6-16). The new shadow would pass west to east across the space and would remove all the remaining sunlight for about 10 minutes, 2:10 PM to 2:20 PM (see Figure 6-17).

F. CONCLUSION

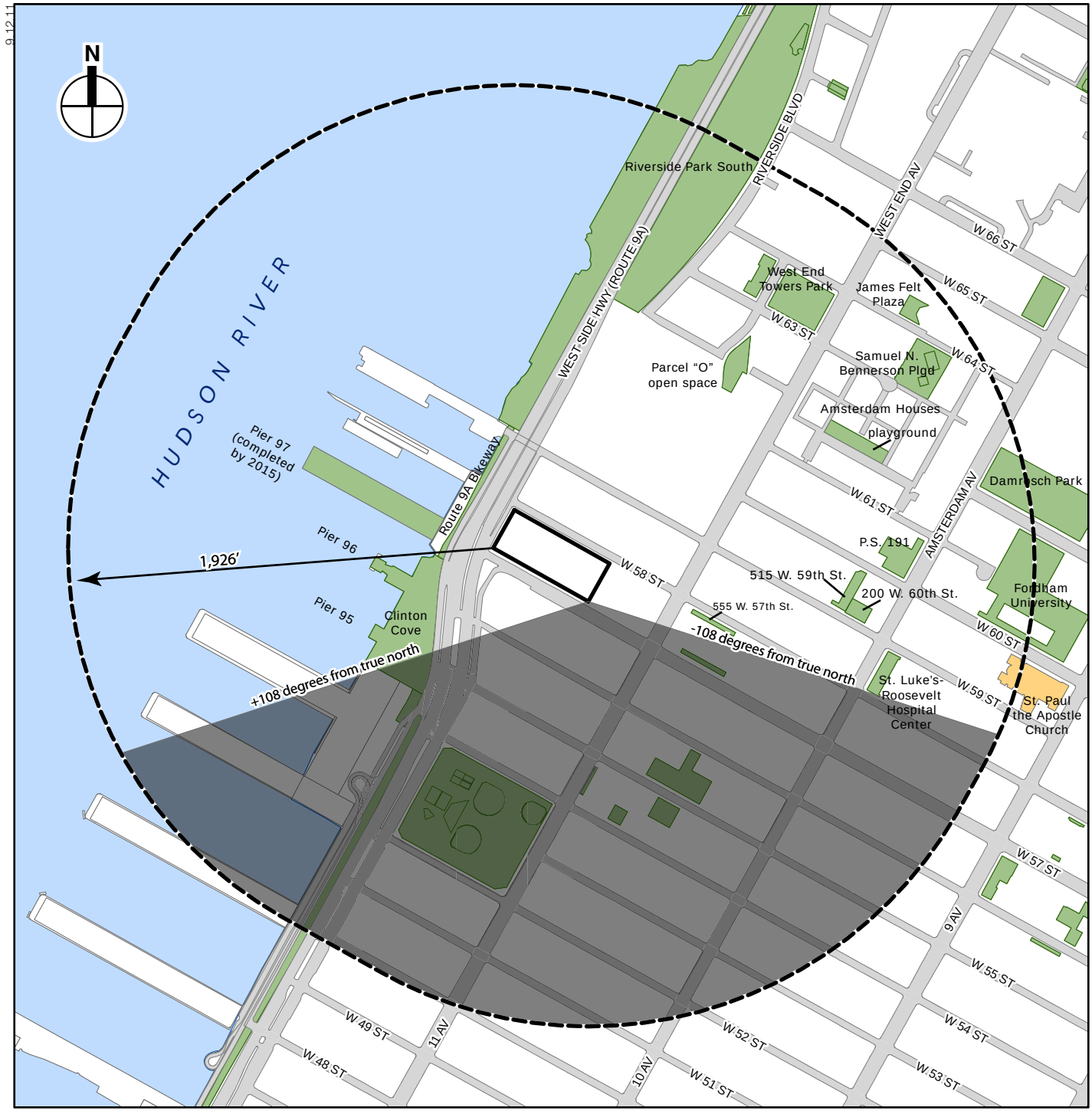
According to the 2012 *CEQR Technical Manual*, a significant shadow impact generally occurs when the incremental shadow added by a proposed project falls on a sunlight sensitive resource and substantially reduces direct sunlight exposure, reduces direct sunlight to unacceptable levels, or completely eliminates all direct sunlight for longer than 10 minutes at any time of the year.

The new morning shadows that would fall on the Hudson River, Hudson River Park, Riverside Park South, and the Route 9A Bikeway with the proposed project would be limited in extent and duration, as shown in the figures and Table 6-1. These four sunlight-sensitive resources are very

large in size and the incremental shadows affect very small portions, relative to the whole, in all four of these cases. In addition, due to the lack of structures to the west, these resources experience direct sunlight throughout the mid-day and afternoon periods throughout the year. Therefore, as with the 2001 *FEIS*, the incremental shadows would not result in significant adverse shadow impacts on these resources.

The plaza on the north side of 555 West 57th Street would experience 20 minutes of new shadow at the end of the June 21 analysis day. The new shadow would be very small, and given the limited extent and seasonality of the incremental shadow, significant adverse shadow impacts would not occur with the proposed actions.

Incremental shadow would not fall on the Parcel "O" Plaza during the spring, summer or fall, which means that the space would be unaffected by project-generated shadow throughout the growing season. On the winter analysis day, the plaza would experience 53 minutes of new shadow, including 10 minutes when the incremental shadow would eliminate all the remaining sunlight. However, areas of West End Towers Park and large areas in Riverside Park South, each one block away, would remain in sunlight during this time. Given the accessibility of these alternative sunlit areas, as well as the overall limited duration and seasonality of the incremental shadow, the proposed actions would not result in significant adverse shadow impacts on this space. ✷

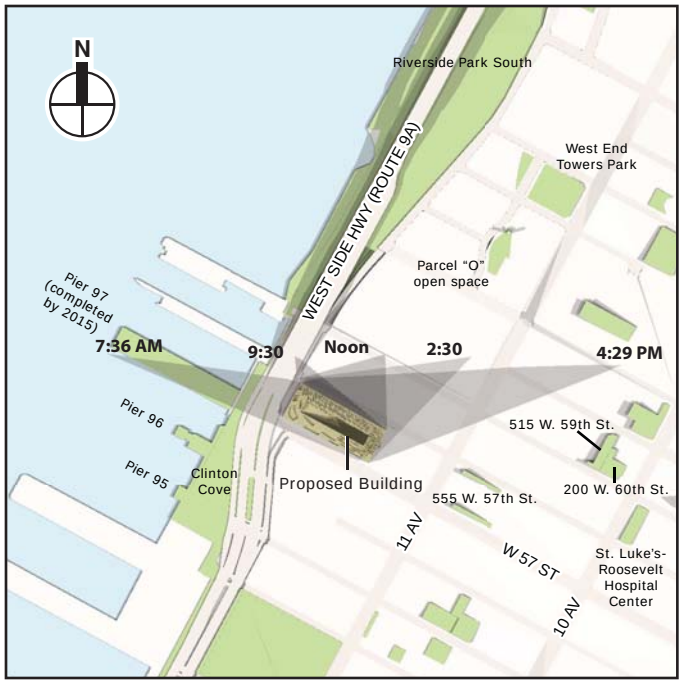


Tier 1 & Tier 2 Screening Assessment

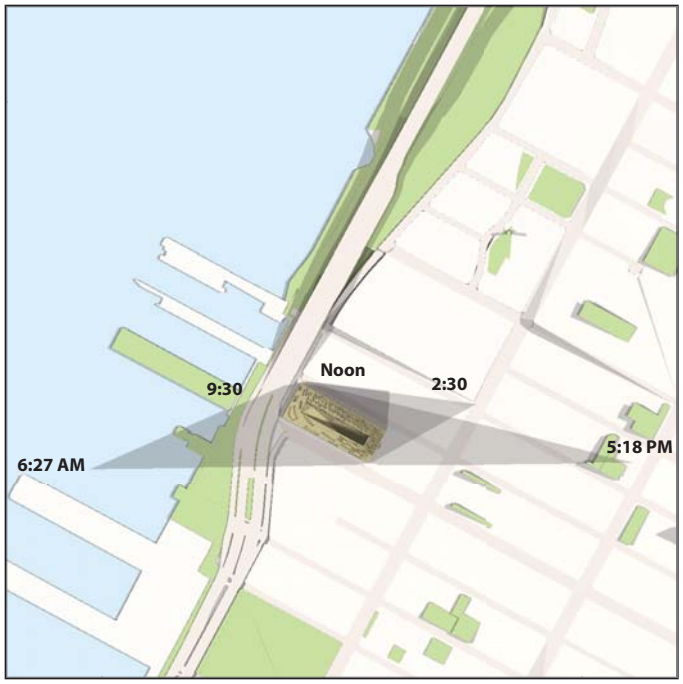
625 WEST 57TH STREET

Figure 6-1

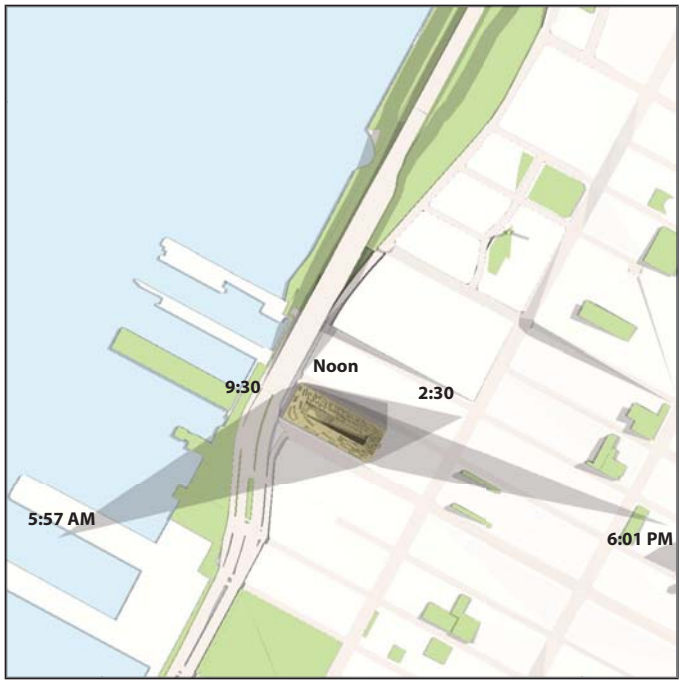
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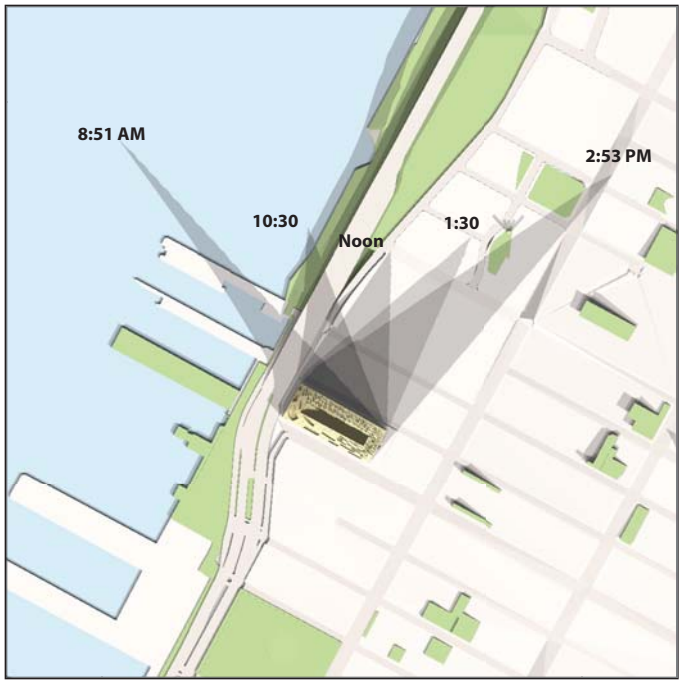
March 21/Sept. 21



May 6/August 6



June 21



December 21

Note: Daylight Saving Time not used.

Publicly-Accessible Open Space

Hudson River

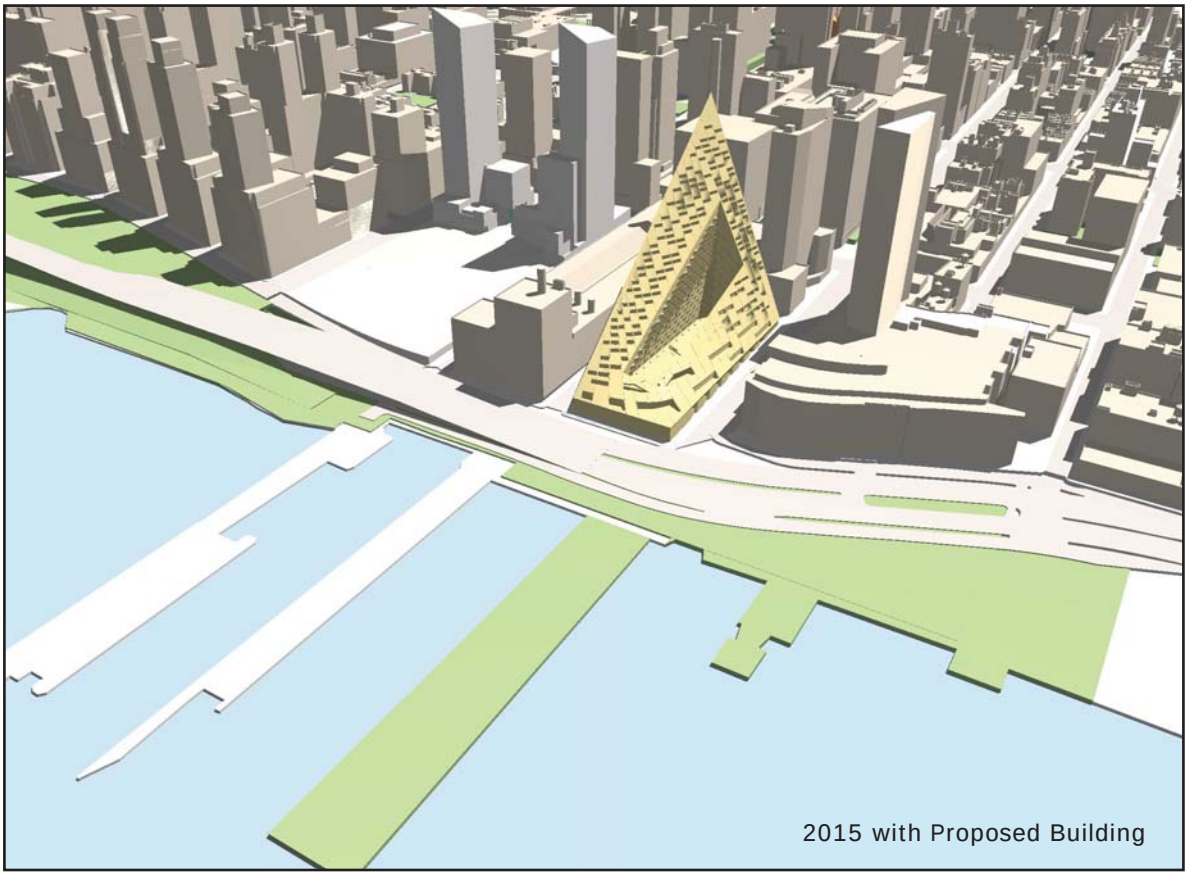
Shadow

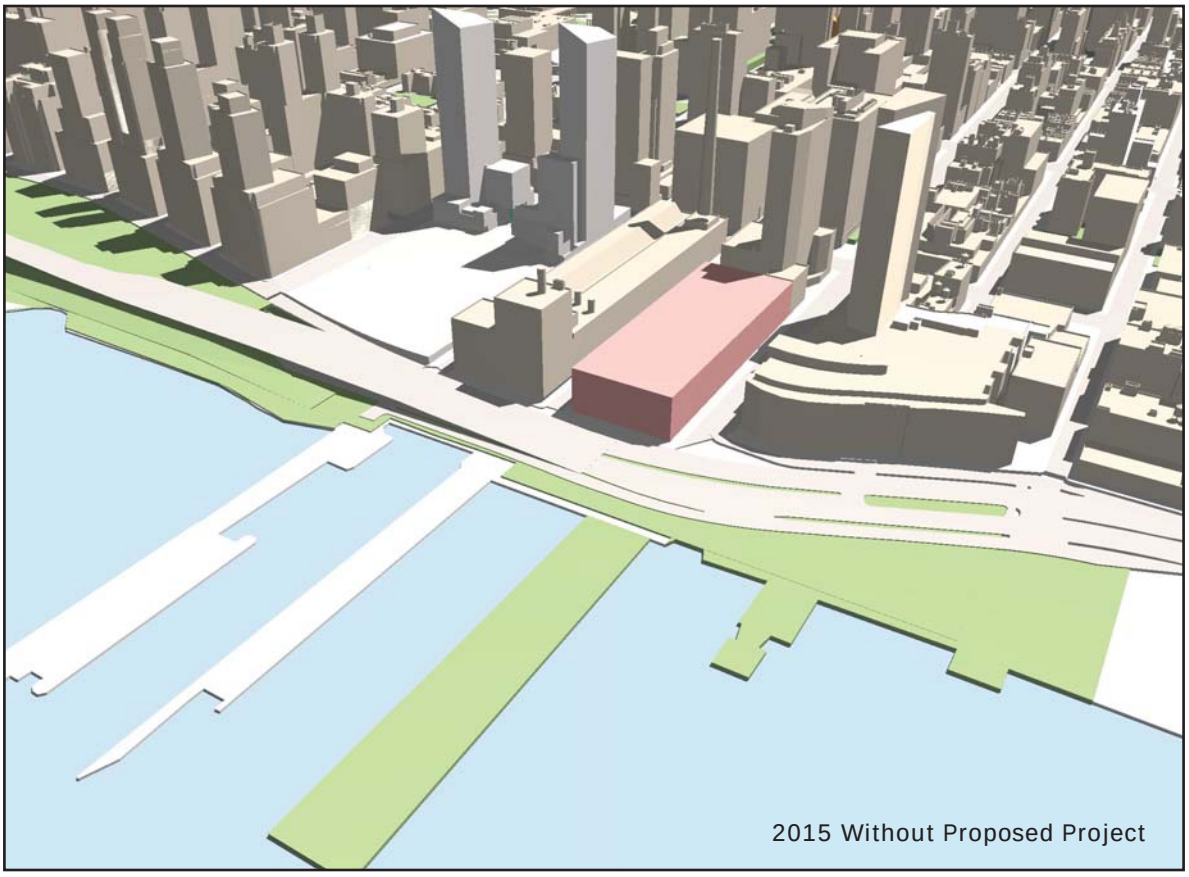
625 WEST 57TH STREET

Tier 3 Screening Assessment

Figure 6-2

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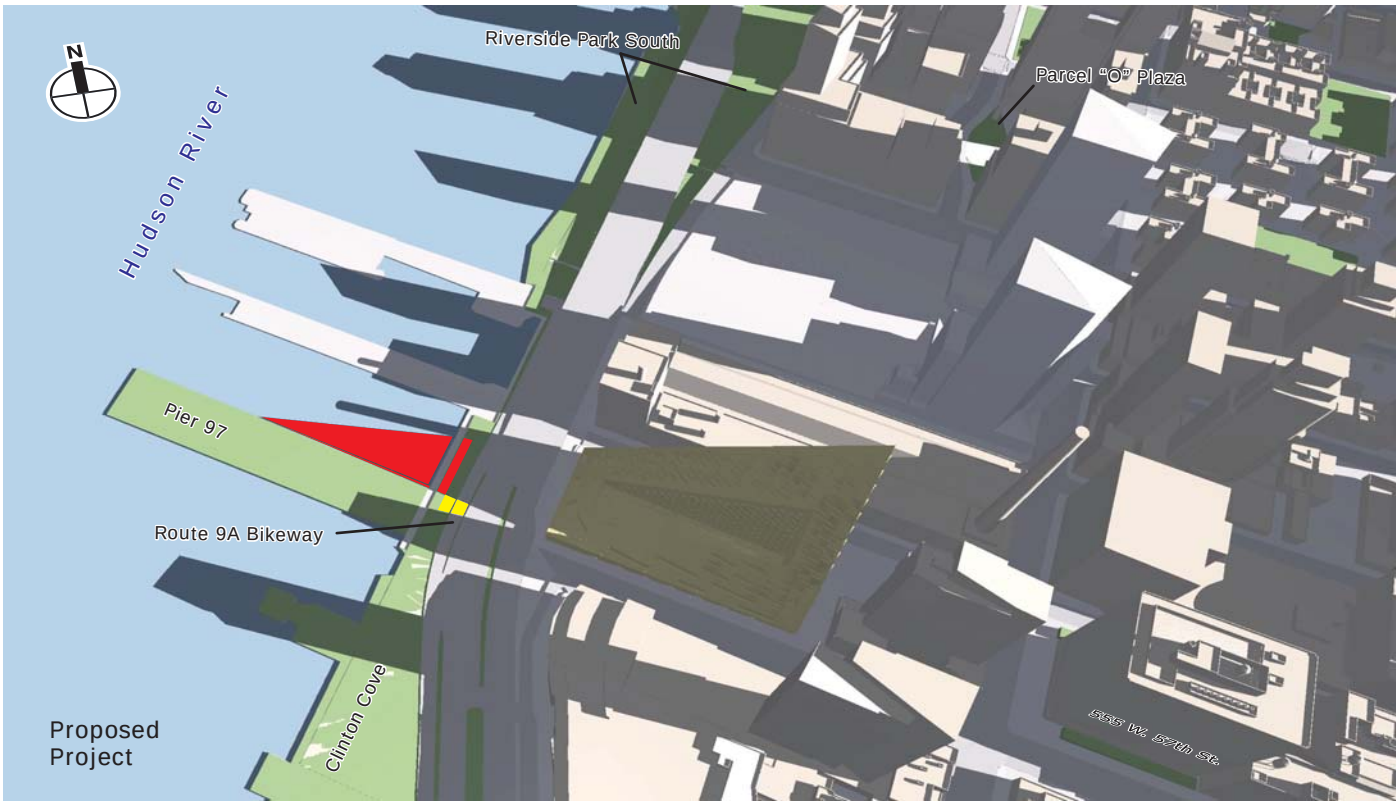


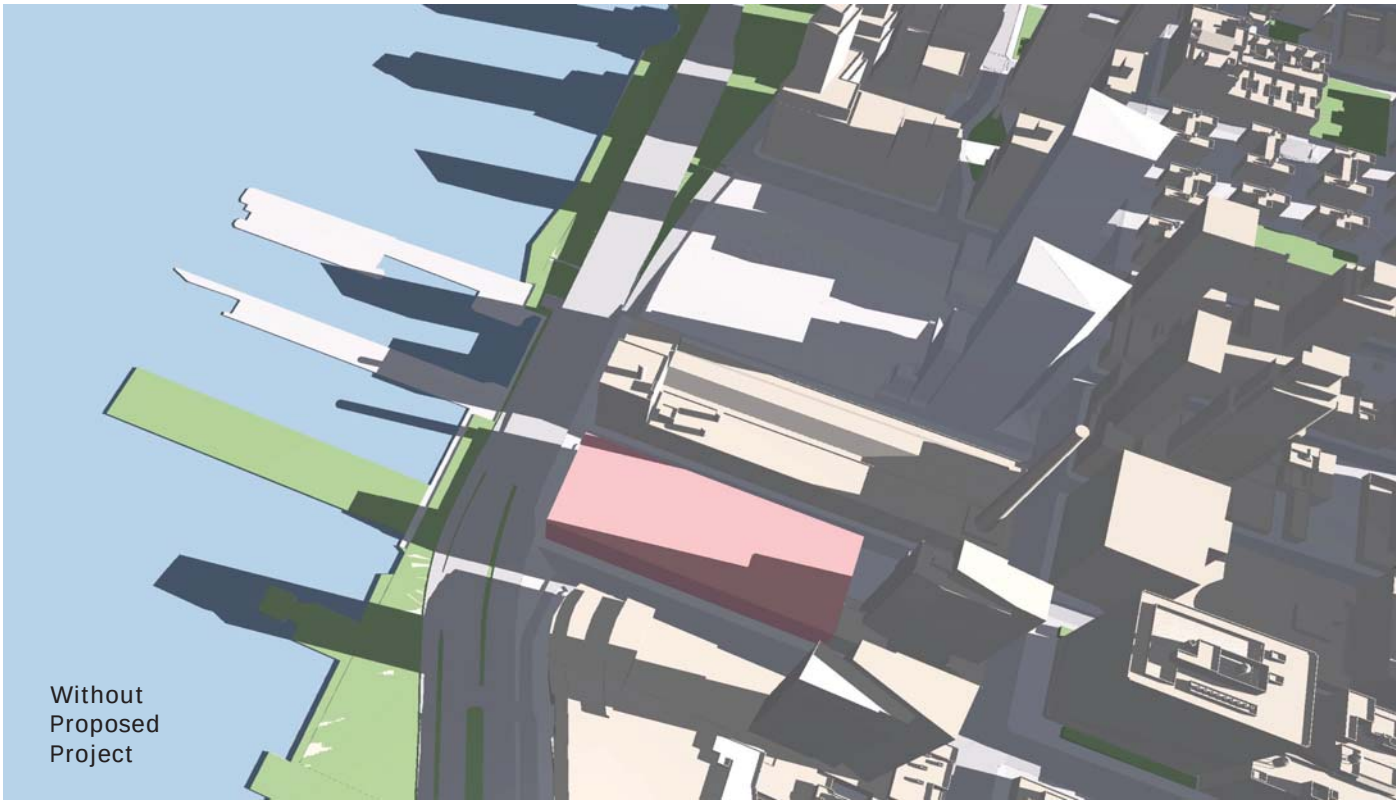
Three-Dimensional Computer Model

625 WEST 57TH STREET

Figure 6-3

10.27.11





Incremental Shadow on Sun-Sensitive Resource

Reduced Shadow on Sun-Sensitive Resource

Existing Shadows

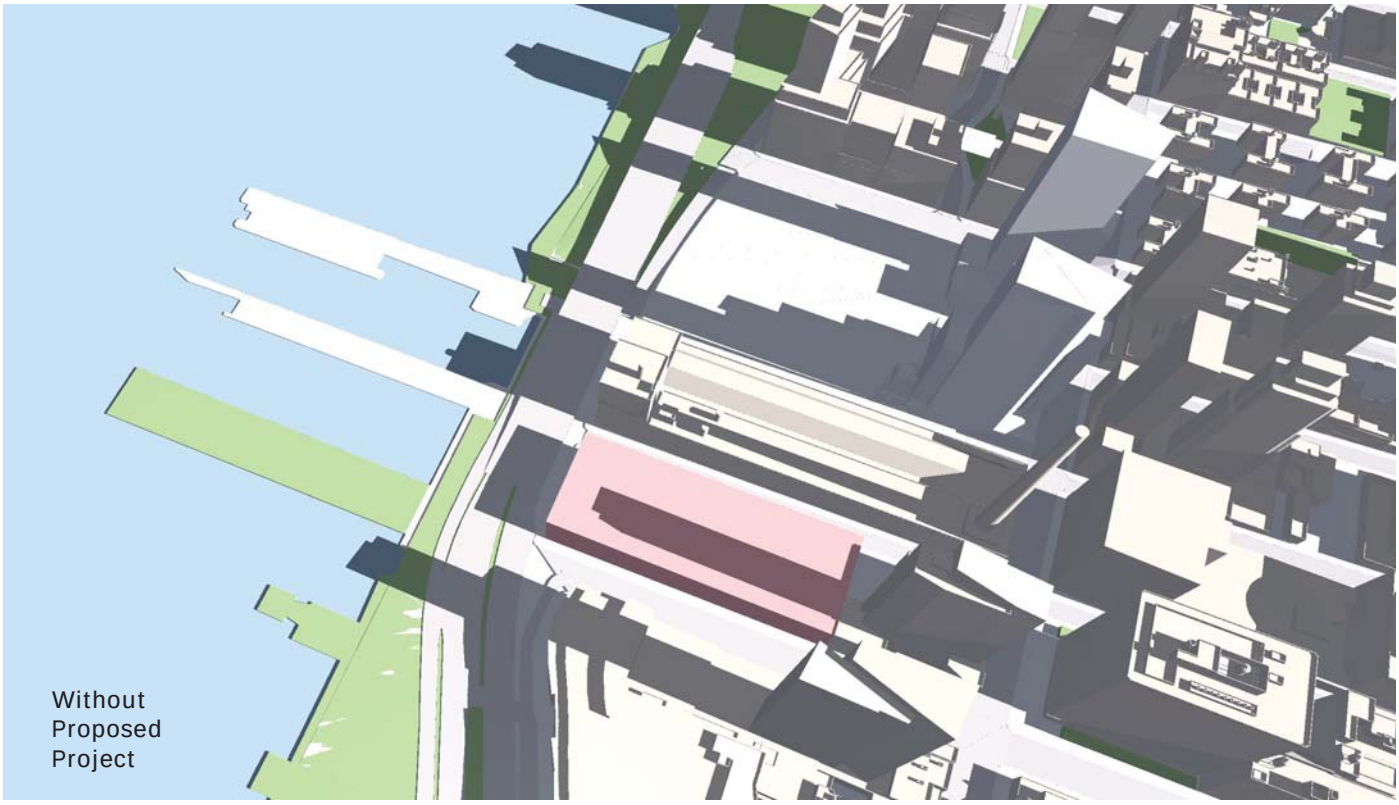
March 21/September 21 - 8:00 AM EST

625 WEST 57TH STREET

Figure 6-4

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Incremental Shadow on Sun-Sensitive Resource

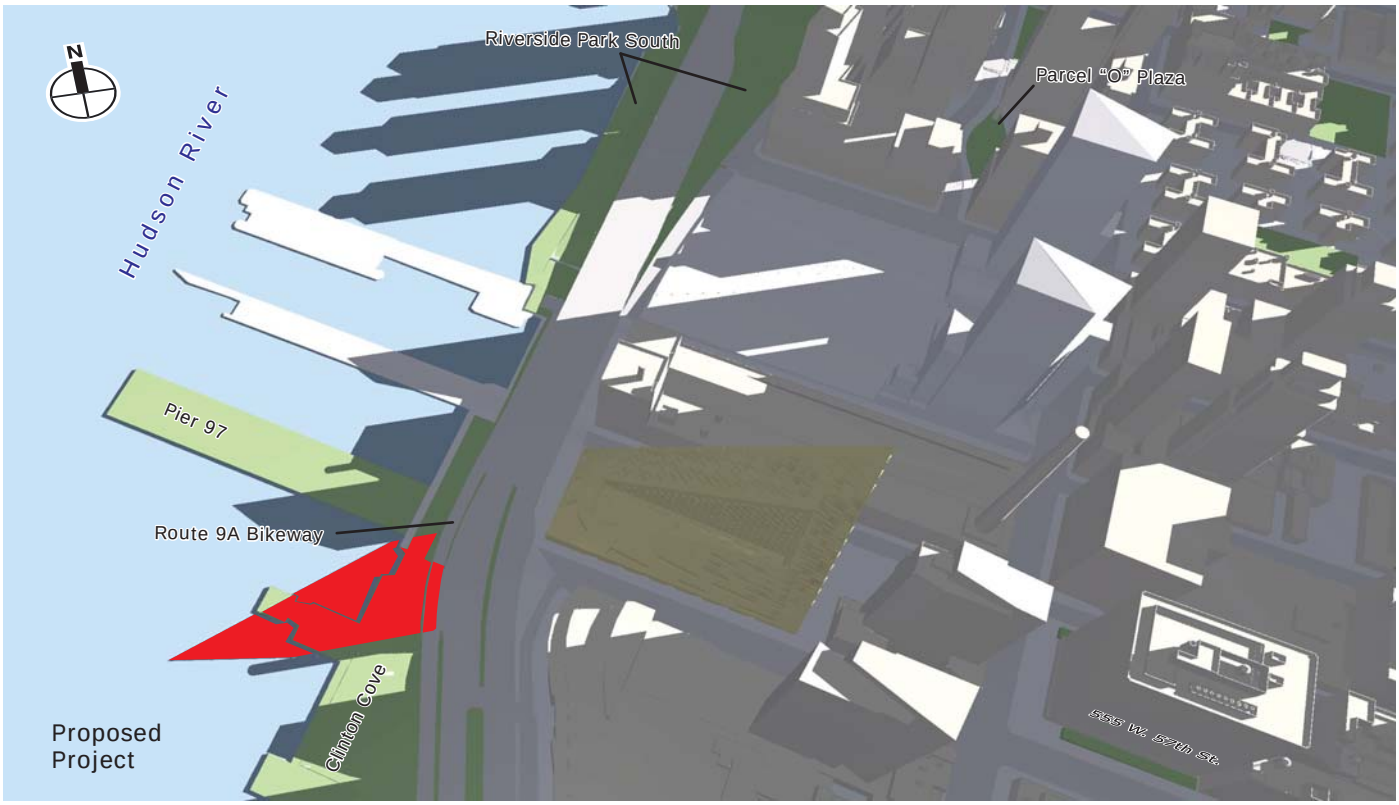
Existing Shadows

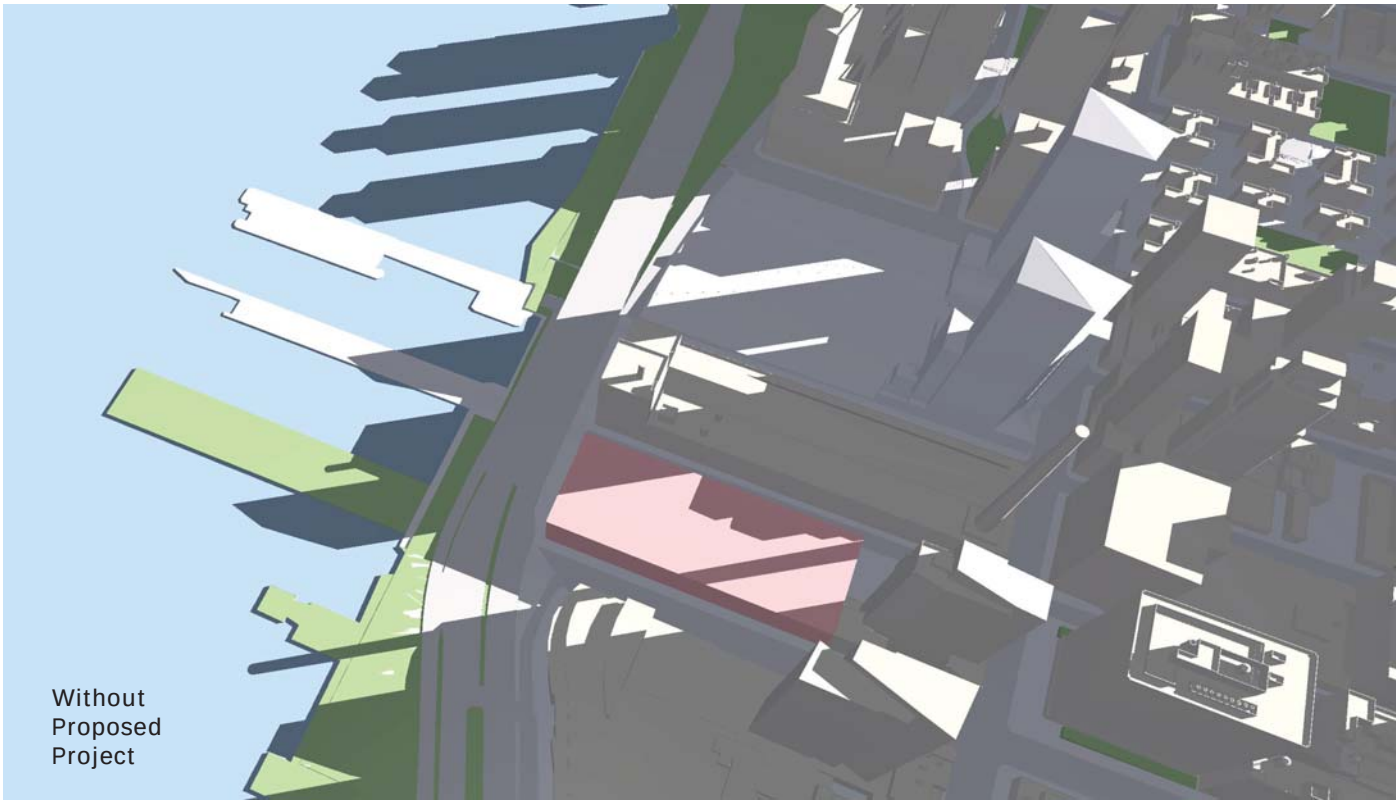
March 21/September 21 - 8:45 AM EST

625 WEST 57TH STREET

Figure 6-5

10.27.11





Incremental Shadow on Sun-Sensitive Resource

Existing Shadows

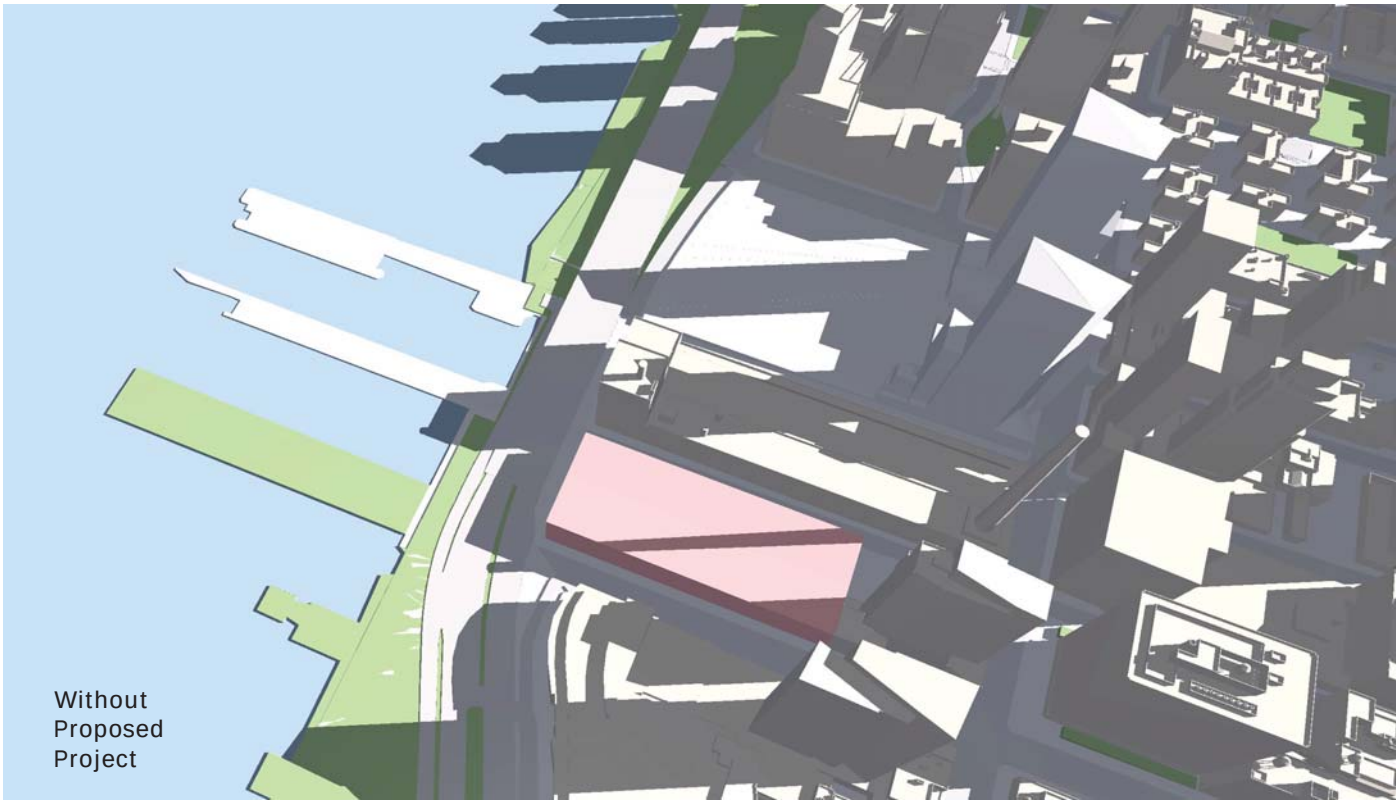
May 6/August 6 - 6:45 AM EST

625 WEST 57TH STREET

Figure 6-6

10.27.11





Incremental Shadow on Sun-Sensitive Resource

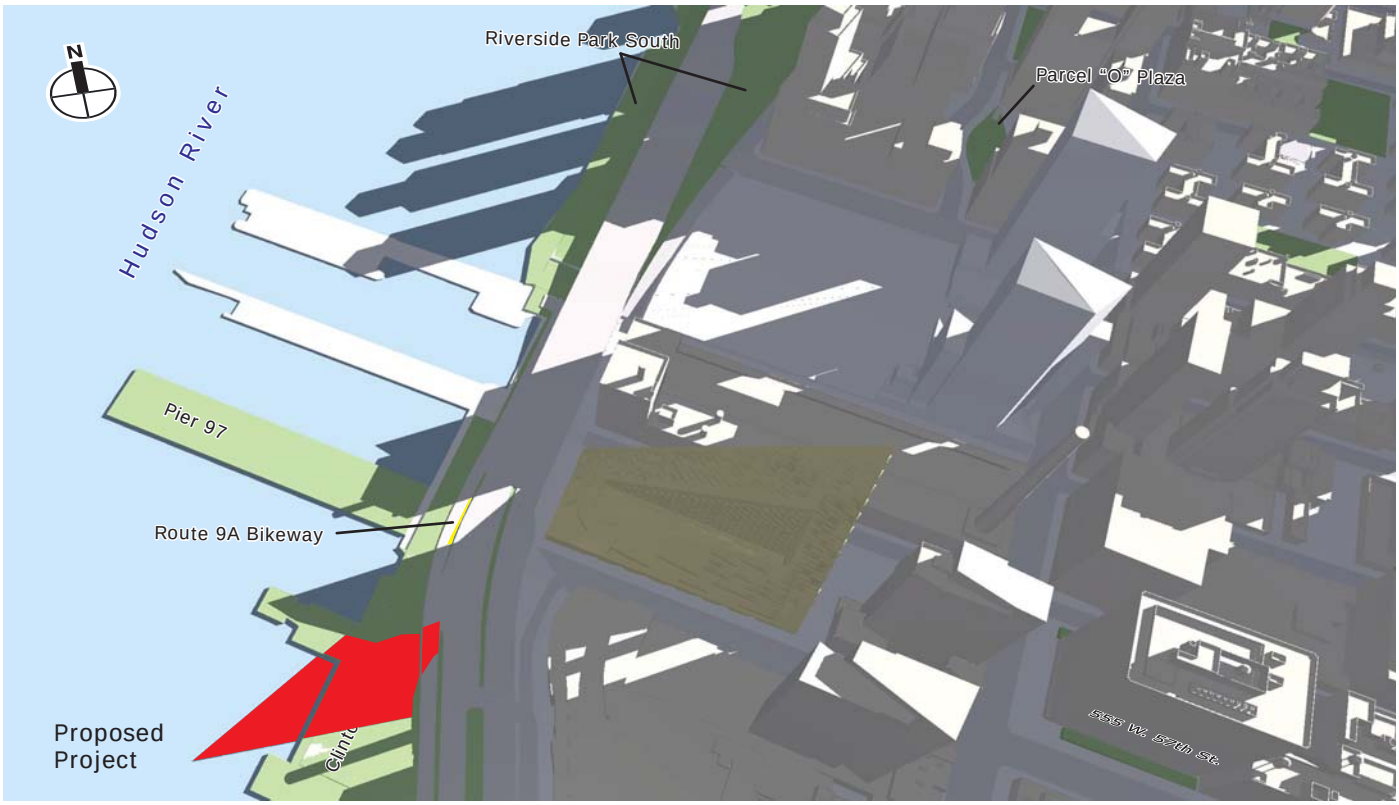
Existing Shadows

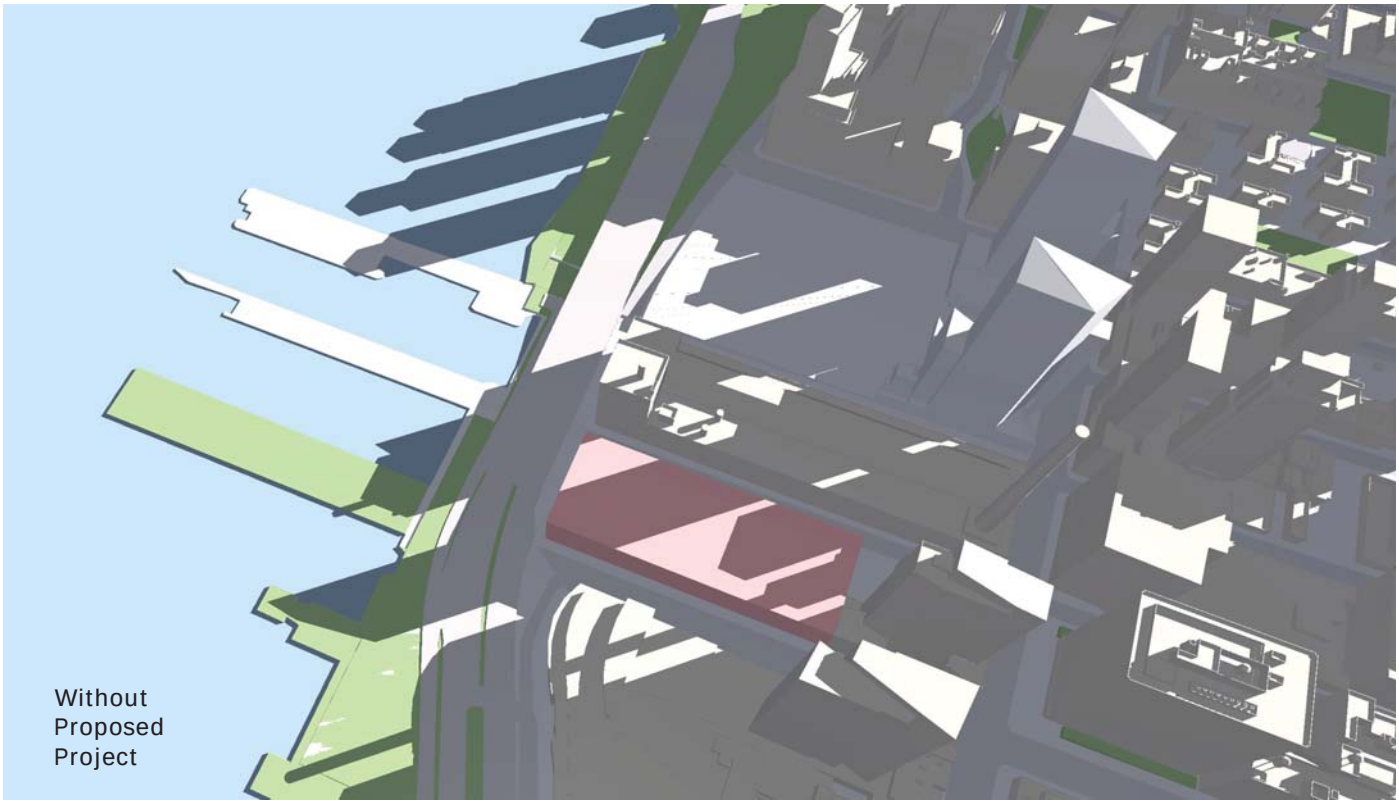
May 6/August 6 - 7:30 AM EST

625 WEST 57TH STREET

Figure 6-7

10.27.11





Incremental Shadow on Sun-Sensitive Resource

Reduced Shadow on Sun-Sensitive Resource

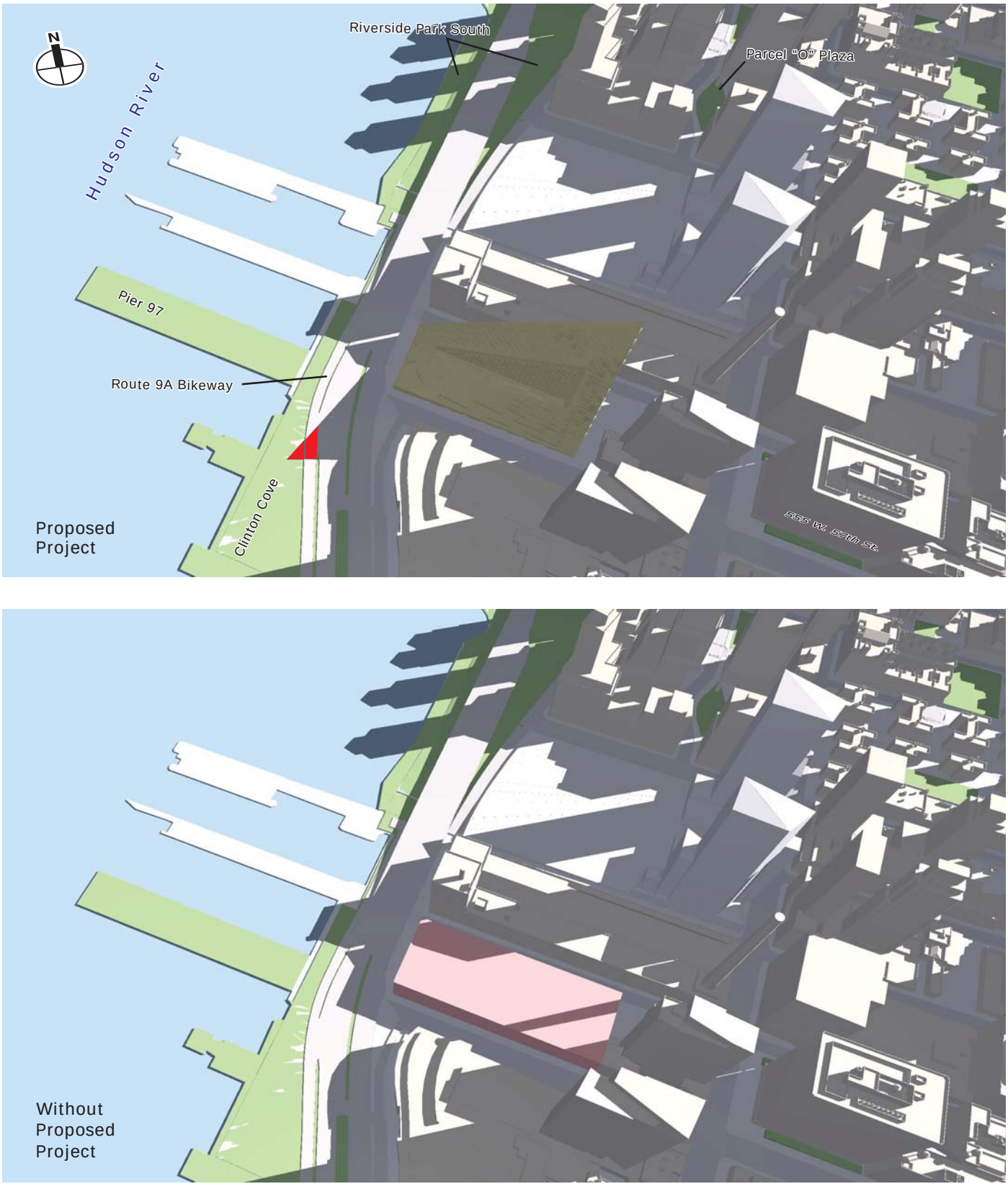
Existing Shadows

625 WEST 57TH STREET

June 21 - 6:30 AM EST

Figure 6-8

10.27.11



Incremental Shadow on Sun-Sensitive Resource

Reduced Shadow on Sun-Sensitive Resource

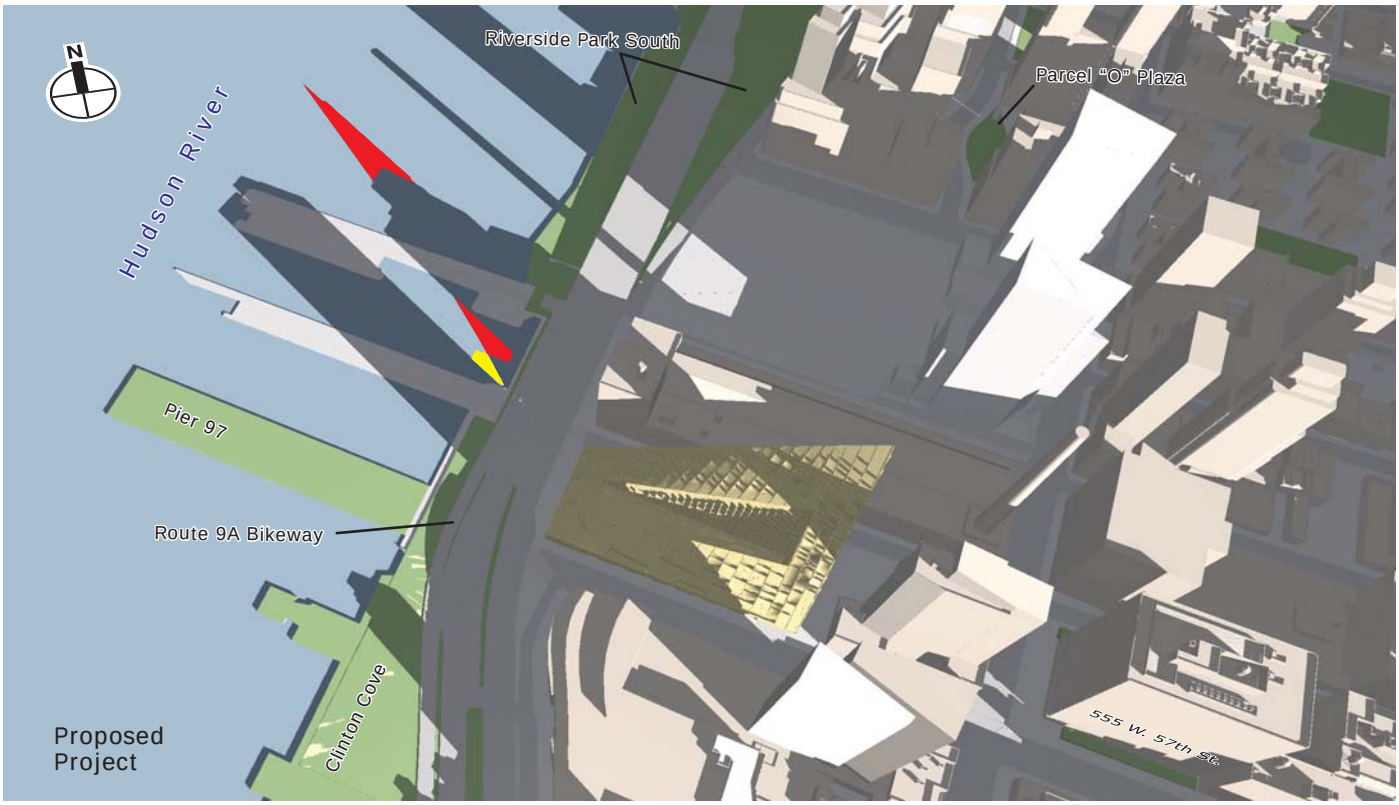
Existing Shadows

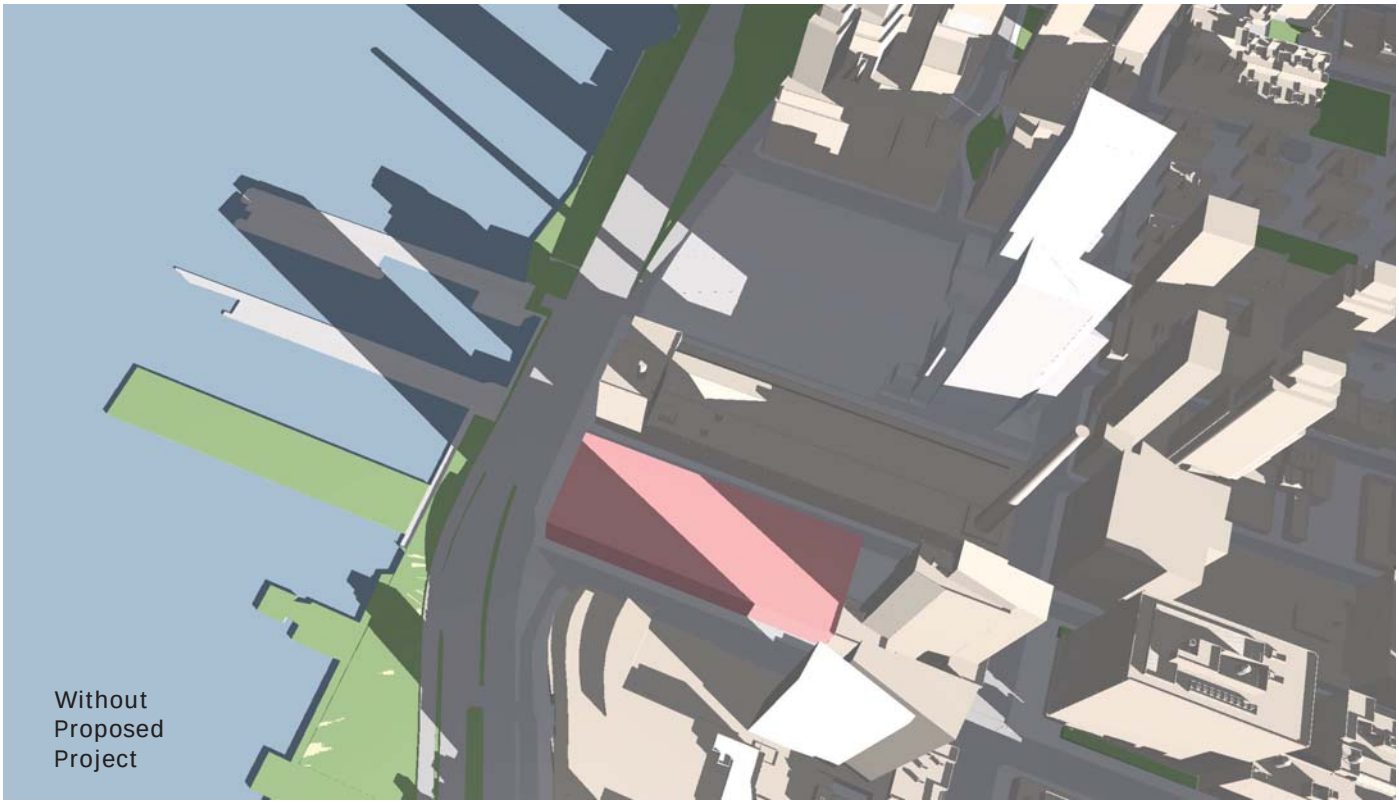
625 WEST 57TH STREET

June 21 - 7:15 AM EST

Figure 6-9

10.27.11





Incremental Shadow on Sun-Sensitive Resource

Reduced Shadow on Sun-Sensitive Resource

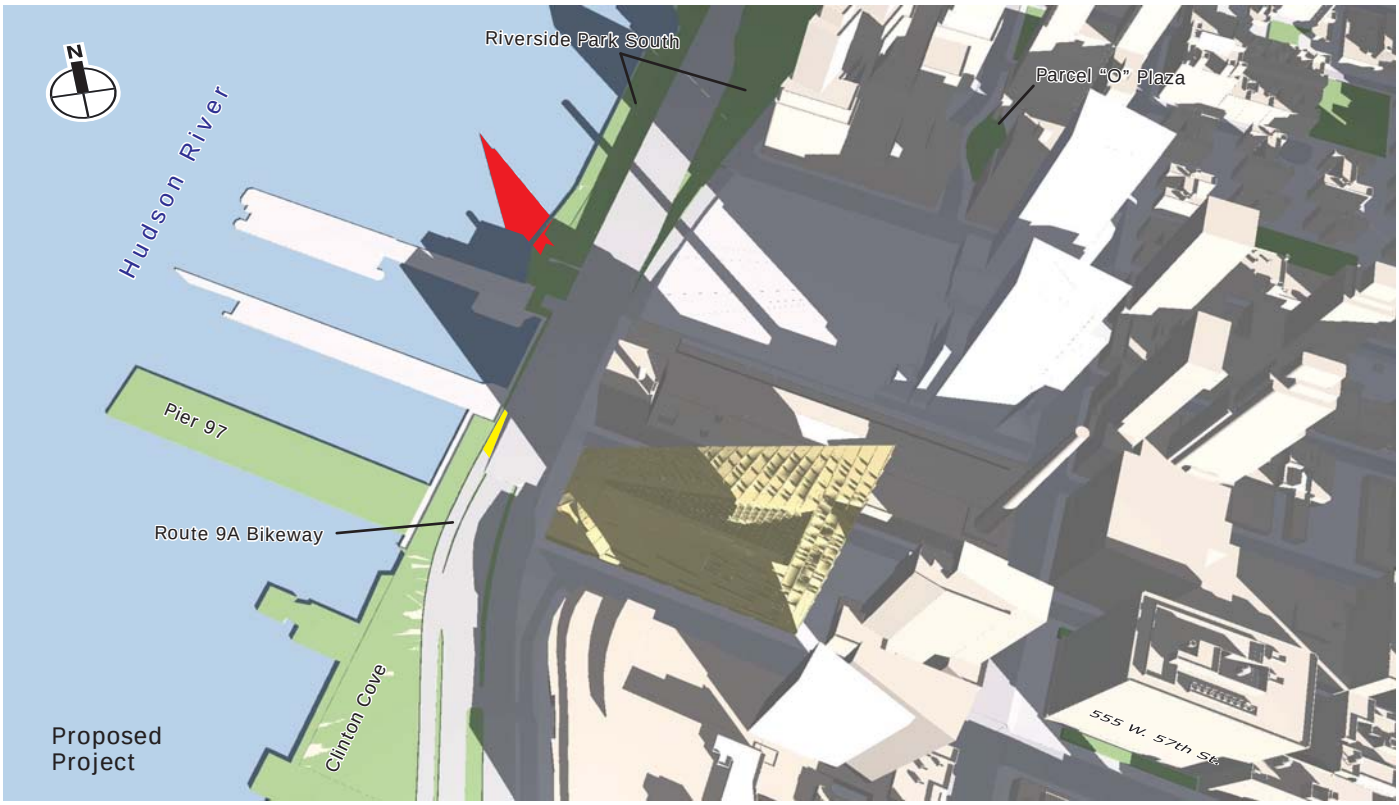
Existing Shadows

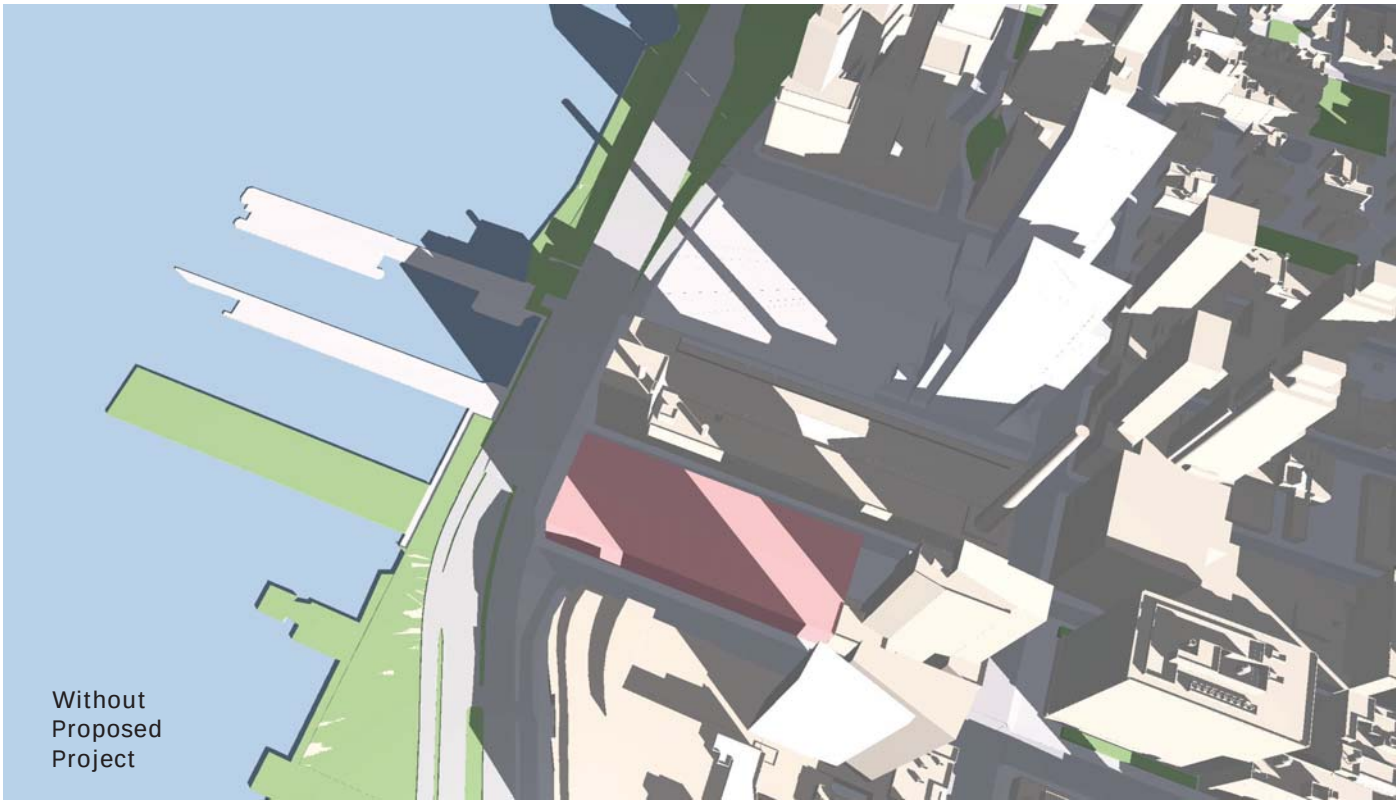
December 21 - 9:15 AM EST

625 WEST 57TH STREET

Figure 6-10

10.27.11





Incremental Shadow on Sun-Sensitive Resource

Reduced Shadow on Sun-Sensitive Resource

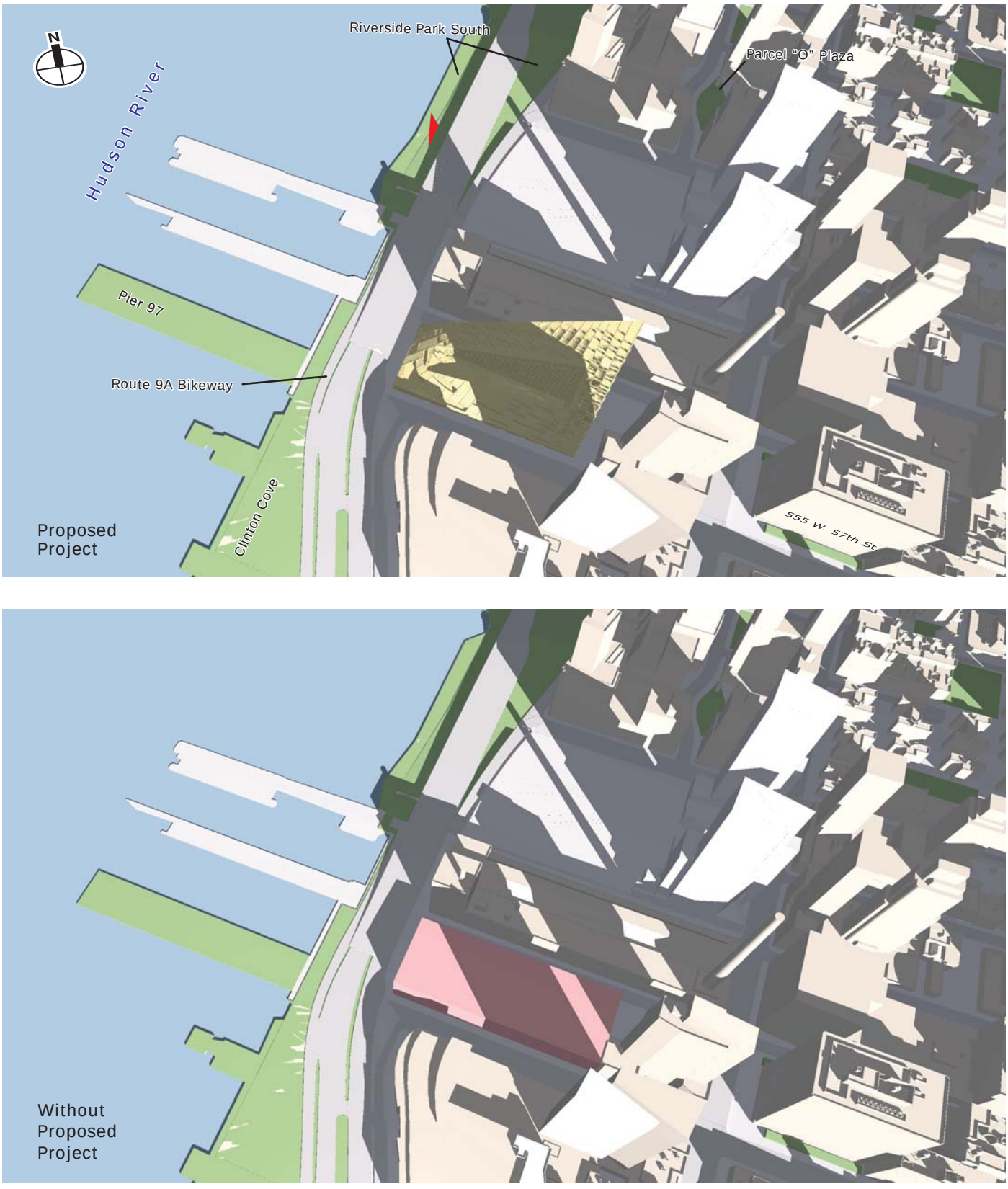
Existing Shadows

625 WEST 57TH STREET

December 21 - 10:00 AM EST

Figure 6-11

10.27.11



Incremental Shadow on Sun-Sensitive Resource

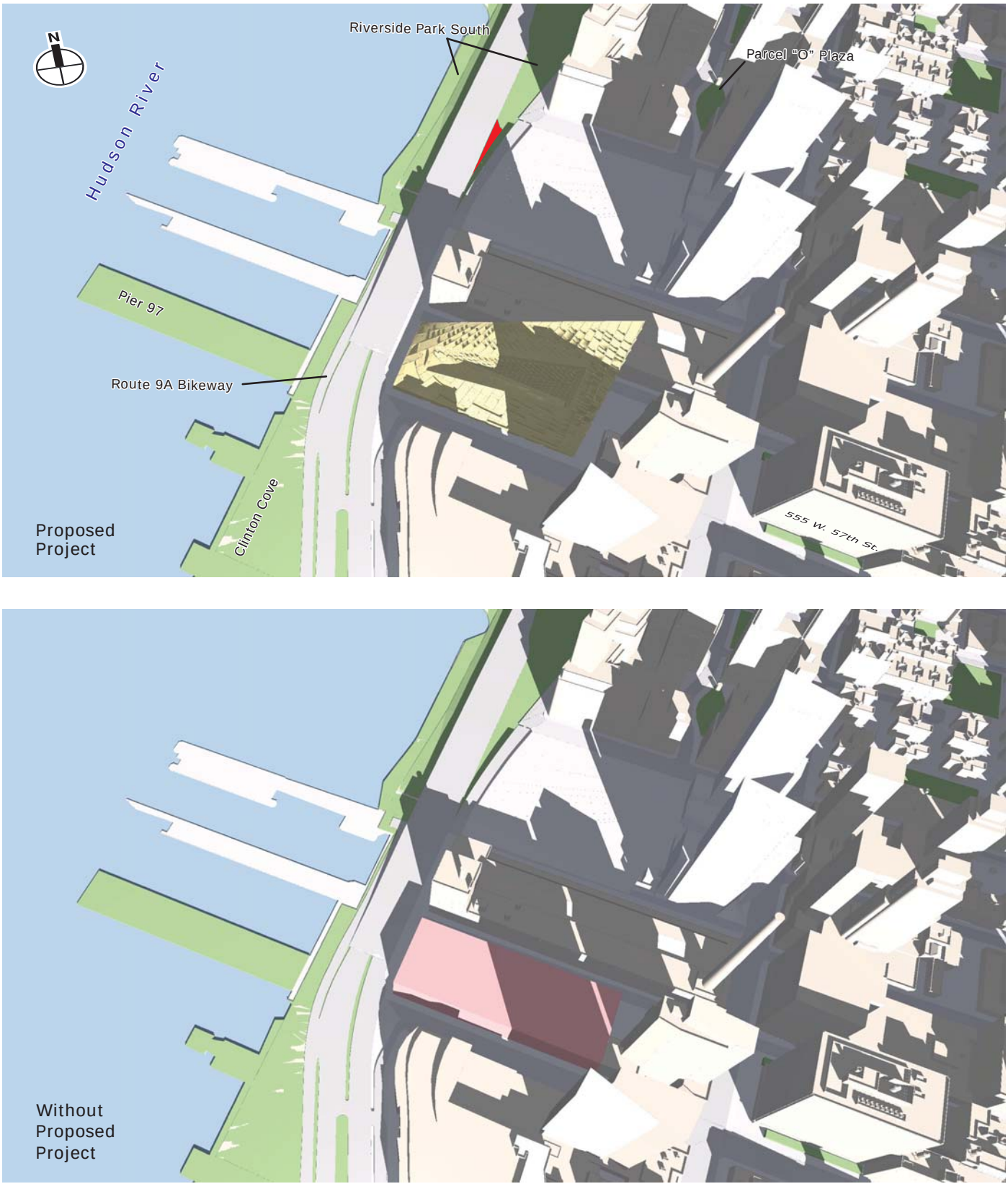
Existing Shadows

December 21 - 10:45 AM EST

625 WEST 57TH STREET

Figure 6-12

10.27.11



Incremental Shadow on Sun-Sensitive Resource

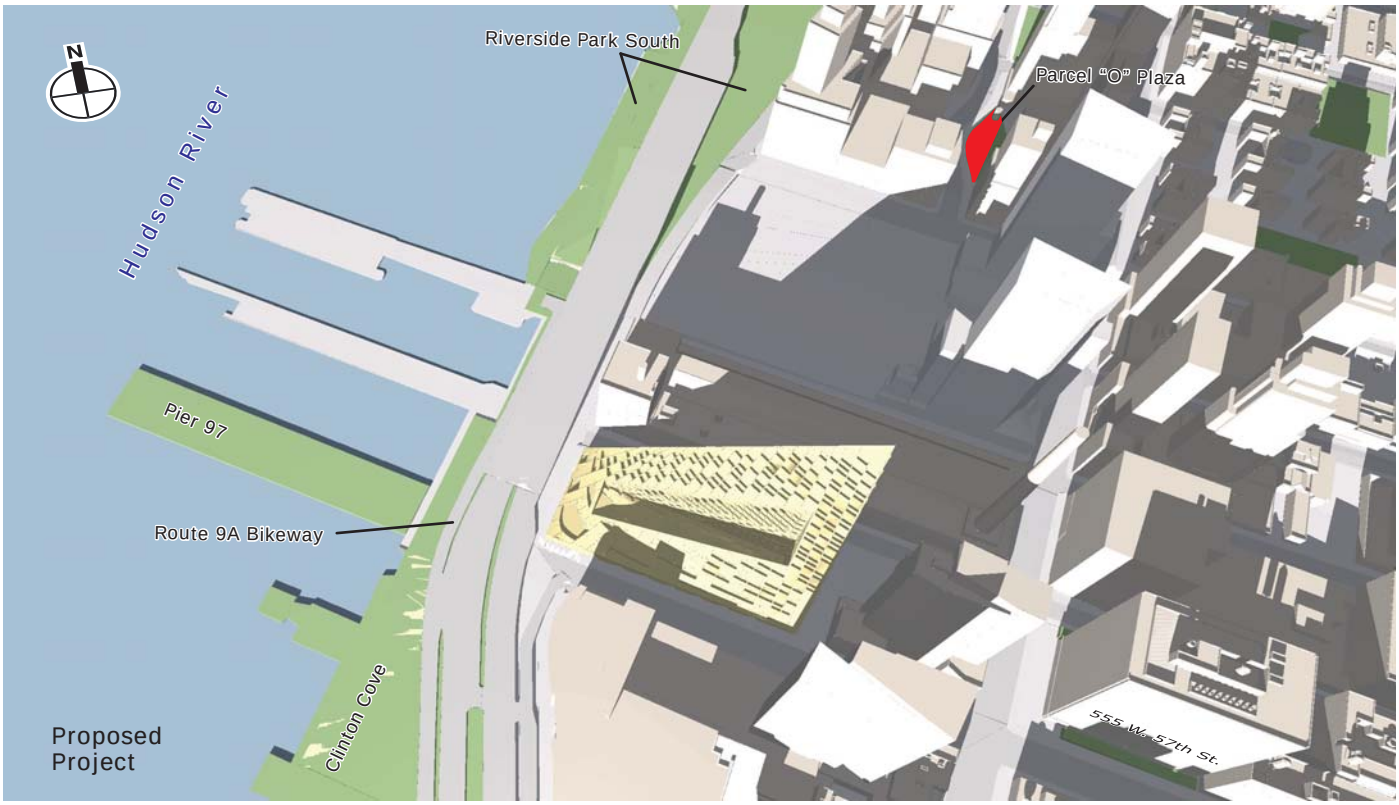
Existing Shadows

625 WEST 57TH STREET

December 21 - 11:30 AM EST

Figure 6-13

10.27.11





Incremental Shadow on Sun-Sensitive Resource

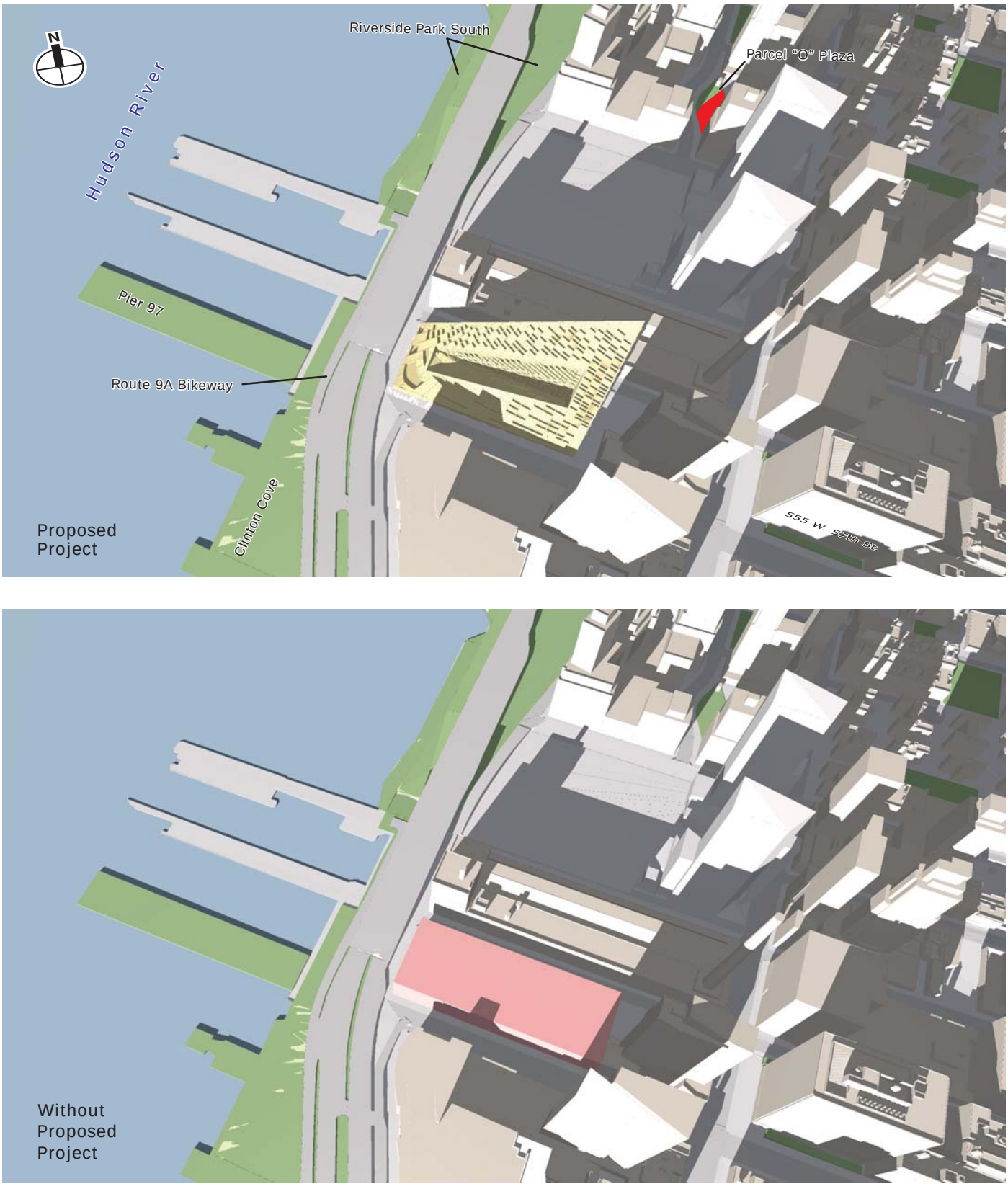
Existing Shadows

625 WEST 57TH STREET

December 21 - 2:15 PM EST

Figure 6-14

10.27.11



Incremental Shadow on Sun-Sensitive Resource

Existing Shadows

625 WEST 57TH STREET

December 21 - 2:45 PM EST

Figure 6-15

4.12.12



Sidewalks

Roadbeds

Buildings/Structures

0 20 40 60 80 100 Feet

Parcel "O" Plaza

Paved

Vegetation - Landscaping or lawn with trees/bushes

Benches

625 WEST 57TH STREET

Parcel “O” Plaza

Figure 6-16

4.12.12



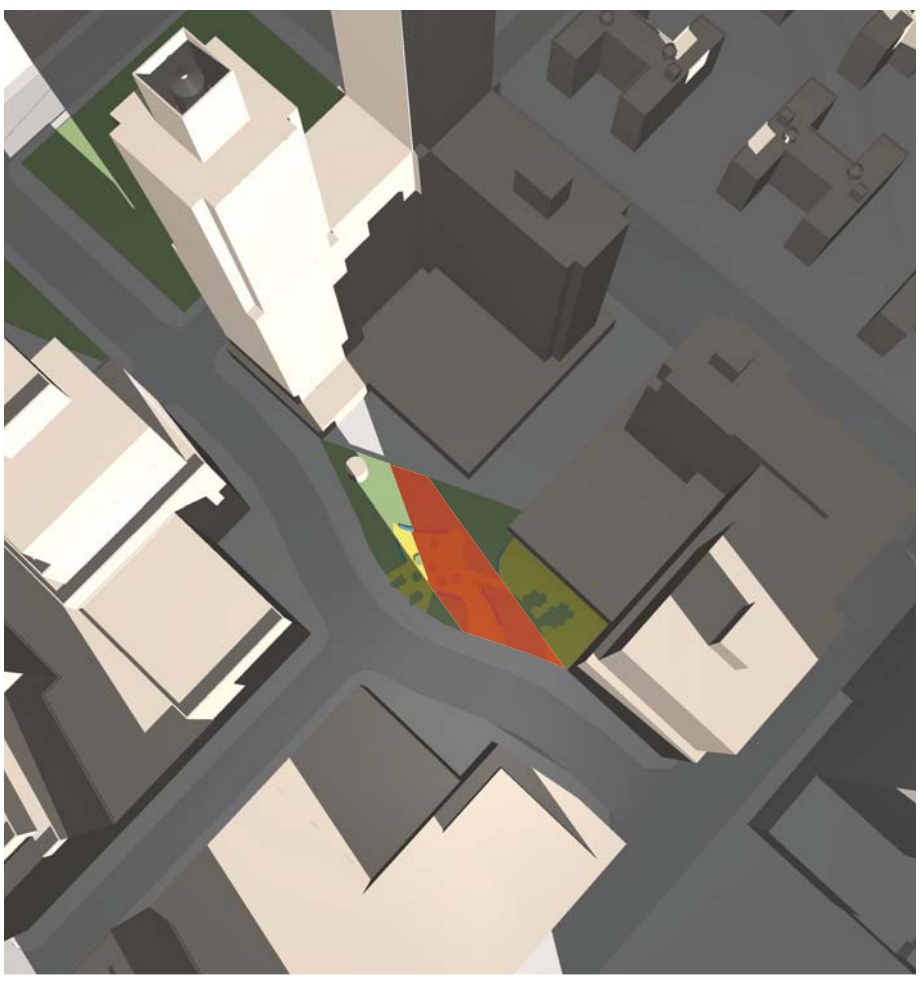
2:00 PM



2:15 PM



2:30 PM



2:45 PM

Incremental shadow from Proposed Project

Vegetation - Landscaping or lawn with trees or bushes

Paved

Benches

December 21 - Shadows on Parcel “O” Plaza

Figure 6-17