

## 6.0 SHADOWS

### 6.1 Introduction

In accordance with the guidelines of the CEQR Technical Manual, this shadow analysis considers shadows for four (4) representative days of the year: March 21 (equivalent to September 21), the equinoxes; May 6 (equivalent to August 6), the midpoint between the summer solstice and the equinox; June 21, the summer solstice and the longest day of the year; and December 21, the winter solstice and the shortest day of the year. The shadow diagrams differentiate between Existing Shadows (the No Action Condition) and the Shadow created by the Proposed Project (the With Action Condition). The shadow analysis focuses on the incremental difference between the No Action Condition and the With Action Condition.

In identifying potential effects, CEQR focuses on uses and users of the open space, landscaping and vegetation, and if there are historic resources, features or details that are both sunlight-dependent and make the resource significant. It should also be noted that since CEQR methodology does not consider shadows and incremental increases in shadows within 1 1/2 hours of sunrise or sunset to be significant, the analysis period is between 1 1/2 hours after sunrise and 1 1/2 hours before sunset. This is reflected in the analysis periods for each season in the presentation. The Old Farmer's Almanac indicates that the sunrise and sunset times for the representative days of the year observed in the Borough of Manhattan, New York, New York in 2007 were as follows:

**Table 6-1. Sunrise and Sunset Times for Manhattan, NY**

Date	Sunrise	1 ½ hours after sunrise	Sunset	1 ½ hours before sunset
March 21	5:57 AM	7:27 AM	6:10 PM	4:40 PM
May 6	5:47 AM	7:17 AM	7:58 PM	6:28 PM
June 21	5:24 AM	6:54 AM	8:31 PM	7:01 PM
August 6	5:57 AM	7:27 AM	8:05 PM	6:35 PM
September 21	6:42 AM	8: 12AM	6:54 PM	5:24 PM
December 21	7:16 AM	8: 46 AM	4:32 PM	3:02 PM

### 6.2 Resources of Concern

In accordance with section 3E-200 of the CEQR Technical Manual, a shadow assessment is appropriate for the proposed project because the proposed project would result in a new structure(s) that is taller than 50 feet and is located adjacent to a designated open space.

The height of the new River Building would rise to a height above the FDR Drive of 168'-9" at the roof of the last occupied floor and to 194' – 11" at the top of the elevator overrun and the enlargement for the East Wing would be an increase from 115' 6" inches to rise without setback to a height of 11 floors – 161'-2" above the FDR Drive. There is then a setback of

approximately 20% of the depth of the building and then it rises one more floor for the mechanical room on the roof. At this point the East Wing is 184'-0" above the FDR Drive. In accordance with the methodology in Section 3E-200 of the CEQR Technical Manual the proposed project has a potential to cast a shadow of 725' 8" from the new River Building, 838' and 2" from the elevator overrun, 693 feet from the East Wing building, and 791' 2" from the East Wing setback (4.3 times its height).

### **6.2.1 Open Spaces**

As described in Chapter 5, Open Spaces, the area surrounding the project site has a number of open spaces. The following three (3) are located within the radius affected by the shadows that would be cast by the proposed project:

The East River Esplanade, which extends along the waterfront, is a public park that includes a walking/running path and trees on the portion of the Esplanade located adjacent the proposed additions, and benches, trees and a walking/running path just south of the proposed project site. (see Figure 6-1 Photograph 1).

Belaire Plaza at 524 East 72<sup>nd</sup> Street/535 East 71<sup>st</sup> Street, is a residential plaza that includes a fountain, drinking fountain, seating and trees. Part of the building is owned by the Hospital for Special Surgery (see Figure 6-1 Photograph 2).

One East River Place Park at 525 East 72<sup>nd</sup> Street, is a public park that includes landscaping, seating, trees, a fountain, benches. This open space includes the East 72<sup>nd</sup> Street Overlook Park located at the cul-de-sac at the end of East 72<sup>nd</sup> Street. (see Figure 6-1 Photographs 3 through 5).

No other public open space is located within the radius affected by the shadows that would be cast by the proposed project (see Chapter 5, Figure 5-1 and Table 5-1).

### **6.2.2 Historic Resources**

As described in Chapter 7 (Historic Resources), the study area surrounding the project site has three historic resources within an 800 foot radius of the site. However, these historic resources would not be affected by the shadows generated as a result of the proposed project. Therefore, no significant adverse impacts as a result of shadows would occur from the proposed project on historic resources. (see Chapter 7, Figure 7-1).

## **6.3 The Future With the Proposed Project - 2010**

*March 21/September 21 (Figures 6-2 to 6-8)*

### Esplanade

The shadow diagrams shows that on the equinoxes (March 21 and September 21) no shadows would fall on the East River Esplanade until approximately 2:55pm. Existing shadows from existing buildings also enter the East River Esplanade at approximately 2:55pm and are off of the Esplanade by 5:30 PM. The incremental shadows cast by the proposed project would fall

during the same hours as the existing shadows (duration of 2 hours 35 minutes), but would cover a larger area of the East River Esplanade. That area on the East River Esplanade that would be incrementally affected by shadows consists of asphalt paving used for cycling, walking, and running purposes. Minimal grass would be covered and no benches are present along this portion of the Esplanade. Therefore, the shadows falling on the open spaces on March 21/September 21 would have no significant adverse impacts since existing shadows already exist and they would be for an insignificant period of time.

#### Belaire Plaza

The shadow diagrams indicate that on the equinoxes (March 21 and September 21) the shadows cast by the proposed project would fall where existing shadows from other buildings in the area already reach the open space and would cover the southeastern portion of the open space which includes benches and a portion of the fountain. The incremental shadows, which are shorter reaching than the existing shadows, would exist the park just after 12:42pm. The shadows that fall on Belaire Plaza would be considered insignificant since this is open space is already experiencing shadows from existing buildings.

#### One East River Place Park

The shadow diagrams indicate that on the equinoxes (March 21 and September 21) only shadows from existing buildings would cover the One East River Place Park.

#### East 72<sup>nd</sup> Street Overlook Park

The shadow diagrams indicate that on the equinoxes (March 21 and September 21) no shadows would enter the park until 12:42pm. The shadow generated at 2:35pm, which represent a worst case scenario for the year, would cover approximately 60% of the East 72<sup>nd</sup> Street Overlook Park. The portion covered by the proposed shadows would cover approximately 4 ½ benches and three trees (Figure 6-8). This shadow would exit the open space at 3:15pm. Since this shadow would only cover 60% of the site's amenities for an insignificant period of time, based on the fact that the shadow would be moving across the site and not covering 60% of the park for the full 2 hours and 33 minutes it falls on the park, this shadow would not be considered significant.

#### *May 6/August 6 (Figures 6-9 through 6-12)*

#### Esplanade

The shadow diagrams show that between the summer solstice and the equinox (May 6 or August 6) only incremental shadows would cover the East River Esplanade between 2:55PM and 5:30PM. The incremental shadows cast by the proposed project would fall during the same hours as the existing shadows (duration of 3 hours 5 minutes) but would cover a larger area of the East River Esplanade. The area on the East River Esplanade that would be incrementally affected by shadows an asphalt pathway used for cycling, walking, and running purposes. A limited number of benches would be covered by the incremental shadows to the south of the site. The incremental shadows cover only a portion of this resource, are of limited duration, and for the most part are cast on areas used for active recreation without sun sensitive features. Therefore, they are not considered significant.

Belaire Plaza

The shadow diagrams indicate that occur in between the summer solstice and the equinox (May 6 or August 6) only shadows from the existing buildings in the area would cover the Belaire Plaza. Therefore, the proposed project would not cause any significant shadows.

One East River Place Park

The shadow diagrams indicate that occur in between the summer solstice and the equinox (May 6 or August 6) only shadows from the existing buildings in the area would cover the One East River Place Park. Therefore, the proposed project would not cause any significant shadows.

East 72<sup>nd</sup> Street Overlook Park

The shadow diagrams indicate that occur in between the summer solstice and the equinox (May 6 or August 6) only shadows from the existing buildings in the area would cover the East 72<sup>nd</sup> Street Overlook Park. Therefore, the proposed project would not cause any significant shadows.

*June 21 (Figures 6-13 through 6-16)*

Esplanade

The shadow diagrams indicate that on the summer solstice, the longest day of the year, (June 21) when shadows are the shortest, no shadows fall on the East River Esplanade until approximately 2:15pm. Existing shadows fall on the East River Esplanade at 2:15 PM and continue to at least 6:30 pm. The incremental shadows cast by the proposed project would fall on the East River Esplanade for a much shorter duration than the existing shadows and only cover a relatively small portion of the Esplanade. That area on the East River Esplanade that would be incrementally affected by shadows is used for cycling, walking, and running purposes and has minimal sun sensitive resources. The incremental shadows falling on the East River Esplanade on June 21 would be slightly greater than four (4) hours. However these additional shadows cover only a portion of this resource, are of limited duration, and for the most part are cast on areas used for active recreation without sun sensitive features. The shadows cast are also typical of the types of shadows experienced up and down the Esplanade, when the tall buildings of the Upper East Side cast shadows on this resource. The Esplanade is in full sunlight from sunrise to mid-afternoon in all analysis periods, and the incremental afternoon shadows occurring as a result of the project would not significantly adversely impact this resource.

Belaire Plaza

The shadow diagrams indicate that on the summer solstice, the longest day of the year, (June 21) when shadows are the shortest, the shadows that cover the Belaire Plaza are a result of the existing buildings in the area, and no shadows would fall on the Belaire Plaza.

One East River Place Park

The shadow diagrams indicate that on the summer solstice, the longest day of the year, (June 21) when shadows are the shortest, the shadows that cover the One East River Place Park are a

result of the existing buildings in the area, and no shadows from the proposed project would fall on the open space.

#### East 72<sup>nd</sup> Street Overlook Park

The shadow diagrams indicate that on the summer solstice, the longest day of the year, (June 21) when shadows are the shortest, the shadows that cover the East 72<sup>nd</sup> Street Overlook Park are a result of the existing buildings in the area, and no shadows from the proposed project would fall on the open space.

#### December 21 (Figures 6-17 through 6-19)

##### Esplanade

The shadow diagrams indicate that on the winter solstice, the shortest day of the year, (December 21) (see Figure 6.6) when shadows are the longest, no shadows as a result of the proposed project would fall on the Esplanade until after 3:02pm, which is 1 ½ hours before sunset. The shadows that fall on the park after 3:02pm would be considered insignificant.

##### Belaire Plaza

The shadow diagrams indicate that on the winter solstice, the shortest day of the year, (December 21) (see Figure 6.6) the shadows that cover the Belaire Plaza are a result of the existing buildings in the area, and any shadows as a result of the proposed project would fall where existing shadows already exist. Therefore, the shadows that fall on Belaire Plaza as a result of the proposed project are not considered to be significant. The existing and incremental shadows that fall on Belaire Plaza would cover portions of the fountain, tables and seats, benches, drinking fountain, and trees.

##### One East River Place Park

The shadow diagrams indicate that on the winter solstice, the shortest day of the year, (December 21) (see Figure 6.6) the shadows that cover the One East River Place Park Plaza are a result of the existing buildings in the area. No shadows from the proposed project would fall on One East River Place Park.

##### East 72<sup>nd</sup> Street Overlook Park

The shadow diagrams indicate that on the winter solstice, the shortest day of the year, (December 21) (see Figure 6.6) that the East 72<sup>nd</sup> Street Overlook Park would be incrementally covered by the proposed project, since existing shadows already fall on this space after 3pm. These shadows would not be considered significant since they would only fall for a short duration prior to 1 ½ hours before sunset.

## **6.4 Determination of Impact**

The proposed project would result in minor incremental shadows over portions of the East 72<sup>nd</sup> Street Overlook Park at limited times throughout the year, principally near the spring and vernal equinox. At other times of the year, shadows from the proposed project do not reach the East 72<sup>nd</sup> Street Overlook Park, or the East 72<sup>nd</sup> Street Overlook Park is already experiencing

shadows from existing buildings. The incremental shadows occurring in the spring and autumn would occur for a limited period in the afternoon, would travel across the East 72<sup>nd</sup> Street Overlook Park so that shadows would not occur for extended periods over any one spot, would for most of this time cover only a portion of the East 72<sup>nd</sup> Street Overlook Park, and would not be of such a duration as to result in a significant adverse impact.

No incremental shadows would occur on the Belaire Plaza above those cast by existing buildings, and therefore no significant adverse impacts to this resource would occur.

Incremental shadows do occur on the East River Esplanade. However these additional shadows cover only a portion of this resource, are of limited duration, and for the most part are cast on areas used for active recreation without sun sensitive features. The shadows cast are also typical of the types of shadows experienced up and down the Esplanade, when the tall buildings of the Upper East Side cast shadows on this resource. The Esplanade is in full sunlight from sunrise to mid-afternoon in all analysis periods, and the incremental afternoon shadows occurring as a result of the project would not significantly adversely impact this resource.

For the reasons described above, the proposed project would not result in a significant adverse shadow impact.

**Figure 6-1. Photographs of Open Spaces within the Radius Affected by Shadows.**



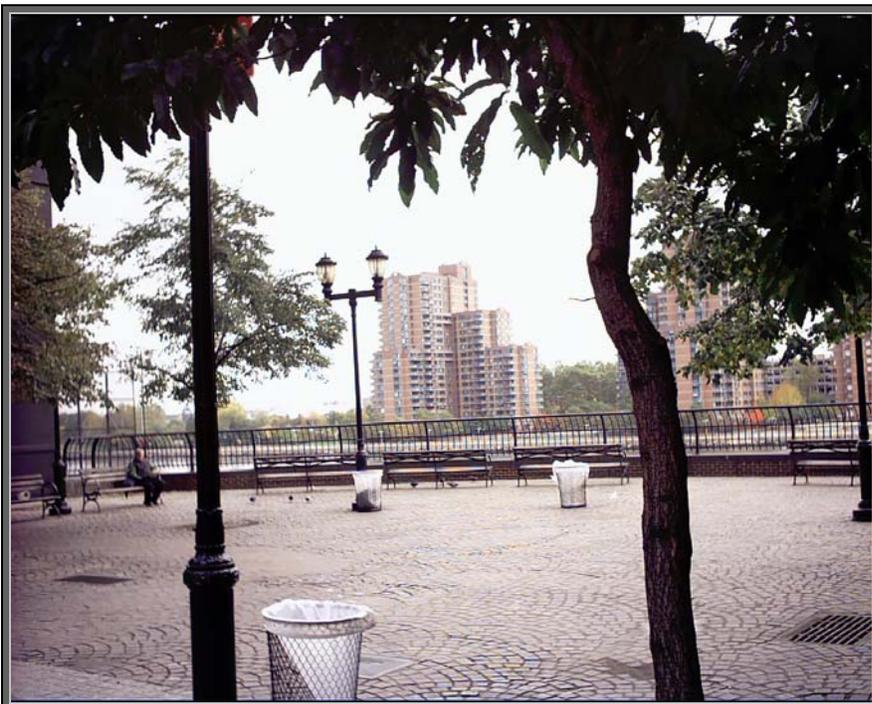
1. Looking north on the open space at the East River Esplanade.



2. Looking north on the open space at Belaire Plaza, 524 East 72<sup>nd</sup> Street.



3. Looking north on the open space at One East River Place Park, 525 East 72<sup>nd</sup> Street.



4. Looking east on another open space at One East River Place Park, 525 East 72<sup>nd</sup> Street (East River overlook at East 72<sup>nd</sup> Street).



5. Looking west on another open space at One East River Place Park, 525 East 72<sup>nd</sup> Street.



**COMBINED SHADOW ANALYSIS MARCH 21 8:30 AM**  
 HOSPITAL FOR SPECIAL SURGERY  
 AND RIVER BUILDING

-  OPEN SPACE RESOURCES
-  EXISTING SHADOW PATH
-  PROPOSED SHADOW PATH
-  OVERLAPPING SHADOW PATH

**Figure 6-2. Shadow Analysis, March 21, 8:30 AM**



**COMBINED SHADOW ANALYSIS** MARCH 21 12:30 PM

HOSPITAL FOR SPECIAL SURGERY  
AND RIVER BUILDING

-  OPEN SPACE RESOURCES
-  EXISTING SHADOW PATH
-  PROPOSED SHADOW PATH
-  OVERLAPPING SHADOW PATH

**Figure 6-3. Shadow Analysis, March 21, 12:30 PM**



COMBINED SHADOW ANALYSIS MARCH 21 12:42 PM

HOSPITAL FOR SPECIAL SURGERY  
AND RIVER BUILDING

-  OPEN SPACE RESOURCES
-  EXISTING SHADOW PATH
-  PROPOSED SHADOW PATH
-  OVERLAPPING SHADOW PATH

Figure 6-4. Shadow Analysis, March 21, 12:42 PM



**COMBINED SHADOW ANALYSIS MARCH 21 2:55 AM**

HOSPITAL FOR SPECIAL SURGERY  
AND RIVER BUILDING

-  OPEN SPACE RESOURCES
-  EXISTING SHADOW PATH
-  PROPOSED SHADOW PATH
-  OVERLAPPING SHADOW PATH

**Figure 6-5. Shadow Analysis, March 21, 2:55 PM**



**COMBINED SHADOW ANALYSIS** MARCH 21 3:14 PM  
 HOSPITAL FOR SPECIAL SURGERY  
 AND RIVER BUILDING

-  OPEN SPACE RESOURCES
-  EXISTING SHADOW PATH
-  PROPOSED SHADOW PATH
-  OVERLAPPING SHADOW PATH

**Figure 6-6. Shadow Analysis, March 21, 3:14 PM**



**COMBINED SHADOW ANALYSIS** MARCH 21 4:30 PM

HOSPITAL FOR SPECIAL SURGERY  
AND RIVER BUILDING

-  OPEN SPACE RESOURCES
-  EXISTING SHADOW PATH
-  PROPOSED SHADOW PATH
-  OVERLAPPING SHADOW PATH

**Figure 6-7. Shadow Analysis, March 21, 4:30 PM**

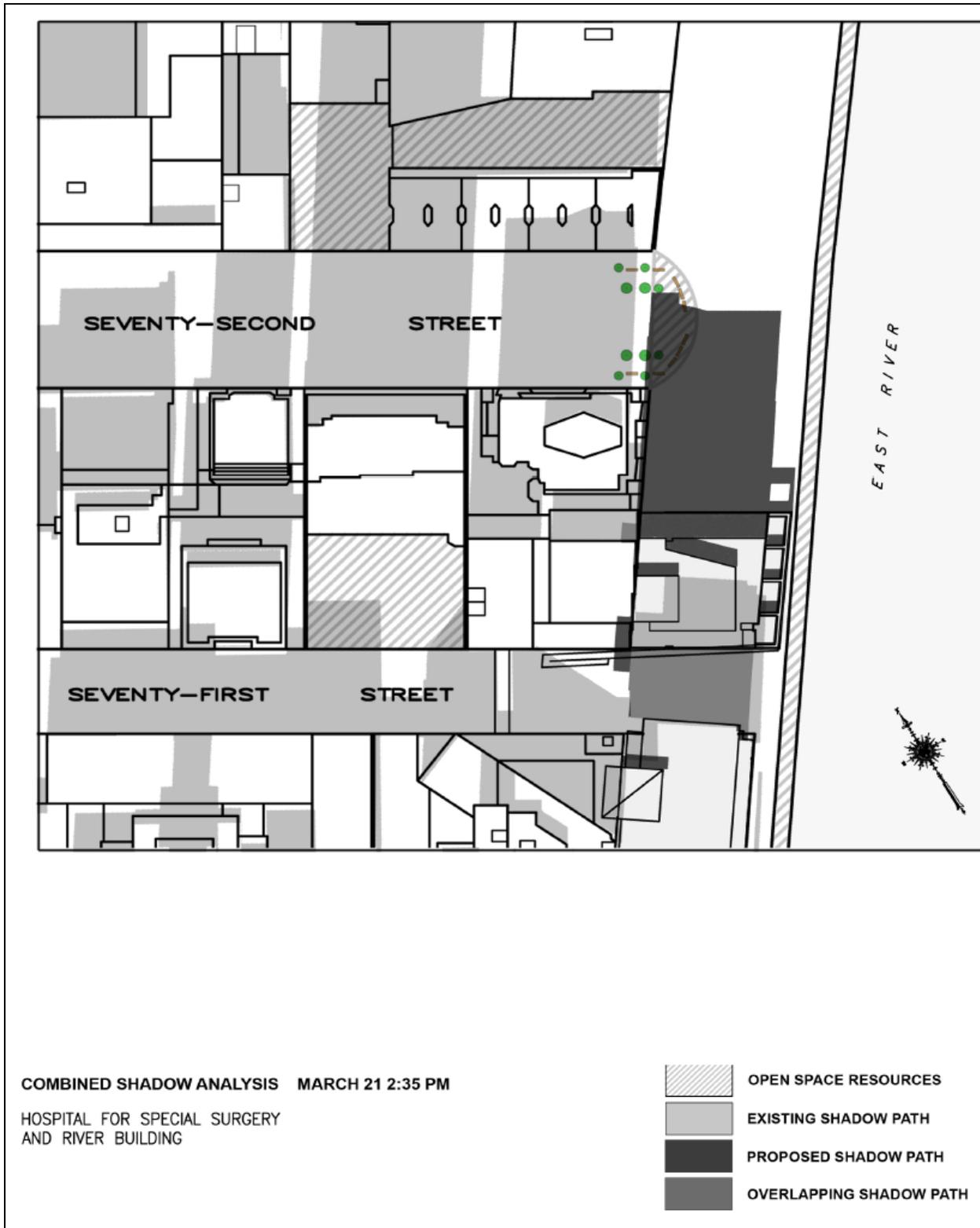
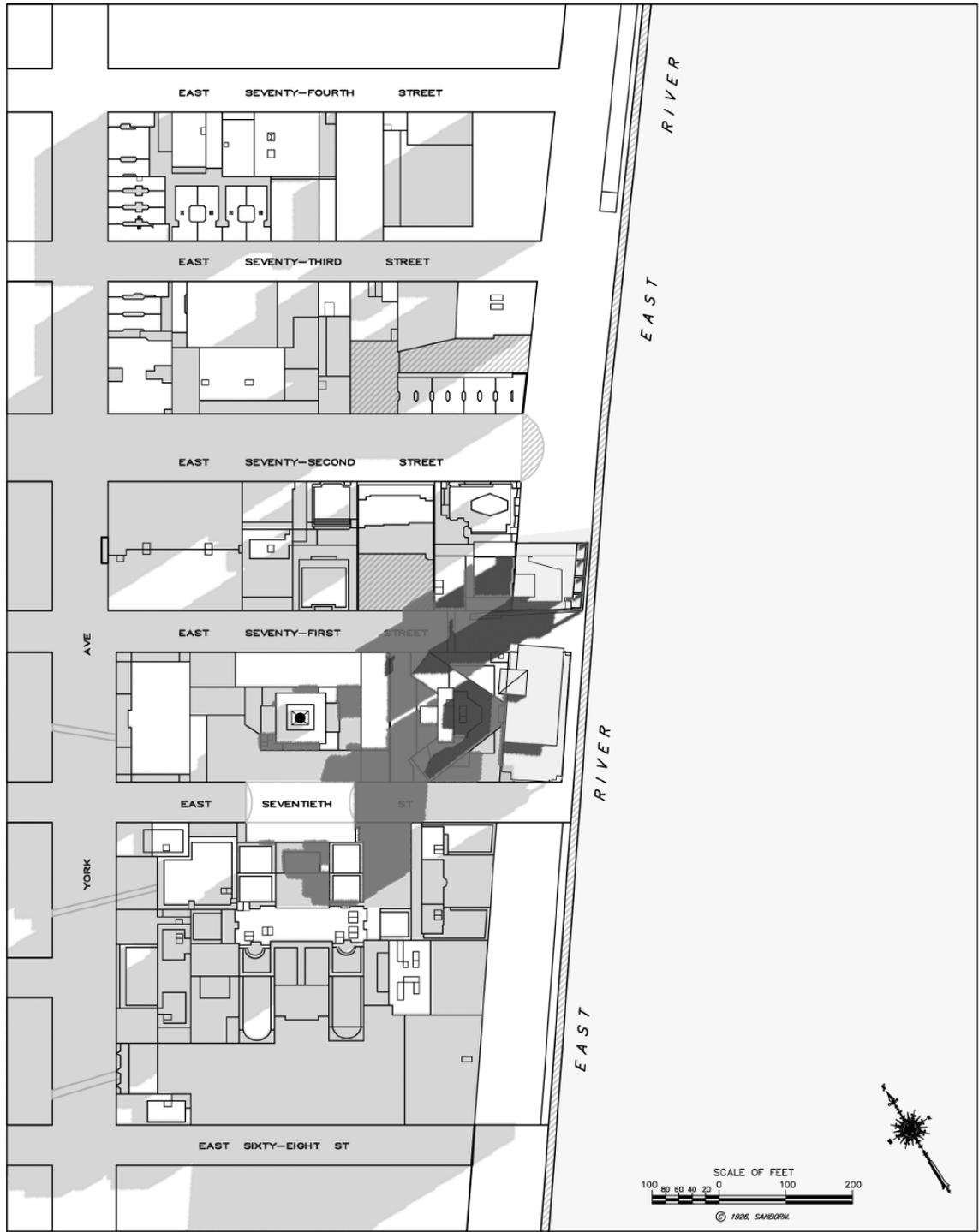


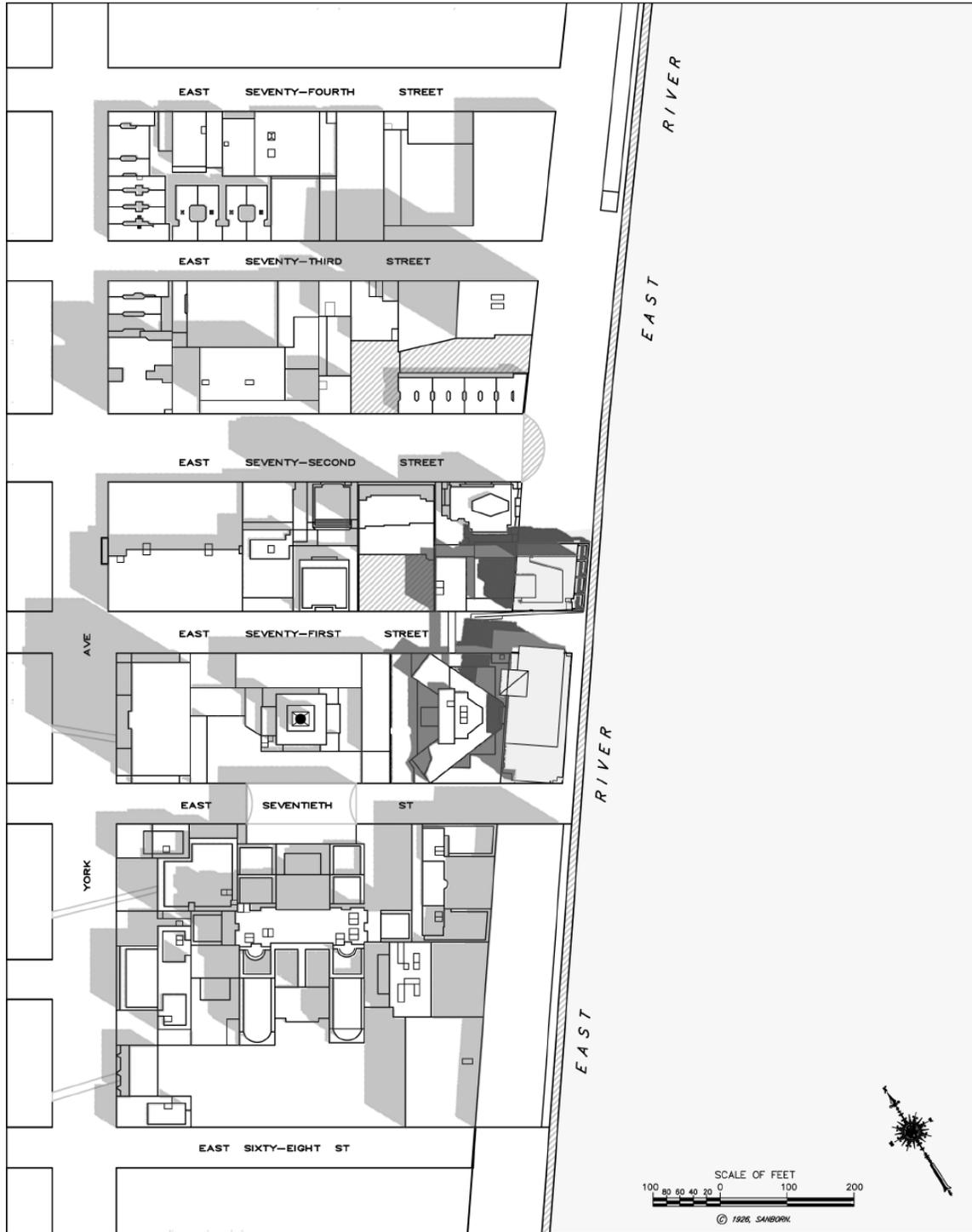
Figure 6-8. Worst Case Shadow Analysis, March 21, 2:35 PM



**COMBINED SHADOW ANALYSIS MAY 6 8:00 AM**  
 HOSPITAL FOR SPECIAL SURGERY  
 AND RIVER BUILDING

-  OPEN SPACE RESOURCES
-  EXISTING SHADOW PATH
-  PROPOSED SHADOW PATH
-  OVERLAPPING SHADOW PATH

**Figure 6-9. Shadow Analysis, May 6, 8:00 AM**

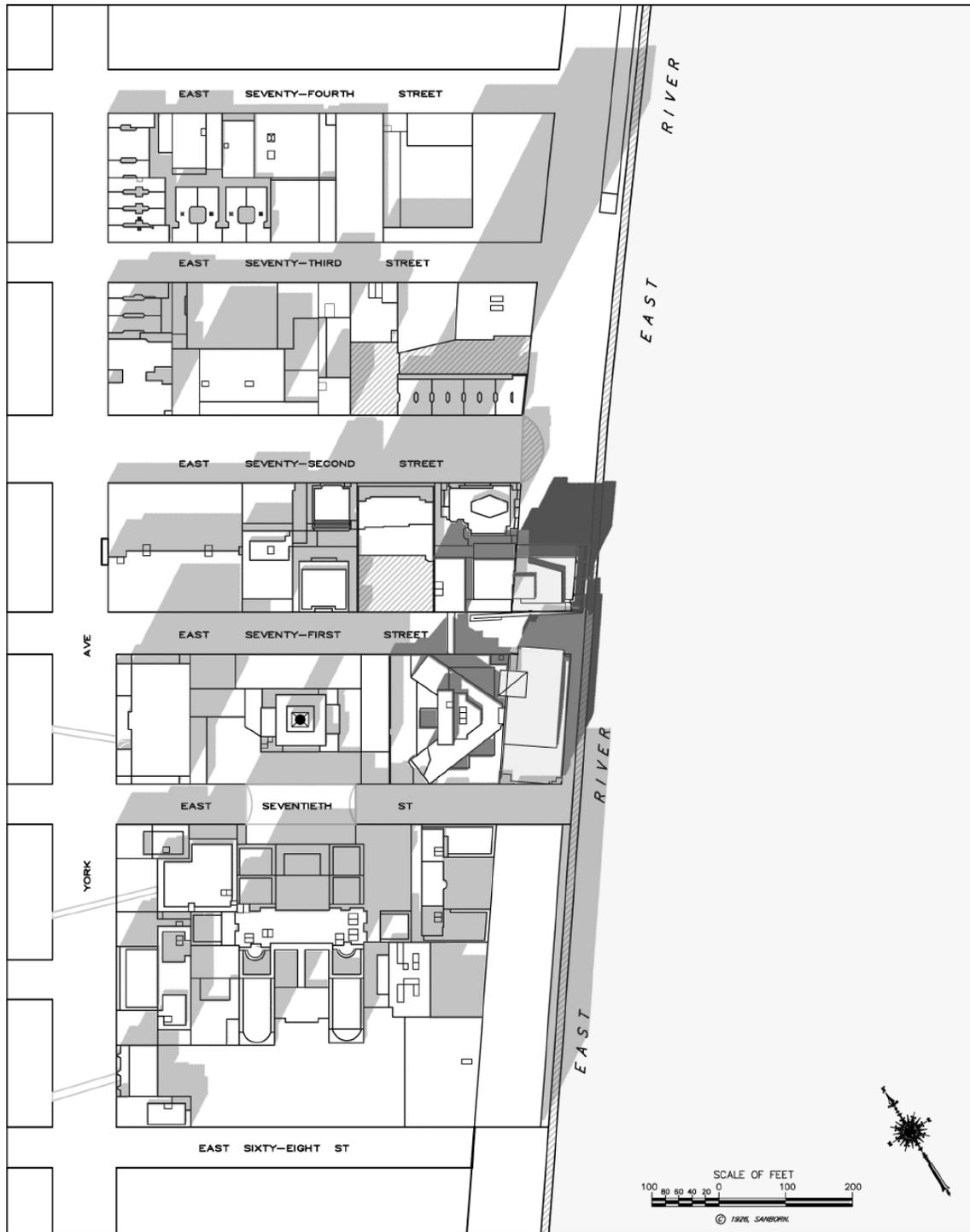


**COMBINED SHADOW ANALYSIS MAY 6 12:00 PM**

HOSPITAL FOR SPECIAL SURGERY  
AND RIVER BUILDING

-  OPEN SPACE RESOURCES
-  EXISTING SHADOW PATH
-  PROPOSED SHADOW PATH
-  OVERLAPPING SHADOW PATH

**Figure 6-10. Shadow Analysis, May 6, 12:00 PM**



COMBINED SHADOW ANALYSIS MAY 6 2:55 PM

HOSPITAL FOR SPECIAL SURGERY  
AND RIVER BUILDING

-  OPEN SPACE RESOURCES
-  EXISTING SHADOW PATH
-  PROPOSED SHADOW PATH
-  OVERLAPPING SHADOW PATH

Figure 6-11. Shadow Analysis, May 6, 2:55 PM



**COMBINED SHADOW ANALYSIS MAY 6 4:30 PM**

HOSPITAL FOR SPECIAL SURGERY  
AND RIVER BUILDING

-  OPEN SPACE RESOURCES
-  EXISTING SHADOW PATH
-  PROPOSED SHADOW PATH
-  OVERLAPPING SHADOW PATH

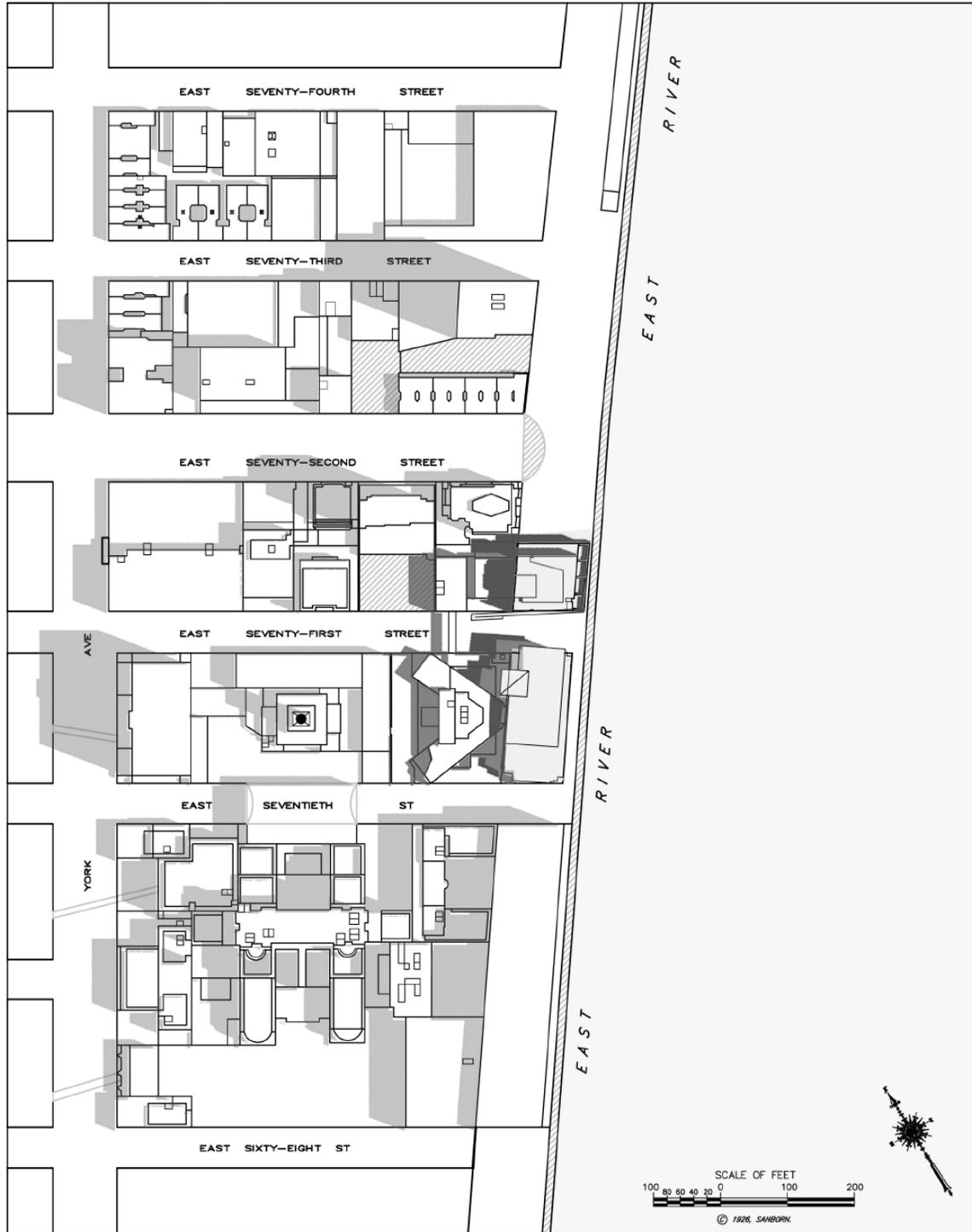
**Figure 6-12. Shadow Analysis, May 6, 4:30PM**



**COMBINED SHADOW ANALYSIS JUNE 21 8:00 AM**  
 HOSPITAL FOR SPECIAL SURGERY  
 AND RIVER BUILDING

-  OPEN SPACE RESOURCES
-  EXISTING SHADOW PATH
-  PROPOSED SHADOW PATH
-  OVERLAPPING SHADOW PATH

**Figure 6-13. Shadow Analysis, June 21, 8:00 AM**

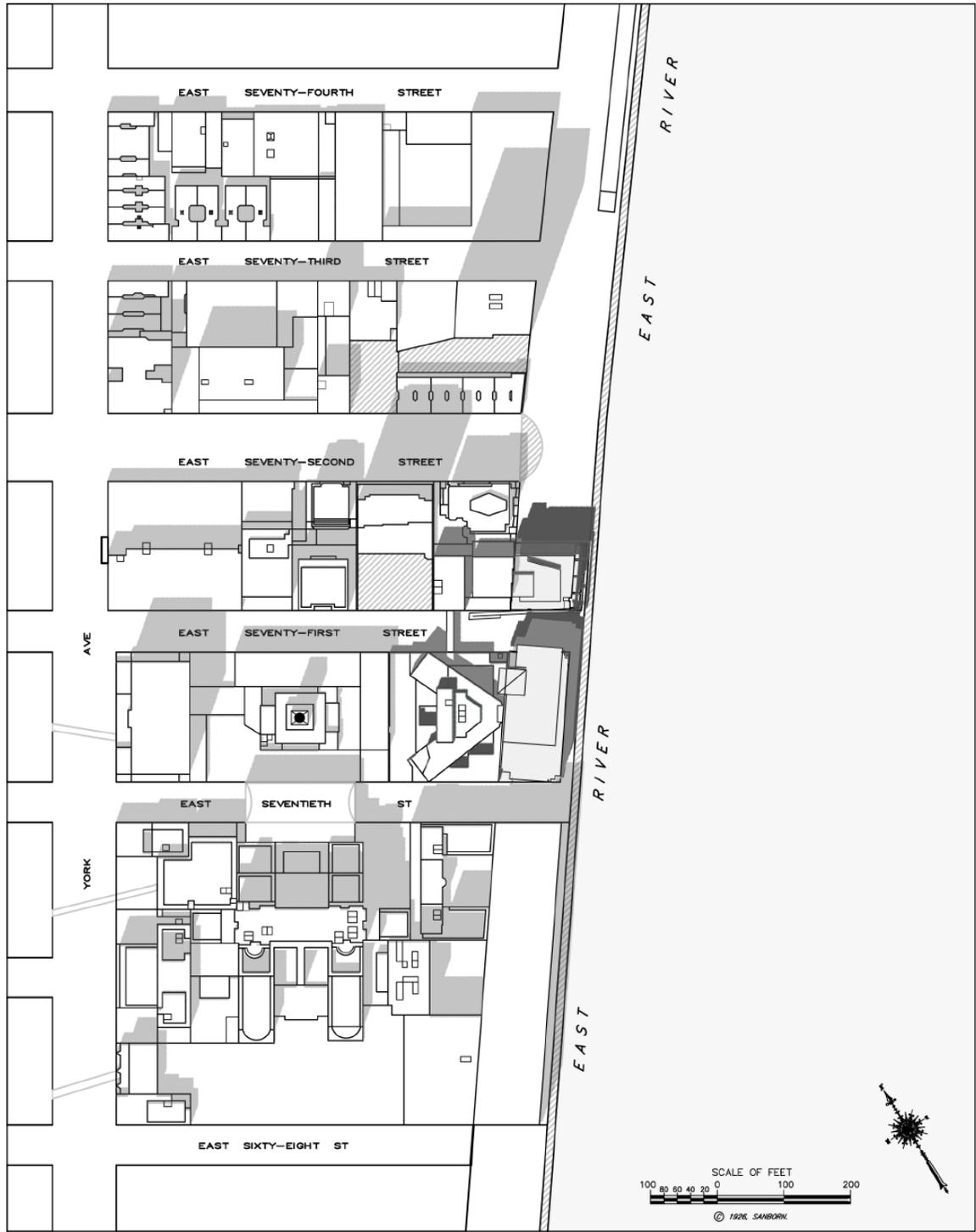


**COMBINED SHADOW ANALYSIS** JUNE 21 12:00 PM

HOSPITAL FOR SPECIAL SURGERY  
AND RIVER BUILDING

-  OPEN SPACE RESOURCES
-  EXISTING SHADOW PATH
-  PROPOSED SHADOW PATH
-  OVERLAPPING SHADOW PATH

**Figure 6-14. Shadow Analysis, June 21, 12:00 PM**

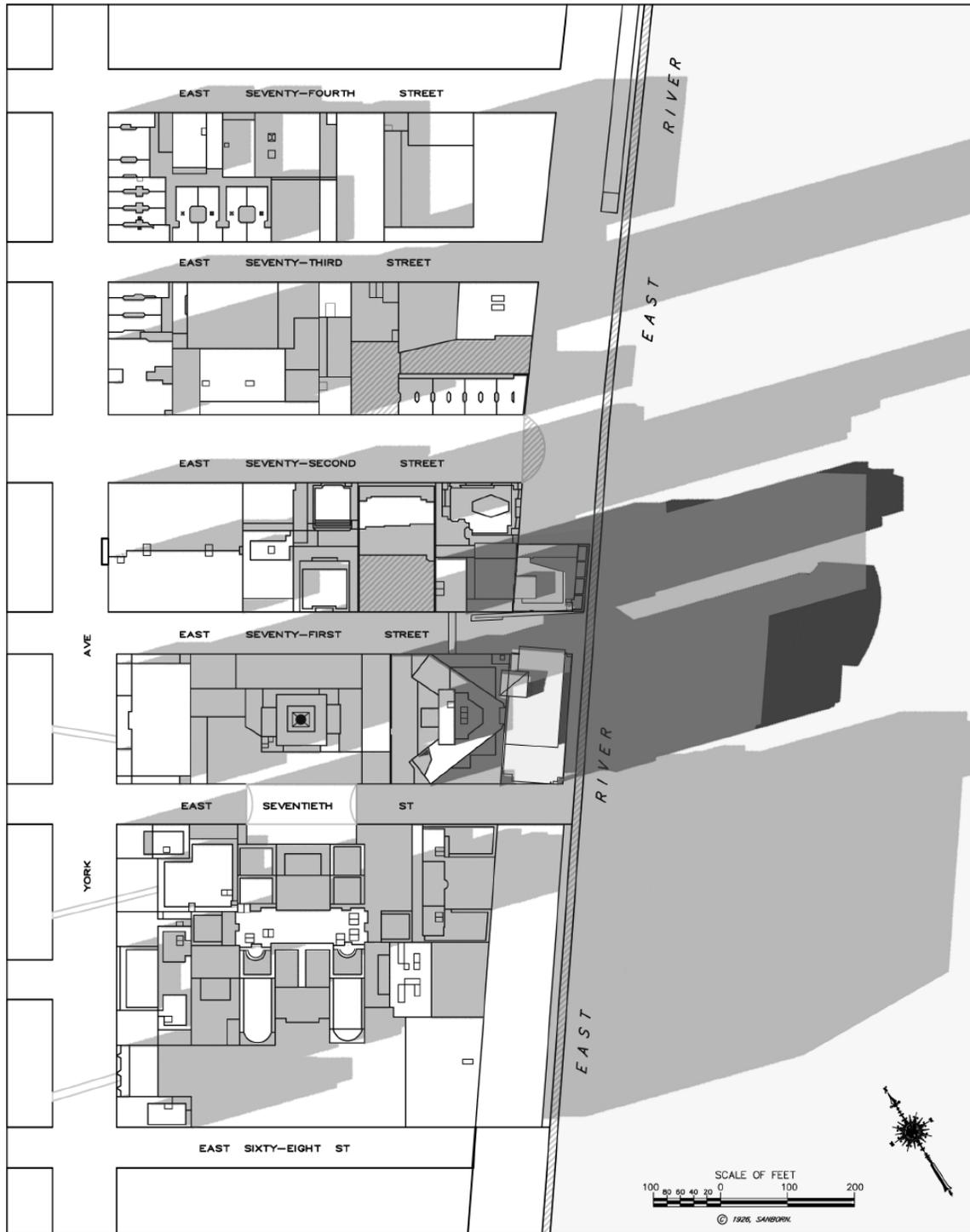


**COMBINED SHADOW ANALYSIS JUNE 21 2:15 PM**

HOSPITAL FOR SPECIAL SURGERY  
AND RIVER BUILDING

-  OPEN SPACE RESOURCES
-  EXISTING SHADOW PATH
-  PROPOSED SHADOW PATH
-  OVERLAPPING SHADOW PATH

**Figure 6-15. Shadow Analysis, June 21, 2:15 PM**



**COMBINED SHADOW ANALYSIS JUNE 21 6:30 PM**

HOSPITAL FOR SPECIAL SURGERY  
AND RIVER BUILDING

-  OPEN SPACE RESOURCES
-  EXISTING SHADOW PATH
-  PROPOSED SHADOW PATH
-  OVERLAPPING SHADOW PATH

**Figure 6-16. Shadow Analysis, June 21, 6:30 PM**



**COMBINED SHADOW ANALYSIS DECEMBER 21 10:30 AM**

HOSPITAL FOR SPECIAL SURGERY  
AND RIVER BUILDING

-  OPEN SPACE RESOURCES
-  EXISTING SHADOW PATH
-  PROPOSED SHADOW PATH
-  OVERLAPPING SHADOW PATH

**Figure 6-17. Shadow Analysis, December 21, 10:30 AM**



COMBINED SHADOW ANALYSIS DECEMBER 21 12:00 PM

HOSPITAL FOR SPECIAL SURGERY  
AND RIVER BUILDING

-  OPEN SPACE RESOURCES
-  EXISTING SHADOW PATH
-  PROPOSED SHADOW PATH
-  OVERLAPPING SHADOW PATH

Figure 6-18. Shadow Analysis, December 21, 12 PM



**COMBINED SHADOW ANALYSIS** DECEMBER 21 3:22 PM

HOSPITAL FOR SPECIAL SURGERY  
AND RIVER BUILDING

-  OPEN SPACE RESOURCES
-  EXISTING SHADOW PATH
-  PROPOSED SHADOW PATH
-  OVERLAPPING SHADOW PATH

**Figure 6-19. Shadow Analysis, December 21, 3:22 PM**