## Chapter 6: Shadows

## A. INTRODUCTION

The West 61st Street rezoning (the "proposed action") would allow for the construction of a new building (the proposed project) located midblock on the block bounded by West 60th and 61st Streets and West End and Amsterdam Avenues (Block 1152). The proposed action could also result in new development on two adjacent lots (Lots 58 and 61), located on the northwest corner of the same block (the projected development). The proposed project would consist of three distinct components (Buildings A, B, and C as shown on Figure 1-4). The tallest component (Building C) would consist of a 27-story tower with frontage on West 61st Street that would rise to a height of approximately 304 feet to the top of the parapet*. On West 60th Street directly south of Building C, the project (Building B) would rise to a height of approximately 97 feet before being set back and rising to a total height of approximately 172 feet. To the west of Building B, the project (Building A) would contain a base that would rise to a height of approximately 85 feet before being set back and rising to a total height of approximately 121 feet. The projected development would consist of a 10-story building (approximately 105 feet) on Lot 58 and a 31-story building (approximately 340 feet) on Lot 61. Because it would develop a vacant lot and low-rise buildings, an assessment of the action's potential to result in significant adverse shadows impacts was undertaken.

Based on the detailed analysis presented in this chapter, it is not anticipated the proposed action would result in any significant adverse impacts to the open spaces in the surrounding area. There would be no shadow increments on the West 59th Street Recreation Center or the P.S. 91 Amsterdam School, and James Felt Plaza and Frank Damrosch Park would experience incremental shadows lasting 30 minutes or less. At the Samuel N. Bennerson Playground and West End Towers Park, shadow increments of short duration would occur in the December analysis period only. At the Amsterdam Houses Playground, incremental shadows would occur during the March and May analysis periods. These increments would be small in size, covering at most a third of the open space, and would move quickly over the open space. Overall, the proposed action would not add a significant amount of new shadows to any of the open spaces, nor would they rest on any area for a significant amount of time; therefore it is not anticipated that the proposed action would result in adverse shadow impacts.

The proposed project would include two new open spaces for the residents of the proposed building; one open space would be programmed for active and passive uses (including a tennis court and landscaped garden rooms) while the other would be dedicated to passive use and have seating areas and a water feature. As the new open spaces created as part of the proposed project

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* All heights are measured from the mean curb elevation to the top of the parapet. The mean curb elevation at West 60th Street is 40.46 feet. At West 61st Street, the mean curb elevation is 51.49 feet. To provide a conservative shadows analysis, the building heights used in the shadows model include the mechanical bulkhead.

are located adjacent to the proposed buildings they would experience shadows, however, such shadows are not a significant adverse impact as the open spaces would be created by the proposed project.

## B. METHODOLOGY

Following the guidelines of the New York City *Environmental Quality Review (CEQR) Technical Manual*, a shadows assessment is appropriate when the project site is adjacent to a park, historic resource, or important natural feature and when the proposed action would result in a building 50 feet in height or greater. The project site and projected development site are within the vicinity of several publicly accessible open spaces. In identifying potential impacts, CEQR focuses on uses and users of the open space, landscaping and vegetation, historic resources with significant sunlight dependant features and important natural resources. Based on *CEQR Technical Manual* methodology, this analysis considers shadows on four representative days of the year:

- March 21, the vernal equinox (equivalent to September 21, the autumnal equinox);
- May 6, the midpoint between the equinox and summer solstice (equivalent to August 6);
- June 21, the summer solstice and the day on which shadows are the shortest; and
- December 21, the winter solstice and the day on which shadows are longest.

The CEQR methodology does not consider shadows within 1½ hours of sunrise or sunset. Therefore, the analysis period is between 1½ hours after sunrise and 1½ hours before sunset.

The *CEQR Technical Manual* identifies the following as situations when a significant shadow impact may occur:

- Substantial reduction in sunlight where a sensitive use is already subject to substandard sunlight (i.e., less than the minimum time necessary for survival);
- Reduction in sunlight available to a sensitive use from more to less than the minimum time necessary for its survival;
- Substantial reduction in sunlight to a sun-sensitive use or feature; and
- Substantial reduction in the usability of the open space.

Analysis of these four criteria forms the basis for the determination that the project would not create significant shadow impacts.

## C. RESOURCES OF CONCERN FOR SHADOWS ANALYSIS

The tallest element of the proposed project would be a tower 331 feet tall, and the projected development would be approximately 340 feet in height. Buildings of this height would be expected to cast shadows up to 1,423 feet and 1,462 feet in length, respectively. There are a number of open spaces within the maximum potential area for new shadows from the proposed and projected developments. The features of the identified open spaces are described in this section and mapped on each of the shadow diagrams. There are no historic resources with sun-sensitive features or significant natural features in the maximum potential area for new shadows.

**PUBLIC OPEN SPACES**

The **West 59th Street Recreation Center** is located south of the project site midblock between West 59th and West 60th Streets and Amsterdam and West End Avenues. The Recreation Center has outdoor amenities including two pools, benches and picnic tables. There are fences around the entire site as well as a fence separating the two pools. One is a shallow outdoor pool on the southern portion of the open space with benches along the north and west boundaries and picnic tables to the east. The other indoor pool for adults is to the north and has benches along the perimeter. The outdoor facilities, particularly the pool, are in poor condition and are not usable

East of the project site is the playground at **P.S. 191 Amsterdam School,** which is approximately 0.6 acres, with plantings, seating, a basketball court, and a playground. On the eastern edge of the playground—along Amsterdam Avenue—are jungle gyms and benches.

The **Amsterdam Houses** contain a section of playground, located midblock just north of a low rise building along West 61st Drive. This open space has slightly more passive recreation area than active and contains play equipment flanked by groups of benches on the west and east sides.

**West End Towers Park** open space is located on West End Avenue between West 63rd and West 64th Streets near the West End Towers residential buildings. Oriented toward active use, with children's play equipment in a fenced of playground in the eastern half, this open space also has attractive landscaping, varied topography, walking paths, lawns, trees, sculptures in the western portion.

The 0.8-acre **Samuel N. Bennerson Playground** contains playground equipment, swings, and basketball courts as well as trees, plantings and seating. The basketball courts take up most of the eastern half of the open space with the western area containing playground equipment and swingsets. Benches are located throughout the open space along paths between the active resources. This playground is located on the south side of West 65th Street between Amsterdam and West End Avenues in the same superblock containing the Amsterdam Houses.

**James Felt Plaza** is located on the north side of West 64th Street between Amsterdam and West End Avenues. This open space contains seating, plantings and a children's playground reserved for tenants of 240 West 64th Street. In the western section of the plaza is a stage with three rows of stadium seating. The eastern portion is a gated area belonging to a private day care center.

**Frank Damrosch Park**, south of Lincoln Center and the Metropolitan Opera House, is a 2.4-acre passive space that has trees, plantings, benches, and a bandshell, but no lawns. It is a popular area for recreation and in the summer is heavily programmed with outdoor music and dance performances. During the winter months the Big Apple Circus tents are set up on the site.

## D. SHADOW IMPACTS

The sun rises in the east and casts its earliest shadows towards the west. Later in the morning, the sun rises higher in the sky, casting shorter shadows towards the northwest. At noon (1 PM during daylight savings time), the sun is at its highest point in the sky and casts the shortest shadows of the day directly north. In the afternoon, the sun continues to move west and begins to cast longer shadows toward the northeast and east.

In its yearly cycle, the height of the sun in the sky and the time and directional location at which it rises and sets varies by season. In the winter, the sun travels in a low arc across the southern

sky, rising late in the southeast and setting early in the southwest. Because it is so low in the sky, it casts longer shadows. In the spring and fall, the sun arcs through the sky at a somewhat higher angle, rises earlier in the east, and sets later in the west. In these seasons, shadows are of moderate length. In the summer, the sun arcs through the sky at its highest angle, rising almost directly overhead at noon. For this reason, summer shadows are shortest. However, as it also travels from the northeast to the northwest in the summer the sun casts shadows in more directions than in other seasons, and its late sunset and early sunrise create shadows earlier in the morning and later in the evening than in other seasons.

All shadow renderings are based on the Environmental Simulation Center's 3D AutoCAD model that was created with Autodesk Architectural Desktop 3.3 and Autodesk Viz 4 based on information provided by the Department of City Planning, AKRF, Inc., and publicly available images and illustrations. Shadow images were produced in Adobe Photoshop CS.

## IMPACT ON SENSITIVE RESOURCES

Table 6-1 illustrates the entering and exit times for the incremental shadows on each of the open spaces. The times in bold indicate the incremental shadows from the proposed project, while the times in italics indicate the incremental shadows from the projected development.

Neither the proposed project nor the projected development would result in shadows that would reach the West 59th Street Recreation Center or the P.S. 91 Amsterdam School. Incremental shadows lasting 30 minutes or less would reach James Felt Plaza and Frank Damrosch Park (see Table 6-1). Therefore, these open spaces are not discussed in detail below, and no significant adverse impacts would occur.

**Table 6-1**
**Shadow Durations**

| Open Space / Historic Resource | March 21/ September 21 7:36 AM-4:29 PM EST | May 6/ August 6 7:27 AM-6:18 PM DST | June 21 6:57 AM-7:01 PM DST | December 21 8:51 AM-2:53 PM EST |
|---|---|---|---|---|
| James Felt Plaza | – | – | – | **1:42 PM – 2:03 PM** |
| Frank Damrosch Park | **4:19 PM – 4:29 PM** | – | – | – |
| Amsterdam Houses Playground | **11:45 AM – 3:27 PM** *2:20 PM – 4:29 PM* | *3:07 PM – 6:00 PM* | – | – |
| Samuel N. Bennerson Playground | – | – | – | **1:31 PM – 2:53 PM** |
| West End Towers Park | – | – | – | *12:29 PM – 1:12 PM* |

**Notes:**
EST—Eastern Standard Time; DST—Daylight Saving Time
Bold: Proposed Project
Italics : Projected Development

**Source:** Environmental Simulation Center, Inc. determined the shadow increments by using a 3D AutoCAD model that was created with Autodesk Architectural Desktop 3.3 and Autodesk Viz 4.

### *AMSTERDAM HOUSES PLAYGROUND*

The Amsterdam Houses open space would experience incremental shadows from the proposed project and the projected development on March 21st and from the projected development on May 6th. Neither the proposed nor projected developments would cast shadows on the open space in June or December.

During the March analysis period, incremental shadow from the proposed development would enter the open space at 11:45 AM and exit by 3:27 PM. The shadow increments would be small in size at both the beginning and end of this period, and would cover no more than a quarter of the open space at any time. At Noon, a small incremental shadow would be located along the western edge of the space, where one of the seating areas is located (see Figure 6-1). The shadow would move quickly across the space, and at 1:00 PM, would reach the active play areas. At 2:00 PM, the incremental shadow would cover approximately one quarter of the open space (see Figure 6-2). The shadow increment would remain on the play areas until approximately 3:00 PM at which time the shadow increment would cover the seating area along the eastern edge of the park (see Figure 6-3). By 3:27, the incremental shadow from the proposed project would completely exit the open space.

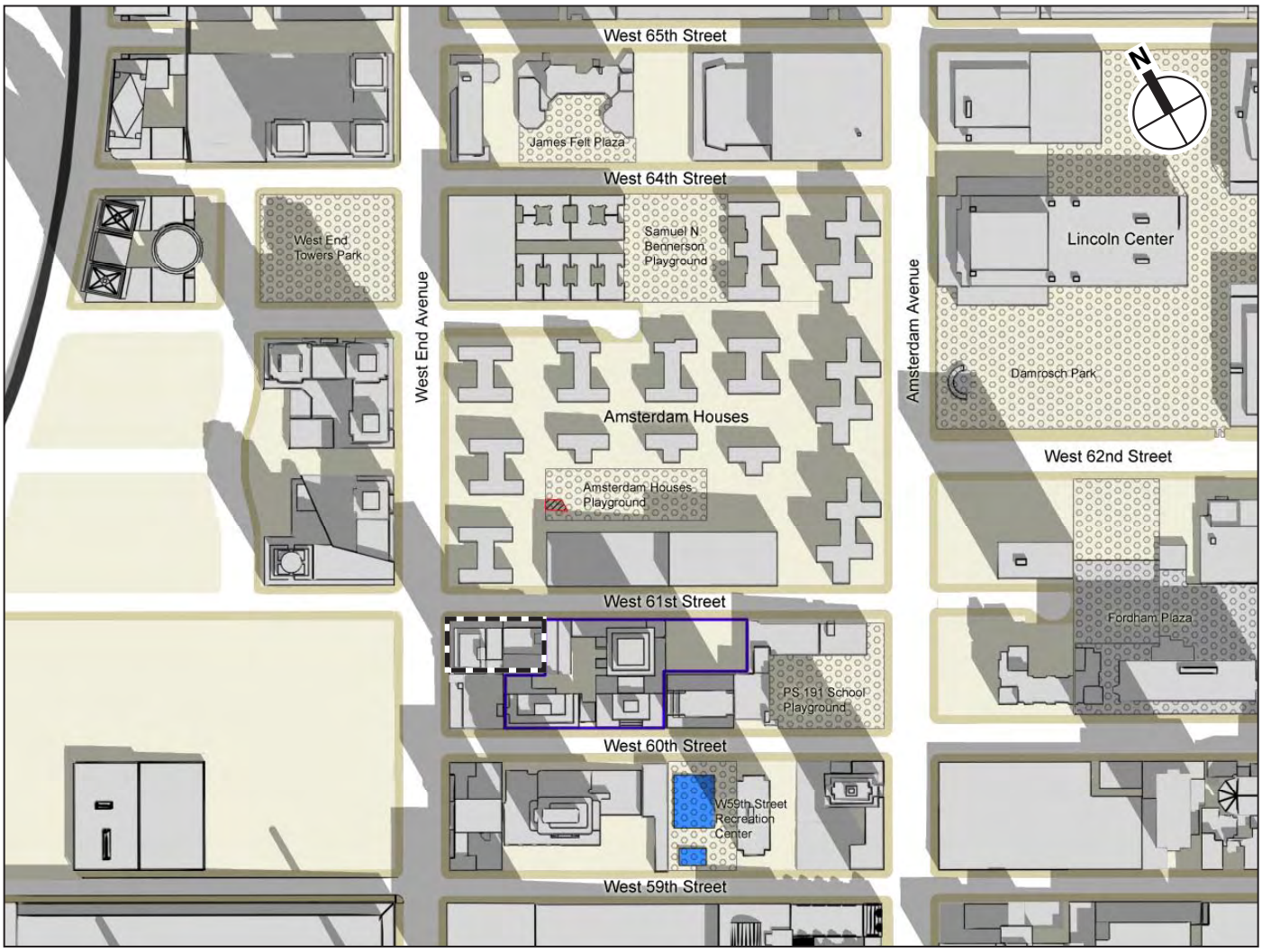
Incremental shadow from the projected development would enter the western edge of the open space (where one of the seating areas is located) at 2:20 PM during the March analysis period. The incremental shadow would remain on the open space until 4:29 PM, the end of the analysis period. In general, the incremental shadow from the projected development would move quickly across the open space. At 3:00 PM, the incremental shadow from the projected development would cover a portion of the open space at its northwestern corner (see Figure 6-3). The shadow would move quickly and an hour later (at 4:00 PM), would cover the northern area of the space (see Figure 6-4).

On March 21st, the combined incremental shadow duration on the Amsterdam Houses Playground from the proposed and projected development sites would be four hours and forty-five minutes. Incremental shadow from both the proposed project and projected development would cover portions of the open space for one hour and seven minutes, from 2:20 PM until 3:27. The combined incremental shadows would be greatest at 3:00 PM when the proposed project would add new shadow to the eastern area (containing one of the seating areas) while the projected development would add new shadow along the western edge where the other seating area is located (see Figure 6-3). However, the shadows would move quickly across the playground and by 3:30 PM only the projected development would cast new shadows. In sum, the incremental shadow during the morning hours would be small in size; it is not until approximately 3:00 PM that the incremental shadow would cover the seating areas, and by 4:00 PM they would only add a small amount of new shadow to the seating area along the eastern side. While there would be new shadow from both the proposed project and the projected development on the open space at 3:00 PM, portions of the active play area and the seating areas would remain in sun. Therefore, no significant adverse impacts would result.

On the May analysis day, the proposed project would not cast shadows on the Amsterdam Houses open space. However, the projected development would result in incremental shadow beginning at 3:07 PM and continuing until 6:00 PM. The incremental shadow would be greatest at 5:00 PM when it would cover approximately one-third of the playground (see Figure 6-5).

Overall, the proposed project and projected development would result in incremental shadows on this open space during the March analysis period, and the projected development would result in incremental shadow during the May analysis period. Shadows from the proposed action would generally be small in size, covering at most a third of the open space at one time, and would not rest on any one area of the open space for an extended period. Furthermore, portions of the active play area and the seating areas would remain in sun during the morning and early afternoon hours. Therefore, no significant adverse impacts are expected to occur.

12.21.06




Source: Environmental Simulation Center, LTD.

Project Site Boundary

Projected Development Site

Shadow

Open Space

Incremental Shadow on Open Space

**March 21 12:00 PM**
**Shadow Diagram**
Figure 6-1

12.21.06


Source: Environmental Simulation Center, LTD.

Project Site Boundary

Projected Development Site

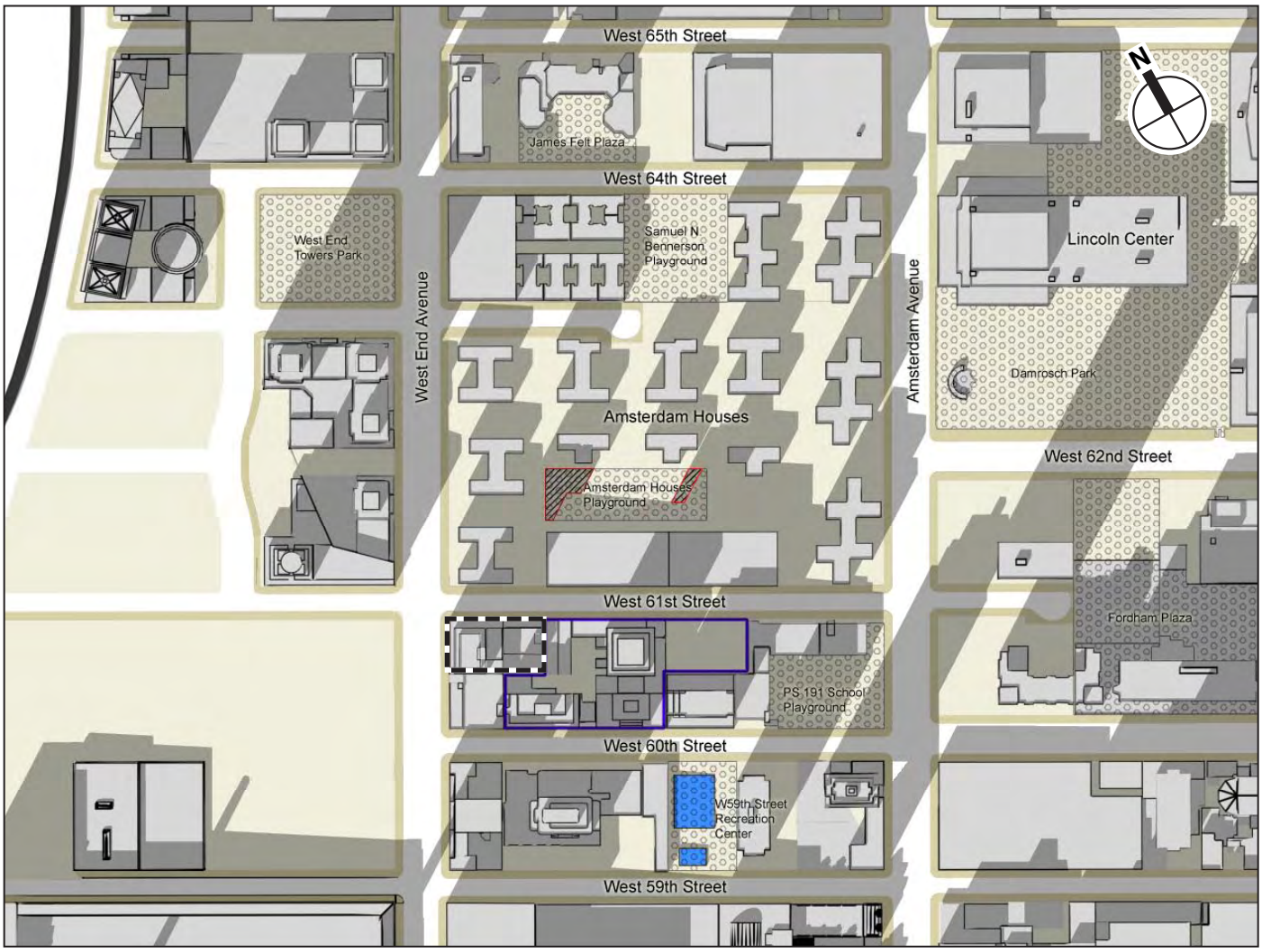
Shadow

Open Space

Incremental Shadow on Open Space

**March 21 2:00 PM**
**Shadow Diagram**
Figure 6-2

12.21.06




Source: Environmental Simulation Center, LTD.

Project Site Boundary

Projected Development Site

Shadow

Open Space

Incremental Shadow on Open Space

**West 61st Street Rezoning**
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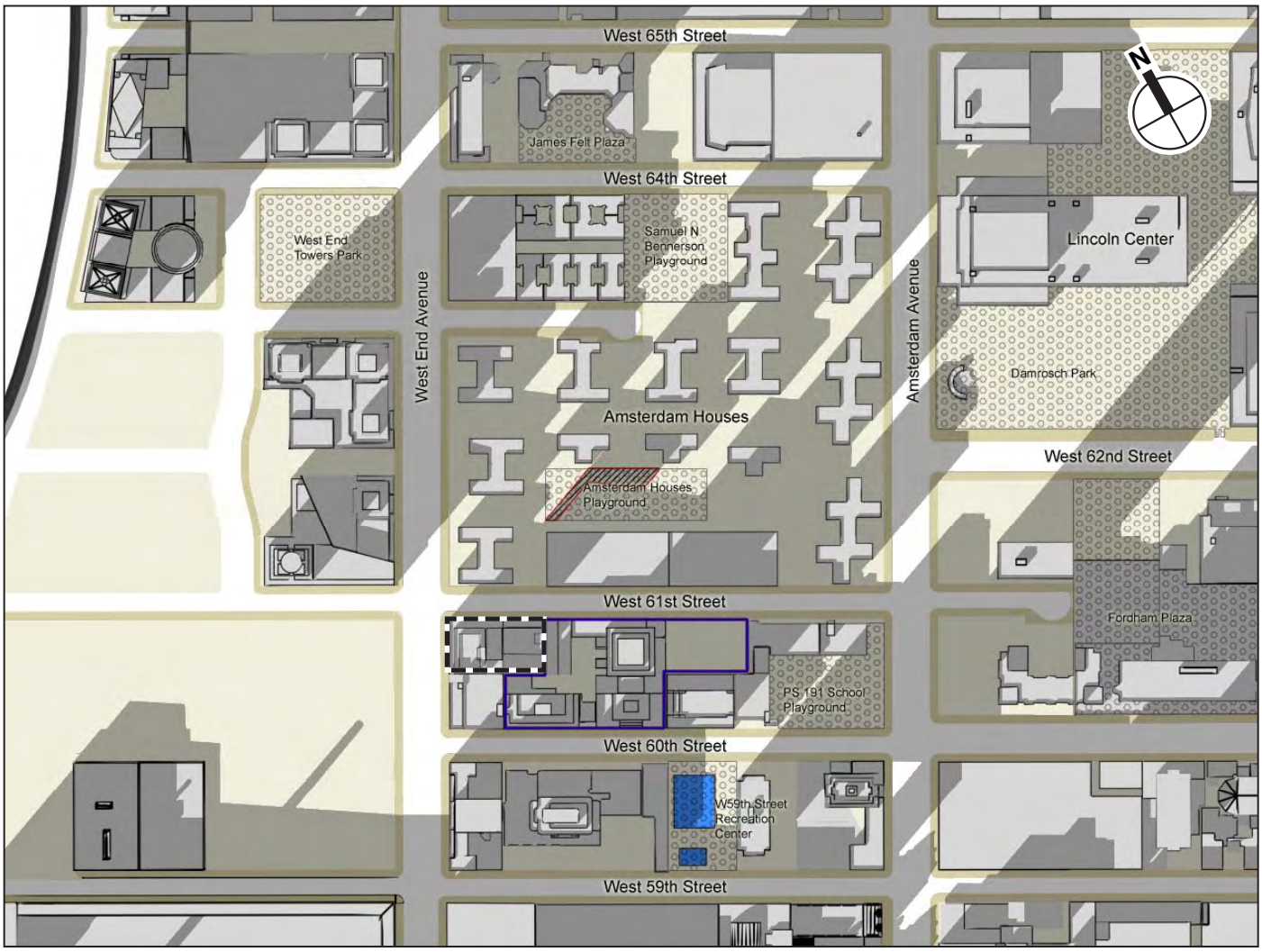
# March 21 3:00 PM Shadow Diagram

Figure 6-3

12.21.06




Source: Environmental Simulation Center, LTD.

Project Site Boundary

Projected Development Site

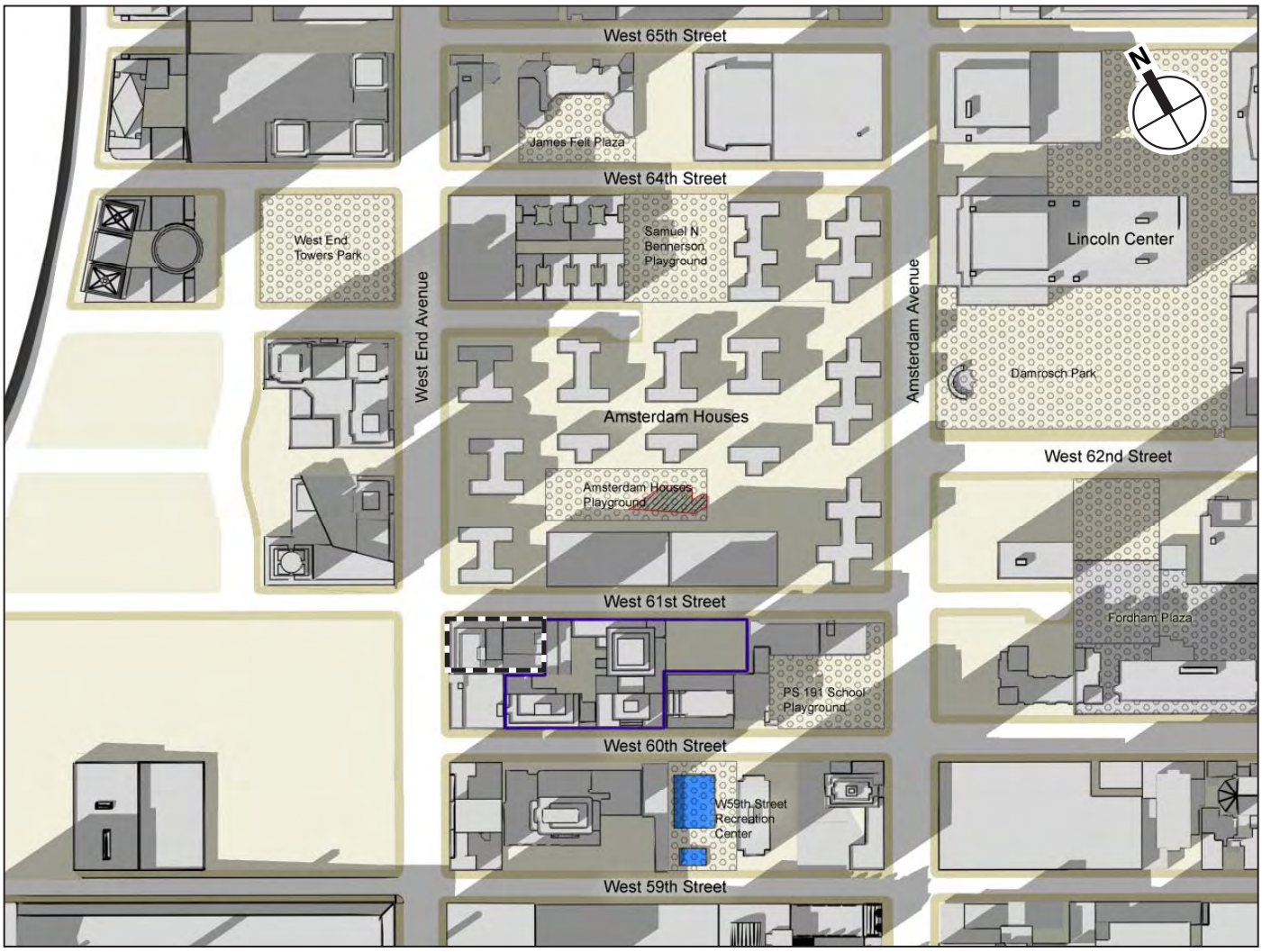
Shadow

Open Space

Incremental Shadow on Open Space

**March 21 4:00 PM**
**Shadow Diagram**
Figure 6-4

12.21.06




Source: Environmental Simulation Center, LTD.

Project Site Boundary

Projected Development Site

Shadow

Open Space

Incremental Shadow on Open Space

**West 61st Street Rezoning**
**Project and Citywide GLSD Text Amendment**

# May 6 5:00 PM
# Shadow Diagram
Figure 6-5

*SAMUEL N. BENNERSON PLAYGROUND*

On December 21st the proposed project would cast incremental shadows on the Samuel N. Bennerson Playground from approximately 1:30 PM until the end of the analysis period, 2:53 PM. At 2:00 PM, the incremental shadow would cover one-third of the playground (see Figure 6-6), while at the end of the analysis period it would only add a very small amount of new shadow (see Figure 6-7). There would be no other incremental shadows on this open space from either the proposed or projected developments. Therefore, the proposed action would not result in any significant adverse impacts from shadows on this open space.

*WEST END TOWERS PARK*

Incremental shadow from the projected development would enter the West End Towers Park at 12:29 PM on the December analysis day covering a small area at the southeast corner and would exit of the park by 1:12 PM for a total duration of 43 minutes (see Figure 6-8). Neither the projected development nor the proposed project would cast any other new shadows on the West End Towers Park. Therefore, the proposed action would not result in any significant adverse impacts from shadows on this open space.

## CONCLUSIONS

Overall, the proposed action would not result in significant adverse shadow impacts on area open spaces. There would be no shadow increments on the West 59th Street Recreation Center or the P.S. 91 Amsterdam School, and James Felt Plaza and Frank Damrosch Park would experience incremental shadows lasting 30 minutes or less. At the Samuel N. Bennerson Playground and West End Towers Park, shadow increments of short duration would occur in the December analysis period only. At the Amsterdam Houses Playground, incremental shadows would occur during the March and May analysis periods. These increments would be small in size, covering at most a third of the open space, and would move quickly over the open space. Overall, the proposed action would not add a significant amount of new shadows to any of the open spaces, nor would they rest on any area for a significant amount of time; therefore it is not anticipated that the proposed action would result in adverse shadow impacts on the open spaces in the surrounding area. ✷

12.21.06


Source: Environmental Simulation Center, LTD.

Project Site Boundary

Projected Development Site

Shadow

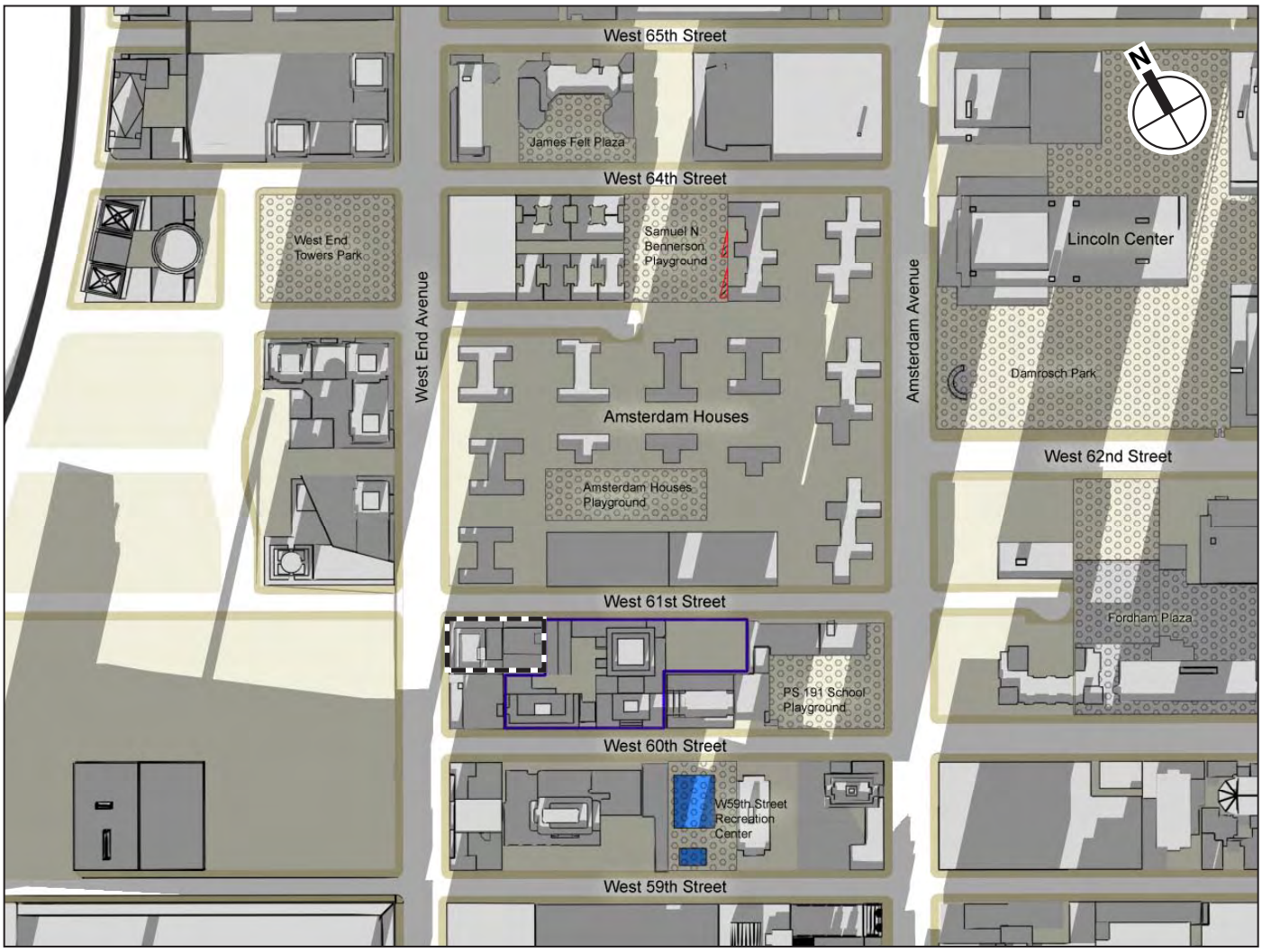
Open Space

Incremental Shadow on Open Space

**West 61st Street Rezoning**
**Project and Citywide GLSD Text Amendment**

# December 21 2:00 PM
# Shadow Diagram
Figure 6-6

12.21.06




Source: Environmental Simulation Center, LTD.

Project Site Boundary

Projected Development Site

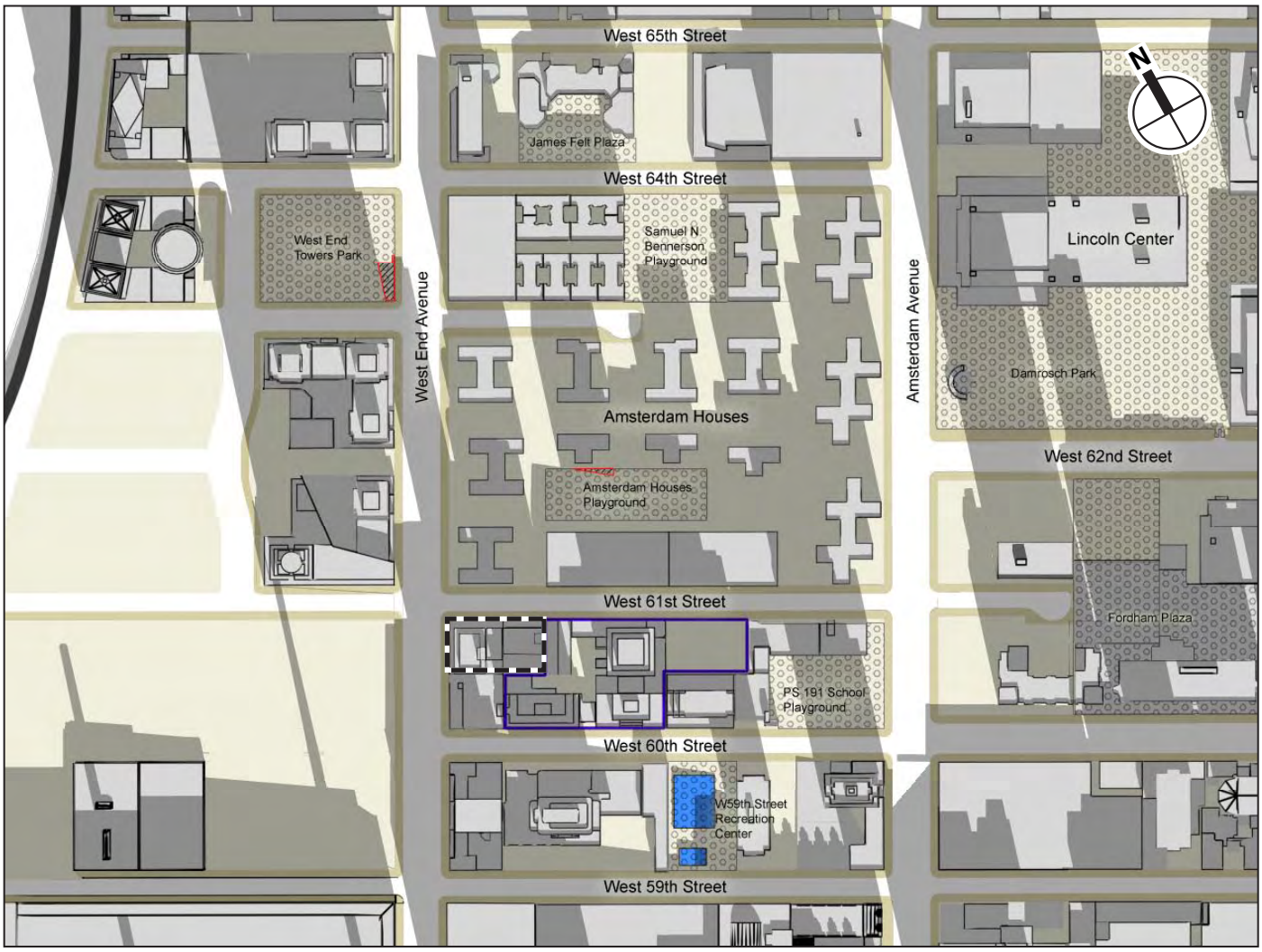
Shadow

Open Space

Incremental Shadow on Open Space

**December 21 2:53 PM**
**Shadow Diagram**
Figure 6-7

12.21.06




Source: Environmental Simulation Center, LTD.

Project Site Boundary

Projected Development Site

Shadow

Open Space

Incremental Shadow on Open Space

**West 61st Street Rezoning**
**Project and Citywide GLSD Text Amendment**

# December 21 1:00 PM
# Shadow Diagram
Figure 6-8