

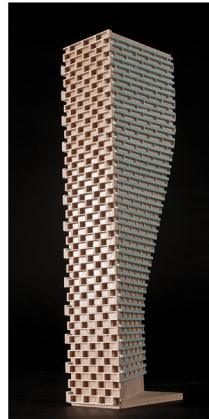
GRADIENTWIND

ENGINEERS & SCIENTISTS

SHADOW IMPACT STUDY

320 McRae Avenue & 1976 Scott Street
Ottawa, Ontario

Report: 20-012-SHADOWS



February 4, 2020

PREPARED FOR

GWL Realty Advisors Inc.
255 Albert Street, Suite 502
Ottawa, ON K1P 6A9

PREPARED BY

Sacha Ruzzante, MASc, Junior Wind Scientist
Justin Ferraro, P.Eng., Principal

EXECUTIVE SUMMARY

This report describes a shadow impact study to satisfy the requirements for a site plan control application (SPA) submission for a proposed two-building development located at 320 McRae Avenue and 1976 Scott Street in Ottawa, Ontario (hereinafter referred to as “subject site”). Our work is based on sun shadow renderings generated from computer-aided design software, City of Ottawa shadow analysis criteria, architectural drawings provided by Neuf Architect(e)s in January 2020, surrounding street layouts and existing and approved future building massing information obtained from the City of Ottawa, as well as recent site imagery.

The results of this analysis are described in Section 5 and presented in pictorial format in Appendix A (Figures A1 to A42). The assessment concerns the impact of net new shadows from the proposed development on sensitive pedestrian areas surrounding the subject site, namely, Westboro Transitway, the proposed park to the immediate south of the subject site, Lion’s Park, and Mahoney Park.

The results of the shadow impact study indicate that the subject site will not cast net new shadows for more than four (4) consecutive hours during any of test dates and times, representing equinox and solstice, on the existing surrounding developments and public outdoor spaces. According to the City of Ottawa criteria, these results are considered to be acceptable.



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1. INTRODUCTION

Gradient Wind Engineering Inc. (Gradient Wind) was retained by GWL Realty Advisors Inc. to undertake a shadow impact study to satisfy the requirements for a site plan control application (SPA) submission for a proposed two-building development located at 320 McRae Avenue and 1976 Scott Street in Ottawa, Ontario (hereinafter referred to as “subject site”). Our work is based on sun shadow renderings generated from computer-aided design software, City of Ottawa shadow analysis criteria, architectural drawings provided by Neuf Architect(e)s in January 2020, surrounding street layouts and existing and approved future building massing information obtained from the City of Ottawa, as well as recent site imagery.

2. TERMS OF REFERENCE

The subject site is located at 320 McRae Avenue and 1976 Scott Street in Ottawa, and is situated on a parcel of land bordered by Scott Street to the north, McRae Avenue to the east, Tweedsmuir Avenue to the west, and existing developments to the south.



*Perspective Rendering Looking Southwest
(Courtesy of Neuf Architect(e)s.)*

The subject site features a 26-storey building (Building A) fronting Scott Street, and a four-storey building (Building B) along McRae Avenue. The two buildings are connected by a 4-storey link, which is recessed from McRae Avenue. Building A comprises a roughly square planform at grade, which sets in at Level 2 at the centre of the south elevation. The building then sets back again at the southwest corner at Level 4. At Level 7 the building sets back on all elevations, revealing a common amenity terrace. The building then rises with a consistent rectangular planform to Level 26 and is topped by a mechanical penthouse. Building A features commercial retail space at grade along Scott Street, a lobby and leasing office at the southeast along McRae Avenue, and townhouses at the southwest, along Tweedsmuir Avenue. Levels 2-6 and 8-26 comprise residential units, while Level 7 features amenity space. Two levels of parking are provided below grade. Retail entrances are located at the northeast and northwest corners of the building, while the



primary residential entrance is located on the east side of the building. A bus stop is located on McRae Avenue, immediately east of Building A.

Building B has an oblong planform, with the long axis along McRae Avenue and an east-west dimension that grows towards the south. The building is four storeys tall and comprises a mix of townhouses and apartment units. A common amenity area is provided on the roof, at Level 5. Entrances to the apartment units are located at the north and south of the west elevation, as well as at the centre of the north elevation. Private entrances to the townhouses are located along the east elevation. A public park is proposed to the south of Building B.

The near-field surroundings (defined as an area within 500 meters (m) of the subject site) are composed of a mix of low-rise residential dwellings and high-rise developments to the north and east (including some developments currently under construction) and a mix of open space and low- and mid-rise buildings in all other directions. The far-field surroundings (defined as an area beyond the near-field but within a 5 kilometer (km) radius of the subject site) contribute primarily suburban wind exposures from the northeast clockwise to west-southwest, and hybrid open-suburban exposures from the west-southwest to the northeast, owing to the proximity of the Ottawa River. Figure 1 illustrates the subject site and surrounding context, while the sun shadow renderings are provided in Appendix A.

3. OBJECTIVES

In accordance with the requirements of the updated Terms of Reference for Shadow Analysis obtained from the City of Ottawa¹, the principal objective of this study is to simulate shadow patterns cast during specific dates and times in order to illustrate the influence of the subject site in terms of sun and daylight access to the subject lands and to the surrounding context, including surrounding buildings, the public realm, as well as public and private open spaces.

¹ City of Ottawa Terms of Reference, Shadow Analysis
https://documents.ottawa.ca/sites/documents/files/documents/tor_shadow_analysis_en.pdf



4. METHODOLOGY

4.1 Background

Shadow impact studies are performed to determine the extent of shadows cast by a proposed development onto the existing surroundings, as well as those cast by the existing surrounding buildings on the proposed development. The procedure requires knowledge of the proposed site massing, as well as detailed knowledge of the existing adjacent lands and buildings. The approach used to conduct a shadow impact study is based on three-dimensional computer modelling and rendered images. Shadow patterns are determined for selected dates and times at a specific geographic location on the earth's surface, which is defined by the latitude and longitude of the site.

For the purposes of this study, shadow-sensitive areas may be defined as building facades, private and public outdoor amenity and open spaces, public parkland, sidewalks and other components of the public realm, as defined by the City of Ottawa. The consequences of shadows cast by new uses of existing land may be beneficial, including cooling effects during warm weather, or adverse, such as the loss of natural light. When shadow-sensitive areas are placed in shade by a proposed project for two or more consecutive hours, the shading may be considered to interfere with sun-dependant activities on that property.

4.2 Shadow Modelling

Computer simulations were undertaken to predict the shadow patterns surrounding the study site, as influenced by the introduction of the proposed development. All relevant architectural details that could affect shadow patterns were included. Shadow patterns were simulated for the future site configuration on four representative days during the year and for multiple times for each day. The geographic coordinates of the site {latitude and longitude, in degrees (°) / minutes (') / seconds (")}, which determine the maximum altitude that the sun reaches above the horizon, is taken to be 45° 23' 46.70" north and 75° 45' 2.63" west. The simulated dates and times are summarized in Appendix A, preceding the pictorial results for each of the four representative days noted in Section 5.



5. SHADOW ASSESSMENT

The results of this analysis are presented in pictorial format in Appendix A (Figures A1 to A42). To focus on the impacts of the subject site, the net new shadows have been distinguished with red shading. The sensitive pedestrian areas surrounding the proposed development include: (i) Westboro Transitway located approximately 80 m to the northwest; (ii) proposed park immediately south of the subject site; and (iii) Lion's Park located approximately 210 m to the southwest and Mahoney Park located approximately 260 m to the northeast. Shadow impacts from the proposed development onto the noted existing areas are described as follows:

(i) Westboro Transitway

- March 21, June 21, and September 21 between 08:15 and 10:15 (3 hours).

(ii) Proposed Park South of Subject Site

- The subject site (Building B) casts net new shadows on the noted proposed park on June 21 between 18:15 and 20:15 (3 hours), and on September 21 at 18:15.

(iii) Lion's Park and Mahoney Park

- The subject site does not cast net new shadows on Lion's Park and Mahoney Park at any time throughout the year.

The results of the shadow impact study indicate that the subject site will not cast net new shadows for more than four (4) consecutive hours during any of test dates and times, representing equinox and solstice, on the existing surrounding developments and public outdoor spaces. According to the City of Ottawa criteria, these results are considered to be acceptable.



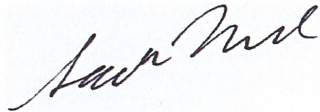
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This concludes our shadow impact study and report. Please advise the undersigned of any questions or comments.

Sincerely,

Gradient Wind Engineering Inc.



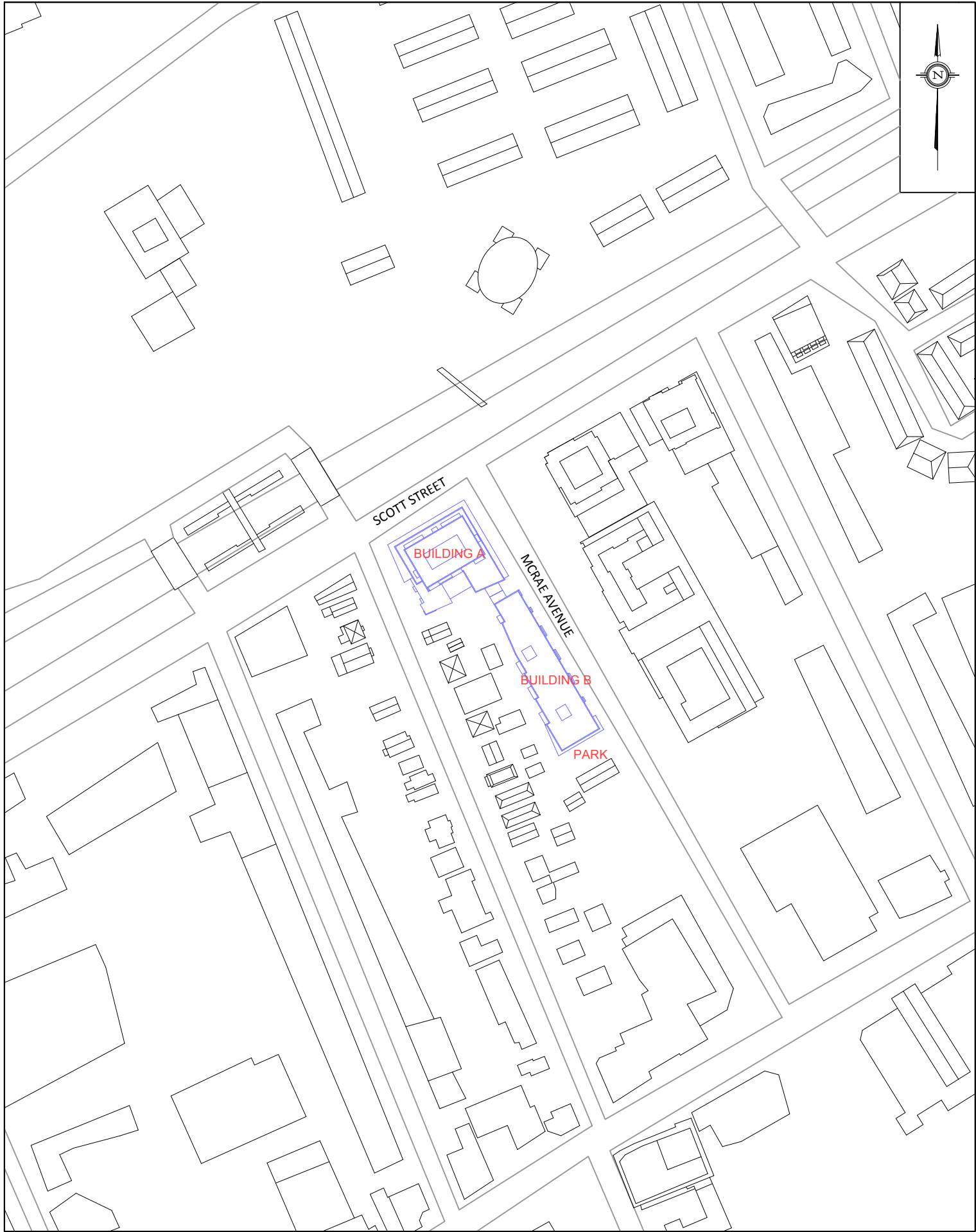
Sacha Ruzzante, MASc.
Junior Wind Scientist

Gradient Wind File #20-012



Justin Ferraro, P.Eng.
Principal



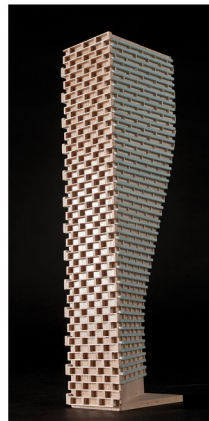


PROJECT	320 MCRAE & 1976 SCOTT ST, ONTARIO SHADOW IMPACT STUDY	
SCALE	1:2500 (APPROX.)	DRAWING NO. 20-012-SHADOWS-1
DATE	JANUARY 31, 2020	DRAWN BY C.E.

DESCRIPTION	FIGURE 1: SITE PLAN AND SURROUNDING CONTEXT
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APPENDIX A

SHADOW RENDERINGS

TABLE A1: SHADOW RENDERING DATES AND TIMES

TIME (EDT)	MARCH 21 (Figure / Page #)
08:15	A1 / A3
09:15	A2 / A3
10:15	A3 / A4
11:15	A4 / A4
12:15	A5 / A5
13:15	A6 / A5
14:15	A7 / A6
15:15	A8 / A6
16:15	A9 / A7
17:15	A10 / A7
18:15	A11 / A8

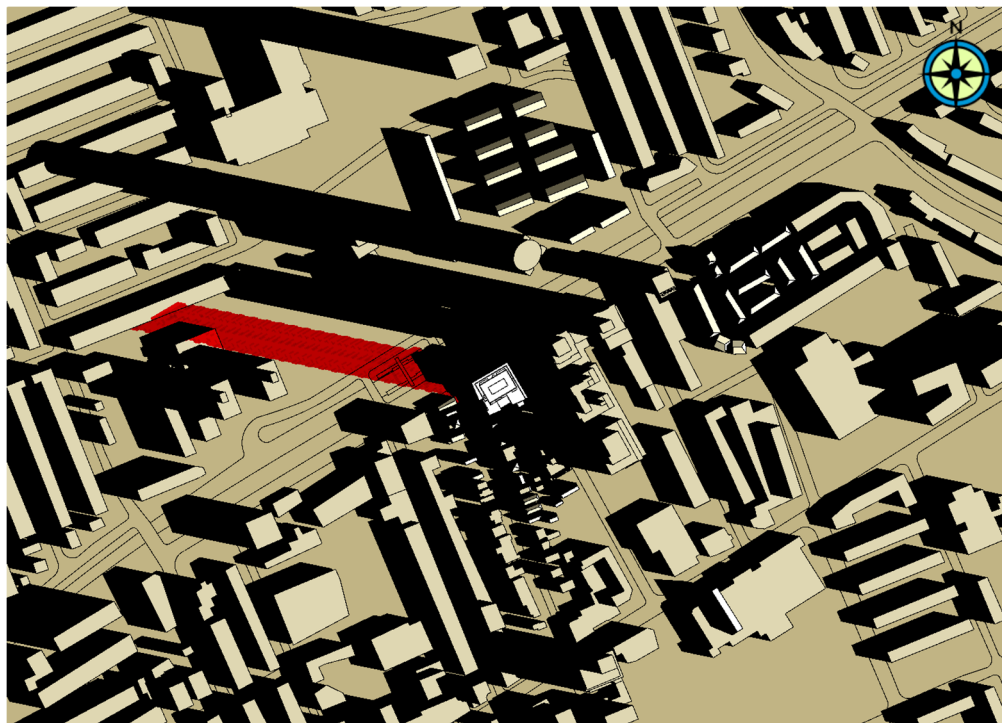


FIGURE A1: MARCH 21, 08:15

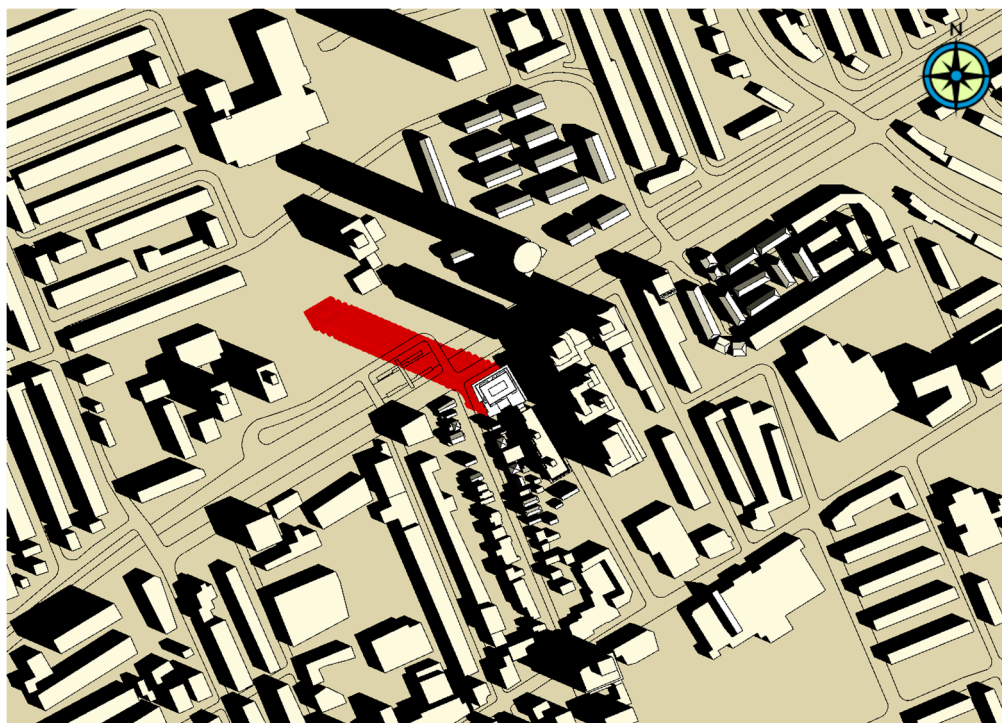


FIGURE A2: MARCH 21, 09:15

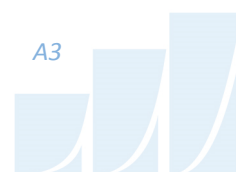




FIGURE A3: MARCH 21, 10:15

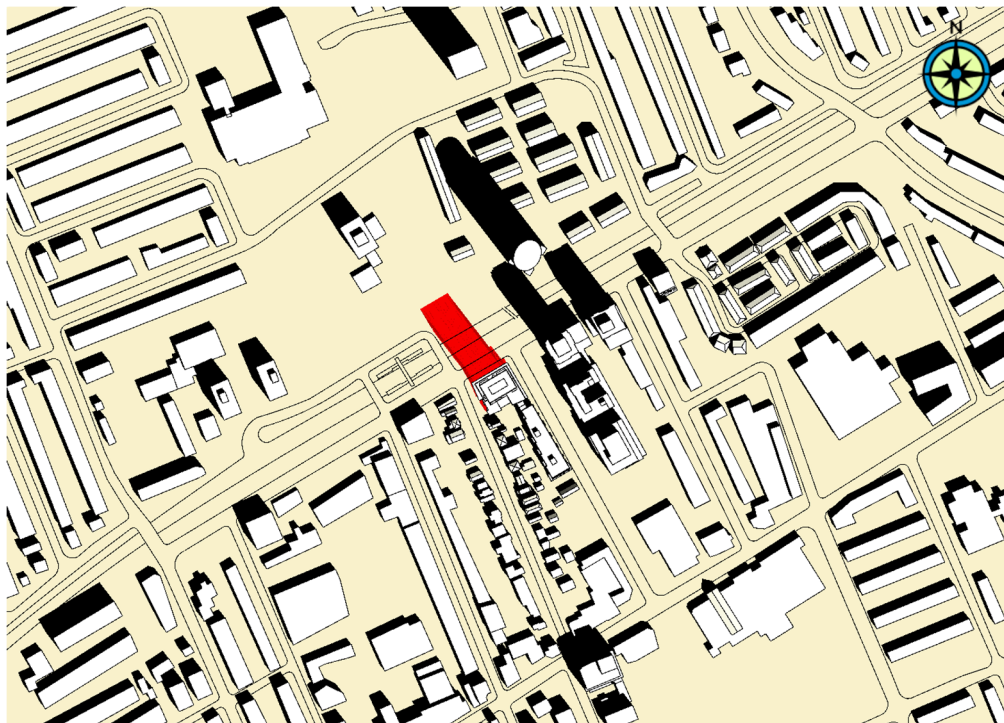


FIGURE A4: MARCH 21, 11:15



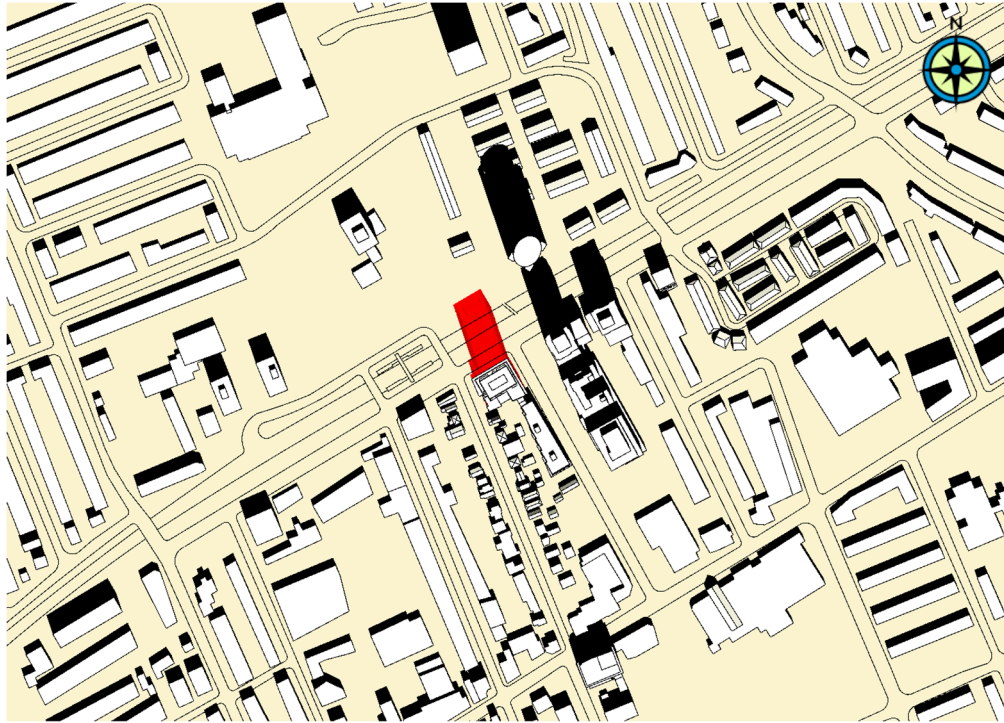


FIGURE A5: MARCH 21, 12:15



FIGURE A6: MARCH 21, 13:15





FIGURE A7: MARCH 21, 14:15



FIGURE A8: MARCH 21, 15:15





FIGURE A9: MARCH 21, 16:15

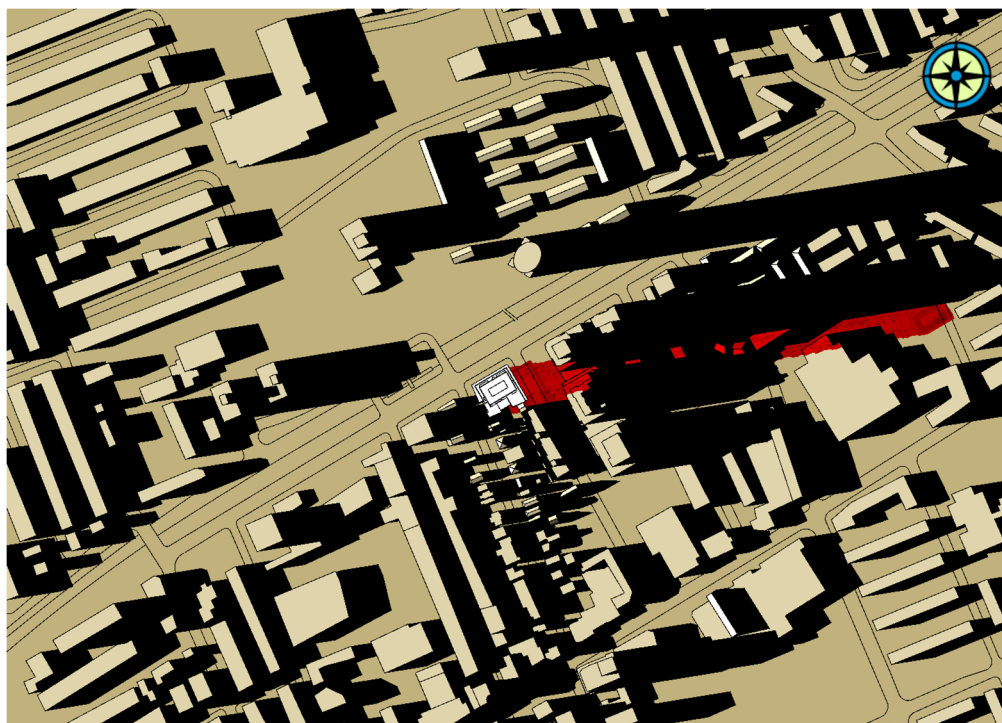


FIGURE A10: MARCH 21, 17:15



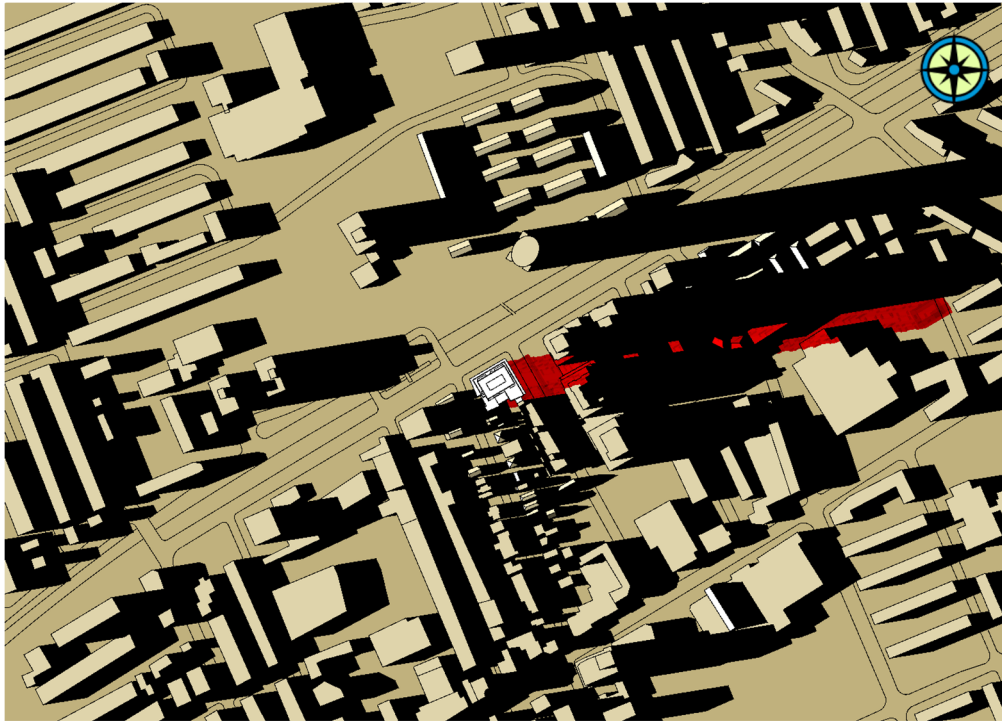


FIGURE A11: MARCH 21, 18:15



TABLE A2: SHADOW RENDERING DATES AND TIMES

TIME (EDT)	JUNE 21 (Figure / Page #)
08:15	A12 / A10
09:15	A13 / A10
10:15	A14 / A11
11:15	A15 / A11
12:15	A16 / A12
13:15	A17 / A12
14:15	A18 / A13
15:15	A19 / A13
16:15	A20 / A14
17:15	A21 / A14
18:15	A22 / A15
19:15	A23 / A15
20:15	A24 / A16



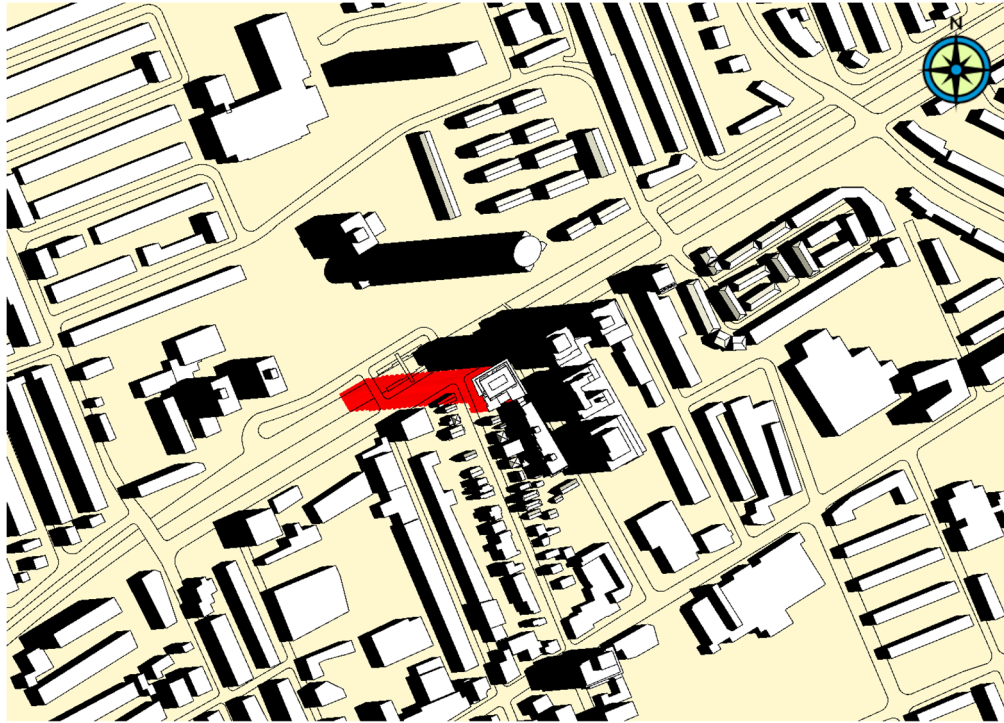


FIGURE A12: JUNE 21, 08:15



FIGURE A13: JUNE 21, 09:15

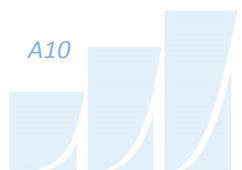




FIGURE A14: JUNE 21, 10:15

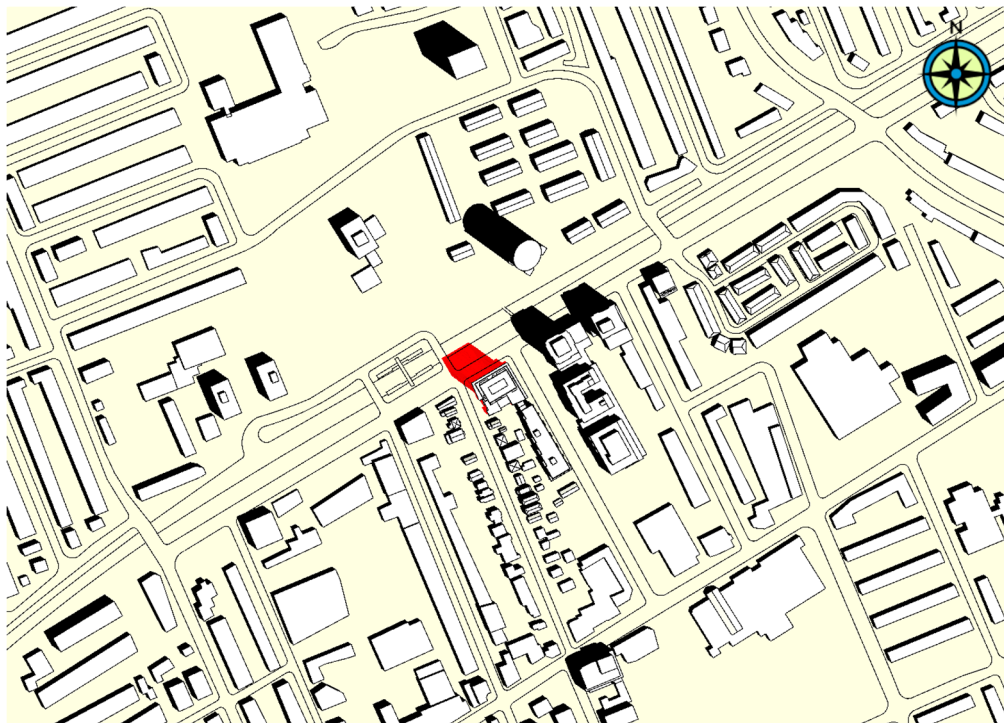


FIGURE A15: JUNE 21, 11:15



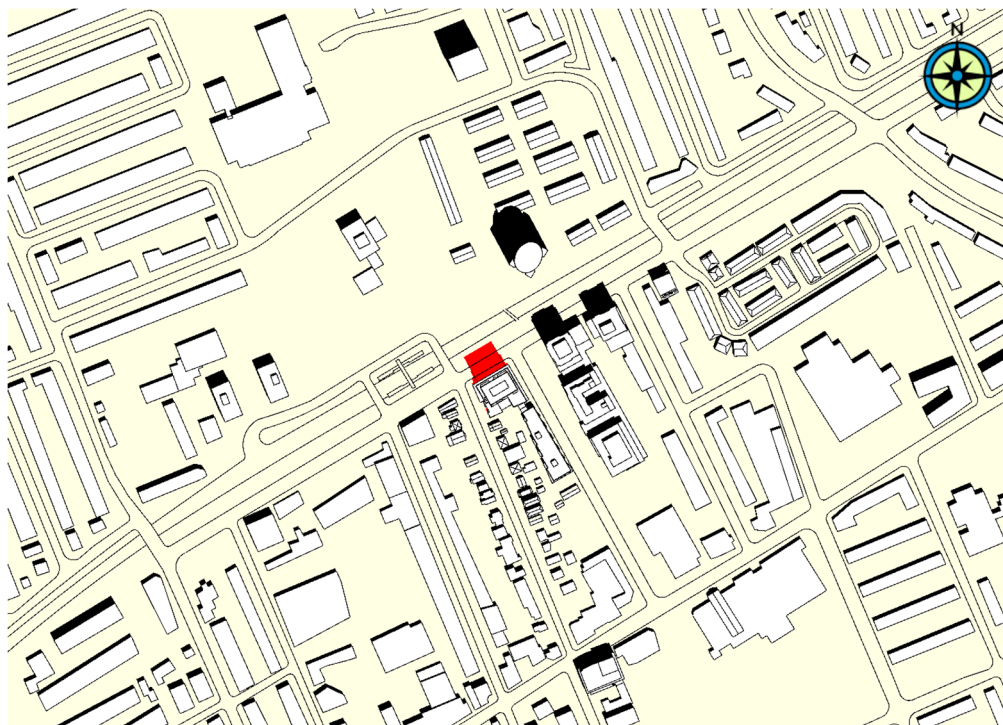


FIGURE A16: JUNE 21, 12:15



FIGURE A17: JUNE 21, 13:15





FIGURE A18: JUNE 21, 14:15



FIGURE A19: JUNE 21, 15:15





FIGURE A20: JUNE 21, 16:15



FIGURE A21: JUNE 21, 17:15





FIGURE A22: JUNE 21, 18:15

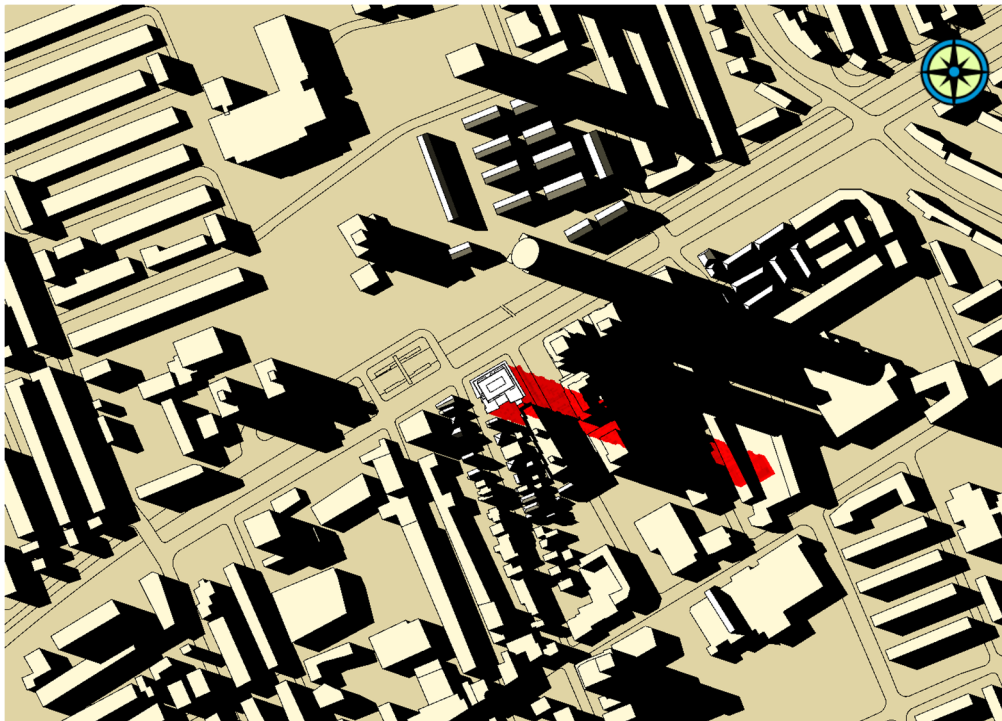


FIGURE A23: JUNE 21, 19:15



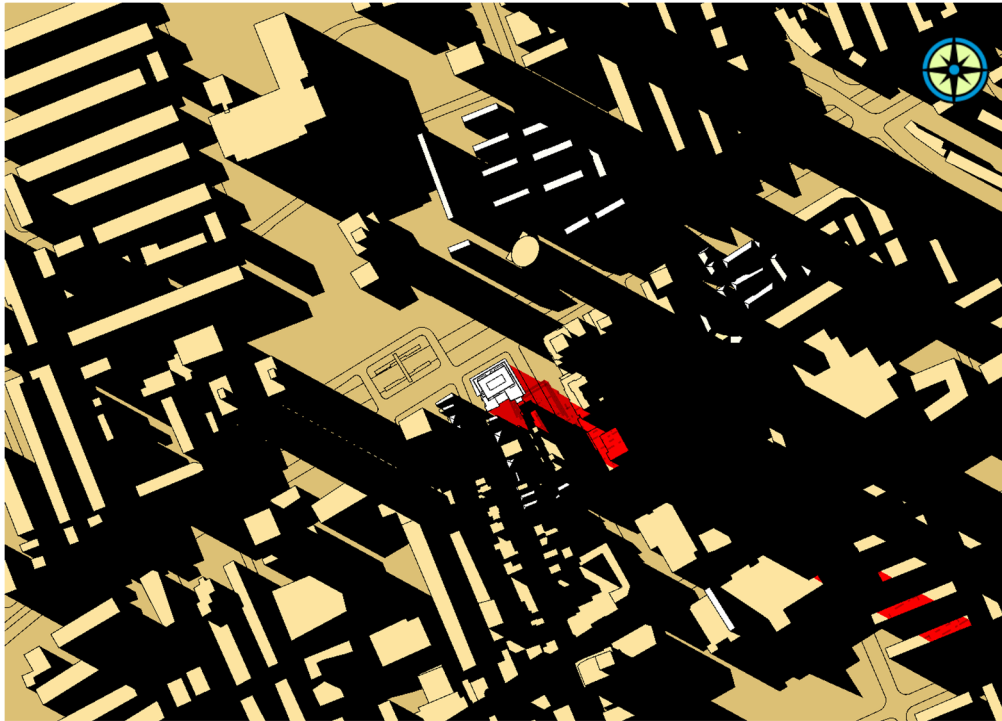


FIGURE A24: JUNE 21, 20:15



TABLE A3: SHADOW RENDERING DATES AND TIMES

TIME (EDT)	SEPTEMBER 21 (Figure / Page #)
08:15	A25 / A18
09:15	A26 / A19
10:15	A27 / A19
11:15	A28 / A19
12:15	A29 / A20
13:15	A30 / A20
14:15	A31 / A21
15:15	A32 / A21
16:15	A33 / A22
17:15	A34 / A22
18:15	A35 / A23

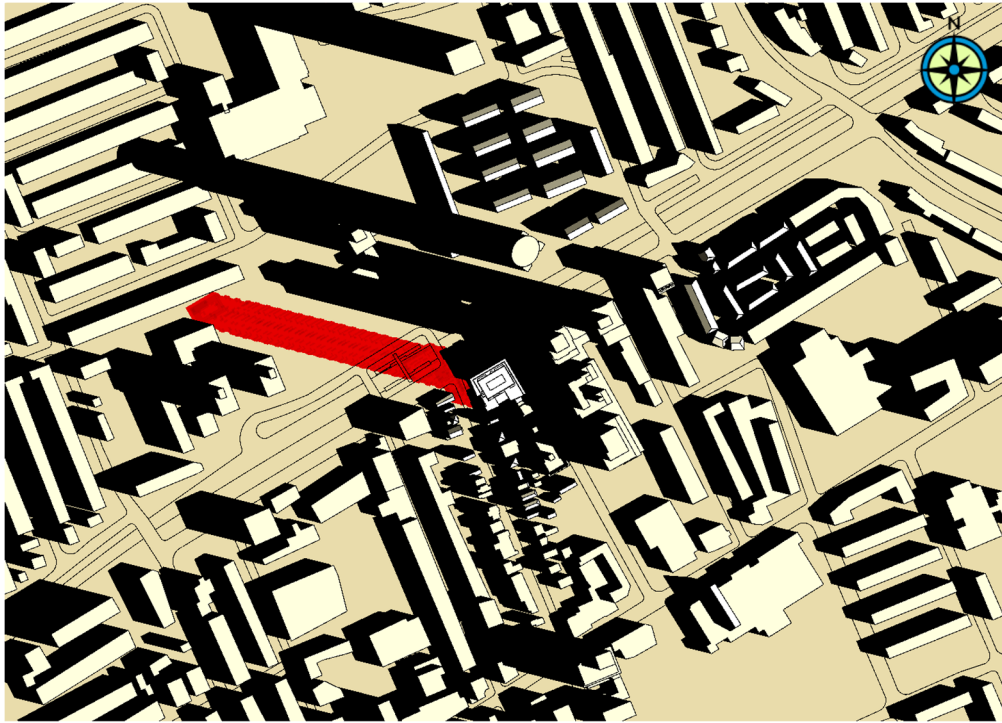


FIGURE A25: SEPTEMBER 21, 08:15

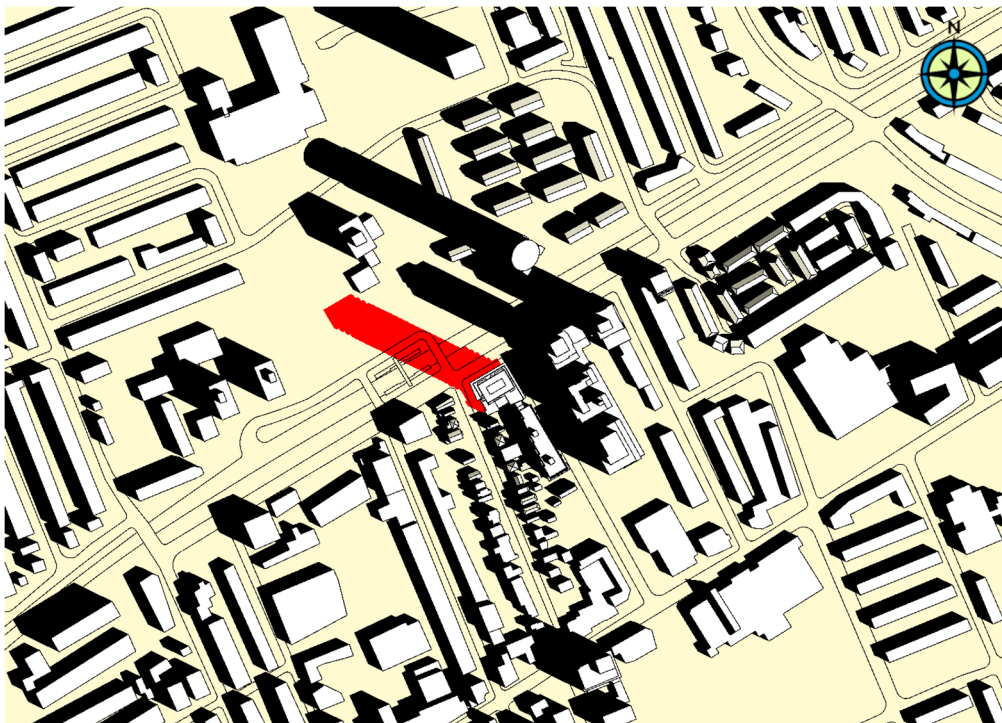


FIGURE A26: SEPTEMBER 21, 09:15





FIGURE A27: SEPTEMBER 21, 10:15



FIGURE A28: SEPTEMBER 21, 11:15





FIGURE A29: SEPTEMBER 21, 12:15



FIGURE A30: SEPTEMBER 21, 13:15

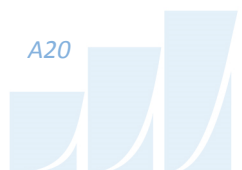




FIGURE A31: SEPTEMBER 21, 14:15



FIGURE A32: SEPTEMBER 21, 15:15





FIGURE A33: SEPTEMBER 21, 16:15

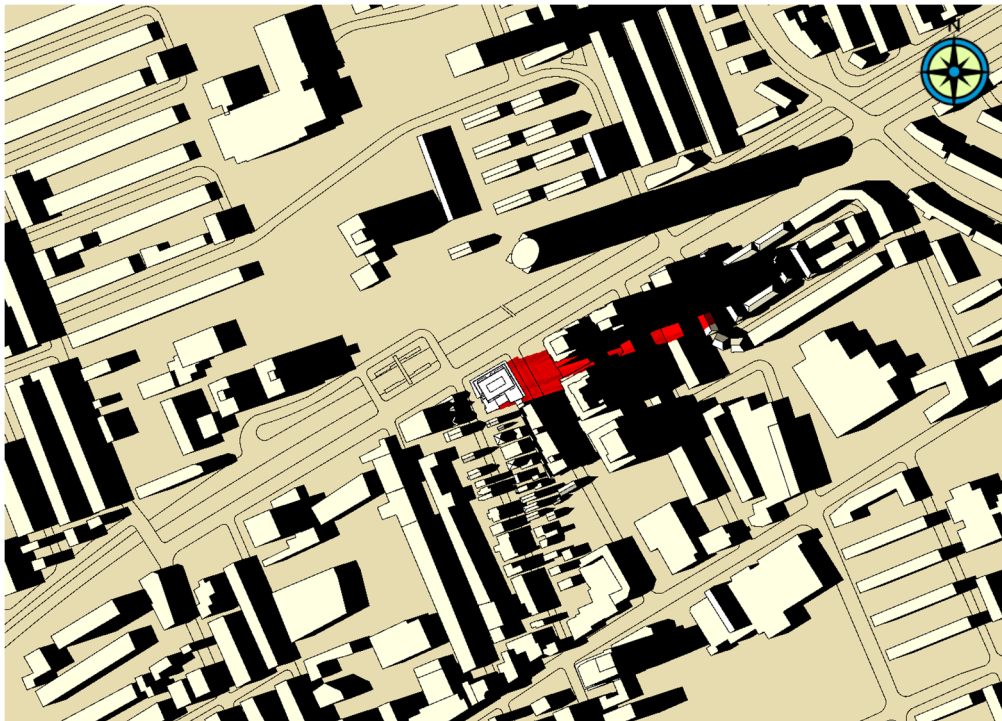


FIGURE A34: SEPTEMBER 21, 17:15



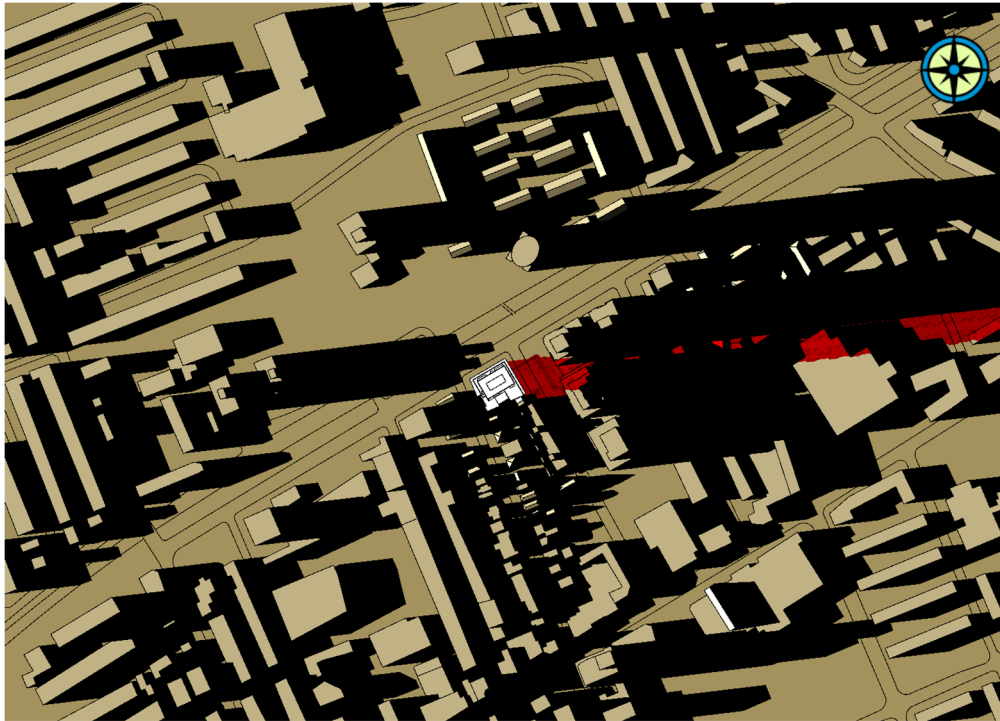


FIGURE A35: SEPTEMBER 21, 18:15

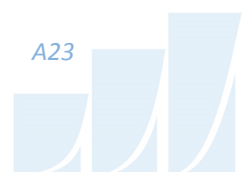


TABLE A4: SHADOW RENDERING DATES AND TIMES

TIME (EDT)	DECEMBER 21 (Figure / Page #)
09:15	A36 / A25
10:15	A37 / A25
11:15	A38 / A26
12:15	A39 / A26
13:15	A40 / A27
14:15	A41 / A27
15:15	A42 / A28

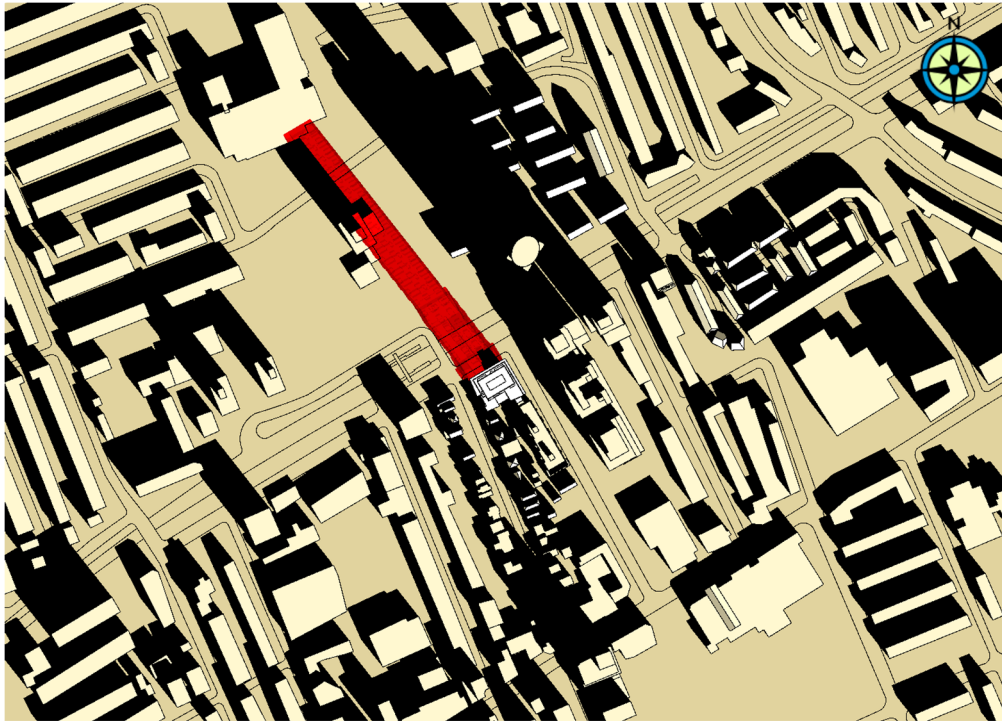


FIGURE A36: DECEMBER 21, 09:15



FIGURE A37: DECEMBER 21, 10:15





FIGURE A38: DECEMBER 21, 11:15



FIGURE A39: DECEMBER 21, 12:15





FIGURE A40: DECEMBER 21, 13:15

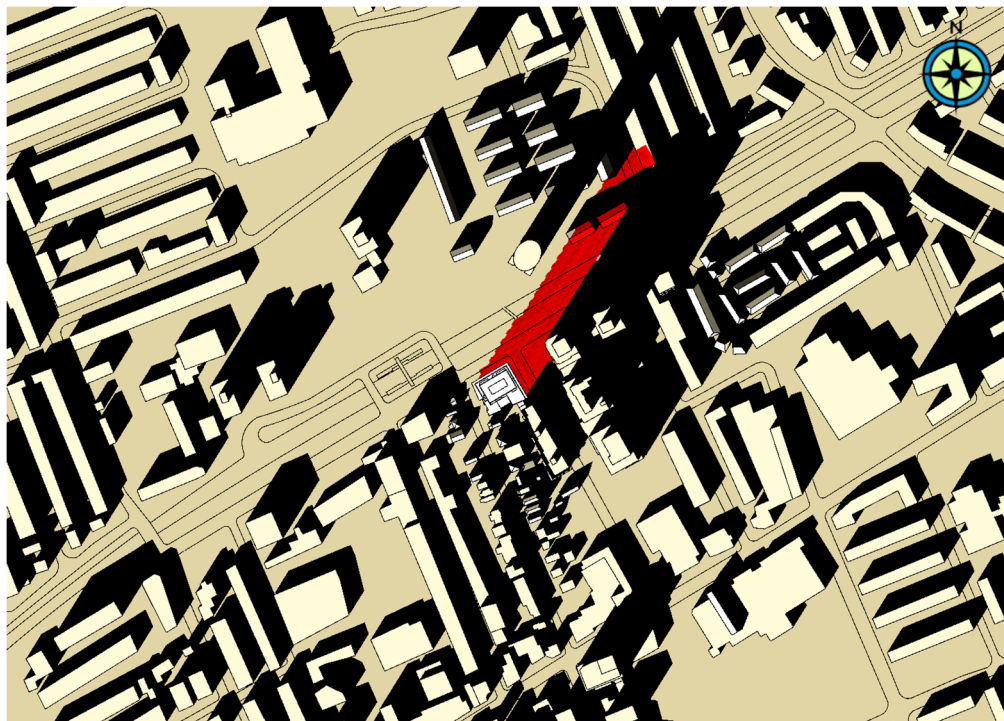


FIGURE A41: DECEMBER 21, 14:15



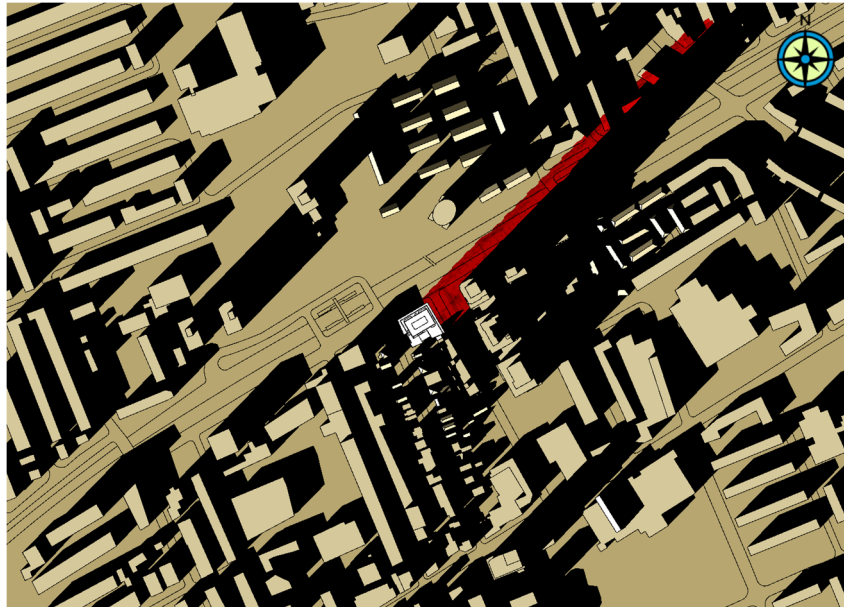


FIGURE A42: DECEMBER 21, 15:15

