

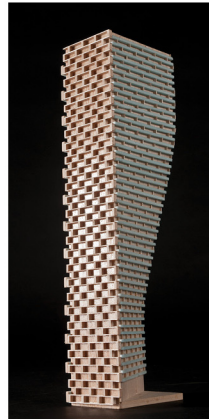
GRADIENTWIND

ENGINEERS & SCIENTISTS

SHADOW IMPACT STUDY

1050 & 1060 Bank Street
Ottawa, Ontario

Report: 19-188-SHADOWS



November 7, 2019

PREPARED FOR

2641723 Ontario Inc.
648 Cole Avenue
Ottawa, ON K2A 2B7

PREPARED BY

Edward Urbanski, M.Eng., 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 for a proposed development located at 1050 and 1060 Bank 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 KWC Architects Inc. in October 2019, 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, the Ottawa Public Library – Sunnyside, Southminster United Church, Colonel By Drive / Rideau Canal Pathway, and Lansdowne 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 2641723 Ontario Inc. to undertake a shadow impact study to satisfy the requirements for a site plan control application for a proposed development located at 1050 and 1060 Bank 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 KWC Architects Inc. in October 2019, 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 1050 and 1060 Bank Street in Ottawa, occupying the entire east side of the city block bordered by Aylmer Avenue to the north, Bank Street to the east, Euclid Avenue to the south, and Galt Street to the west. The subject site is also bordered by existing low-rise developments to the west. For ease of description and presentation of wind comfort contours, Aylmer Street is defined as project north.

The development comprises a 6-storey building with a wedge-shaped floorplan that runs parallel to the existing roadways



*Axonometric Rendering, Northeast Perspective
(Courtesy of KWC Architects Inc.)*

on the north, east, and south sides, and parallel to existing developments to the west. The floorplate steps back on all sides at Level 5 to reveal private terraces on the east side, a common amenity terrace within the south end, and a public roof area/walkway on the west side. The floorplate steps back again at Level 6 on the west and south sides. Grade-level pedestrian walkways are located on all sides of the proposed development. 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.

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

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



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' 42.52" north and 75° 41' 3.22" 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) Ottawa Public Library – Sunnyside, located to the east at 1049 Bank Street; (ii) Southminster United Church, located to the north at 15 Aylmer Avenue; (iii) Colonel By Drive / Rideau Canal Pathway, located approximately 70 m to the north-northwest; and (iv) Lansdowne Park, located approximately 230 m to the north. Shadow impacts from the proposed development onto the noted existing areas are described as follows:

(i) Ottawa Public Library – Sunnyside

- March 21 and September 21 between 15:15 and 18:15 (4 hours)
- June 21 between 17:15 and 20:15 (4 hours)
- December 21 between 12:15 and 15:15 (4 hours)

(ii) Southminster United Church

- March 21 and September 21 between 08:15 and 11:15 (4 hours)
- December 21 between 09:15 and 12:15 (4 hours)

(iii) Colonel By Drive / Rideau Canal Pathway (West of Bank Street)

- December 21 at 09:15 (1 hour)

(iv) Lansdowne Park

- The proposed development does not cast net new shadows on Lansdowne 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.

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

Sincerely,

Gradient Wind Engineering Inc.

E. Urbanski

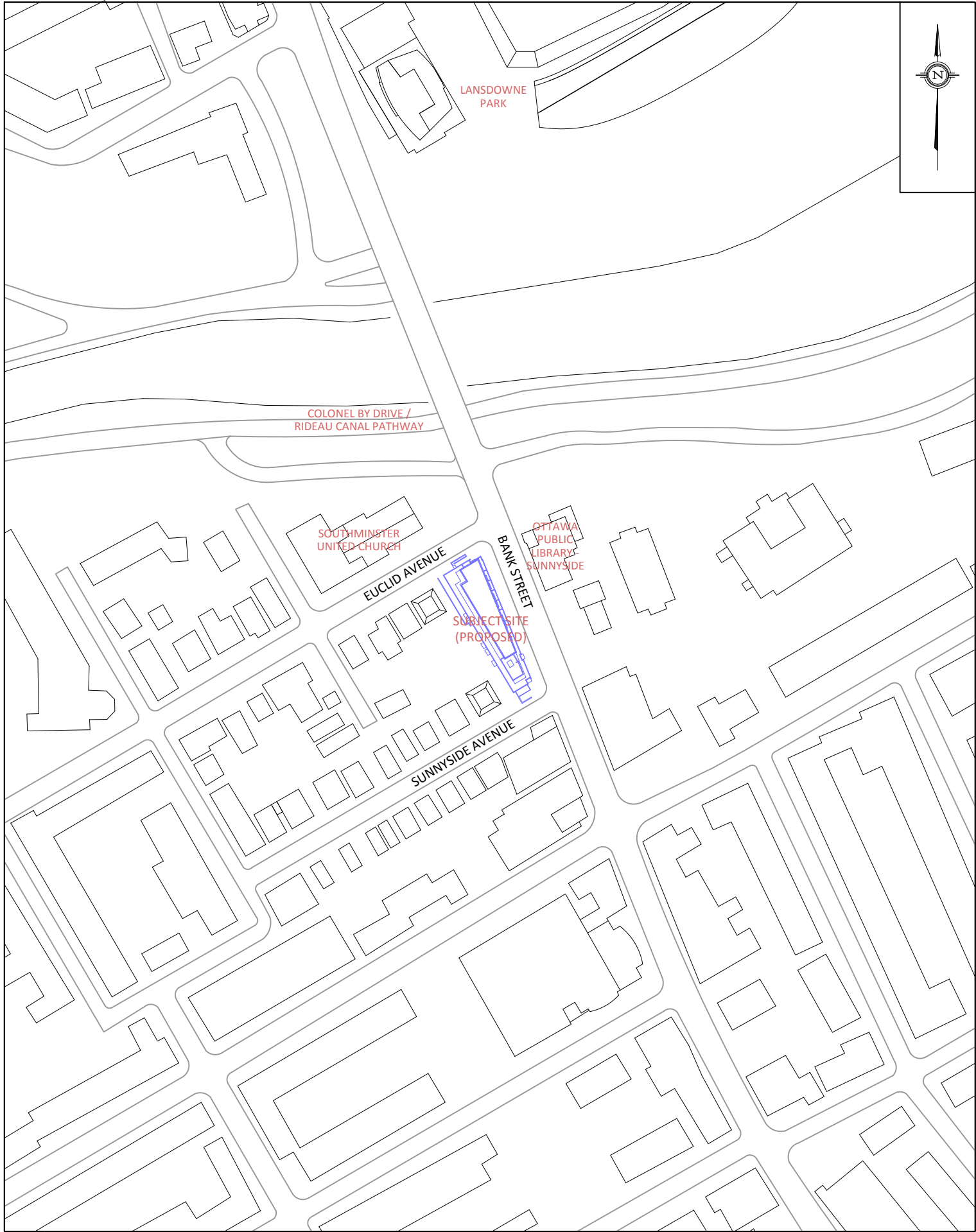
Edward Urbanski, M.Eng.
Junior Wind Scientist

Gradient Wind File #19-188



Justin Ferraro, P.Eng.
Principal



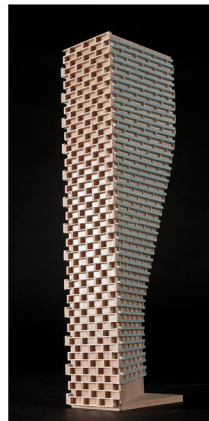


PROJECT	1050 & 1060 BANK STREET, OTTAWA SHADOW IMPACT STUDY	
SCALE	1:2500 (APPROX.)	DRAWING NO. 19-188-SHADOWS-1
DATE	NOVEMBER 7, 2019	DRAWN BY C.E.

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

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FIGURE A1: MARCH 21, 08:15

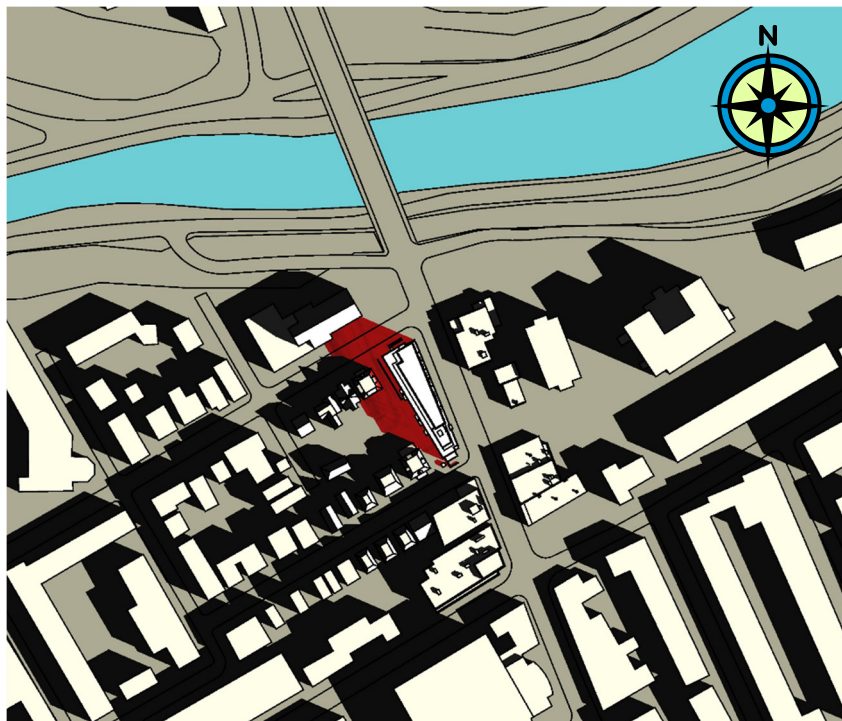


FIGURE A2: MARCH 21, 09:15



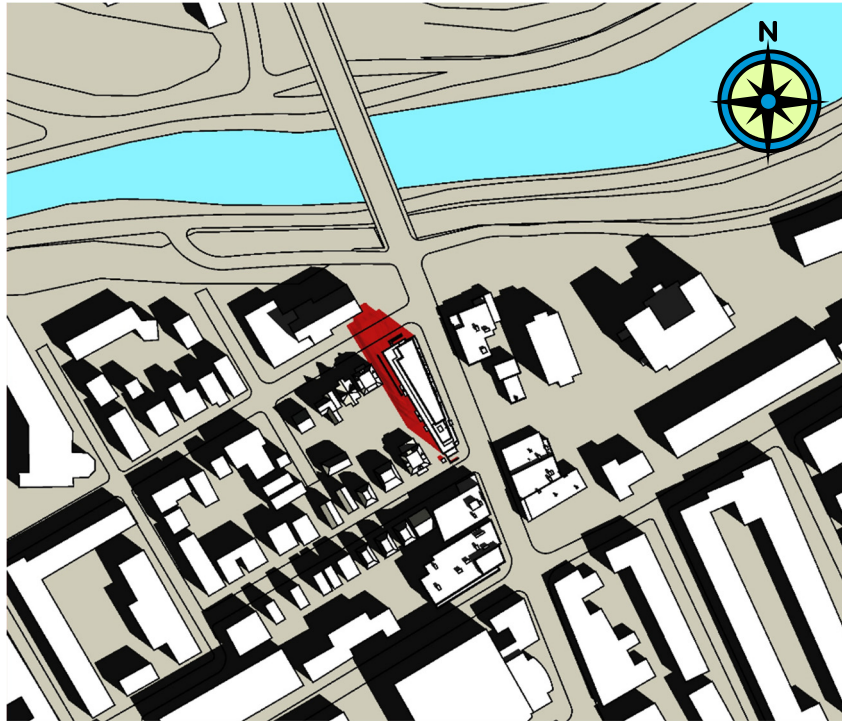


FIGURE A3: MARCH 21, 10:15

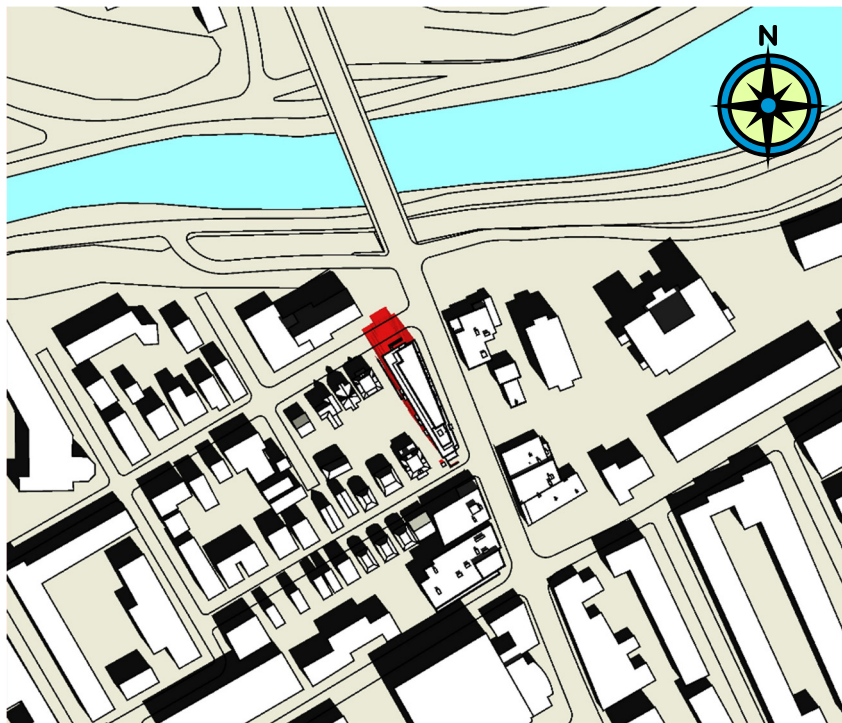


FIGURE A4: MARCH 21, 11:15



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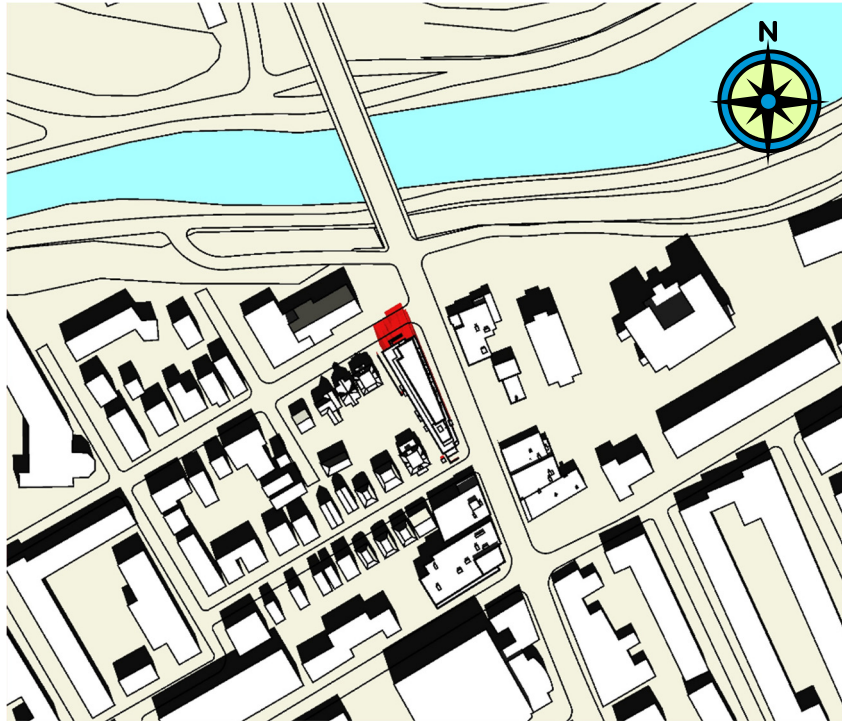


FIGURE A5: MARCH 21, 12:15

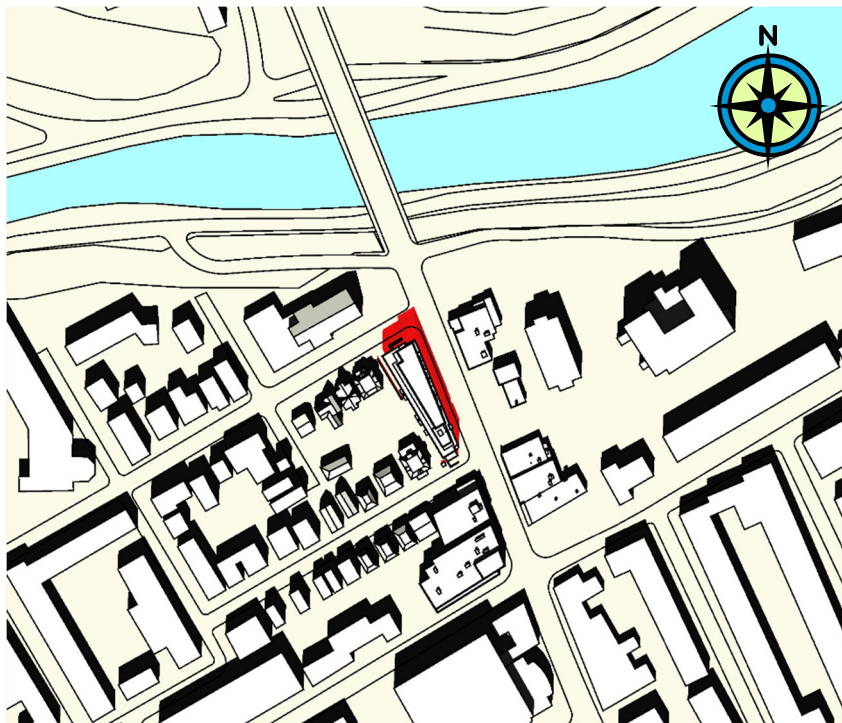


FIGURE A6: MARCH 21, 13:15



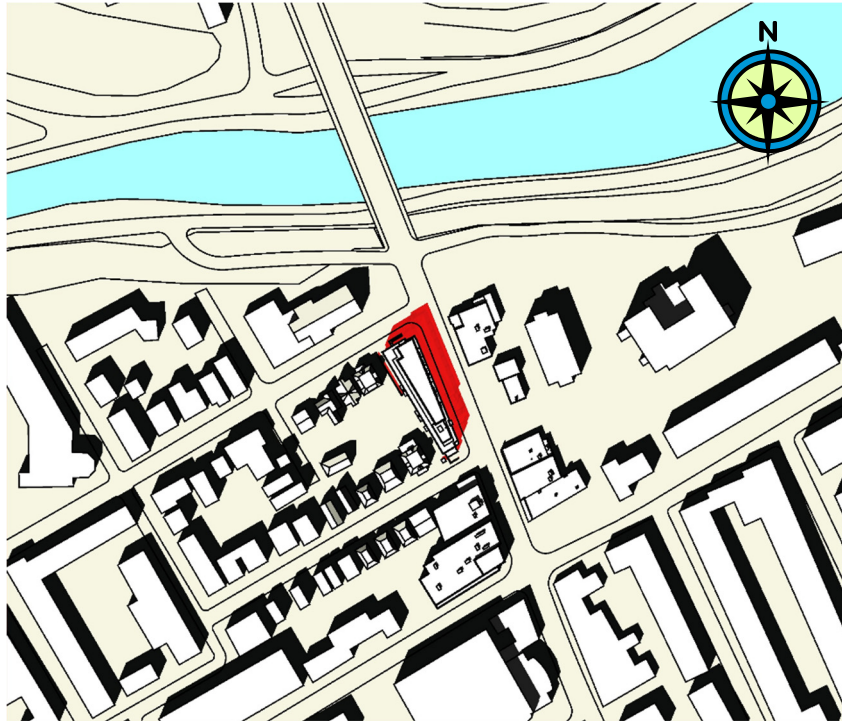


FIGURE A7: MARCH 21, 14:15

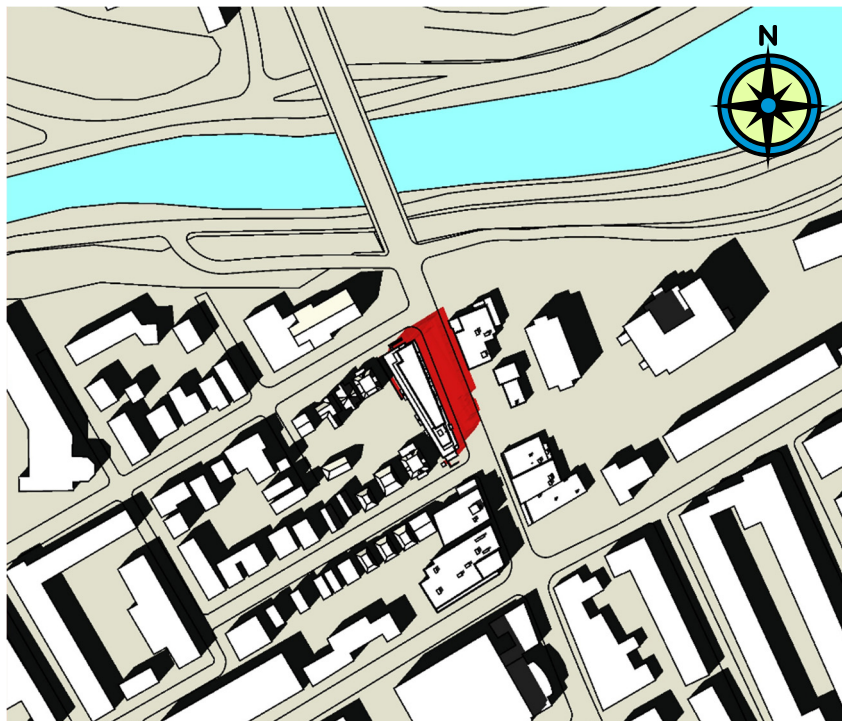


FIGURE A8: MARCH 21, 15:15



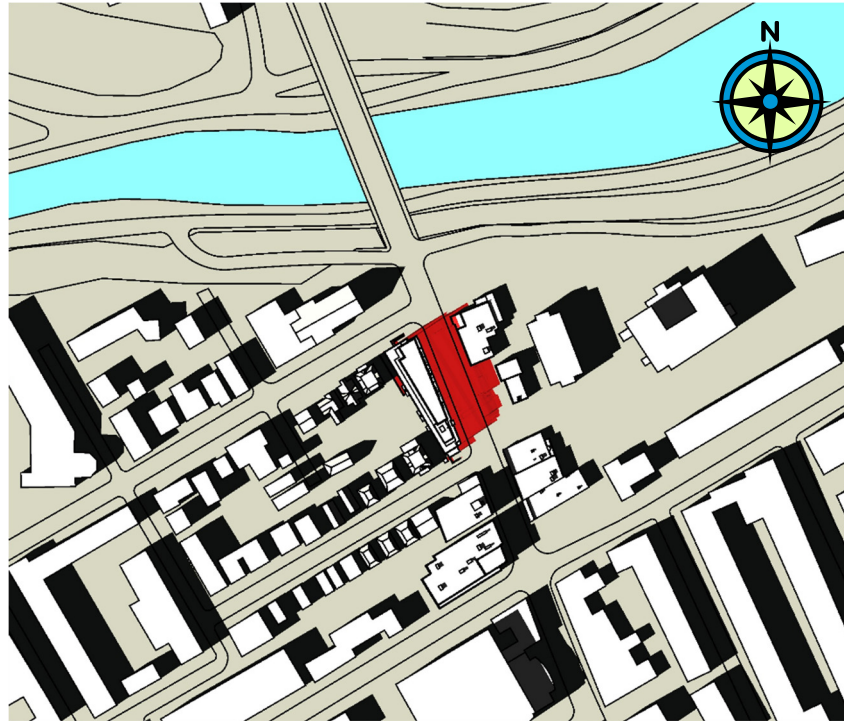


FIGURE A9: MARCH 21, 16:15

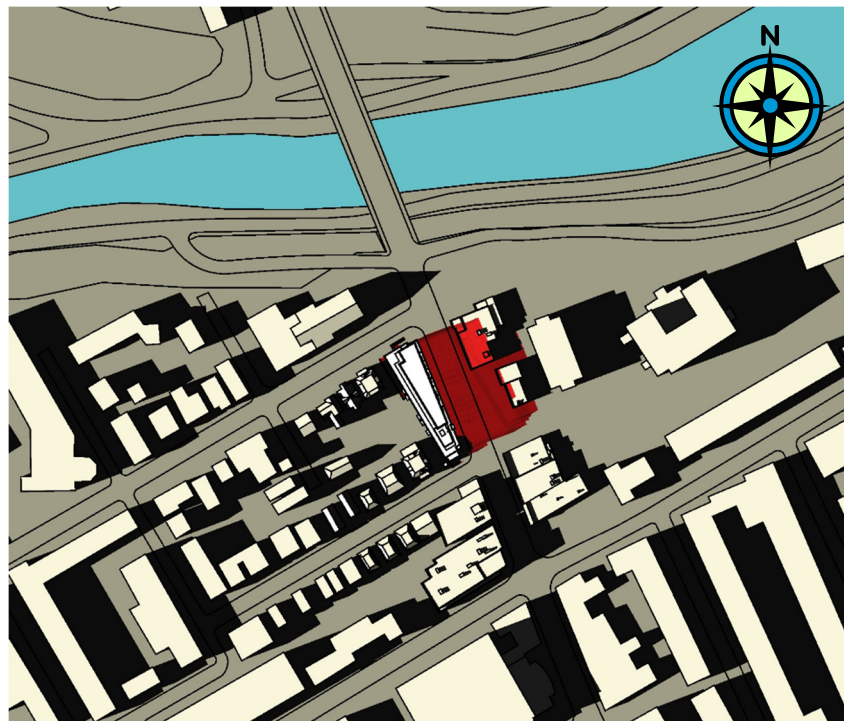


FIGURE A10: MARCH 21, 17:15





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

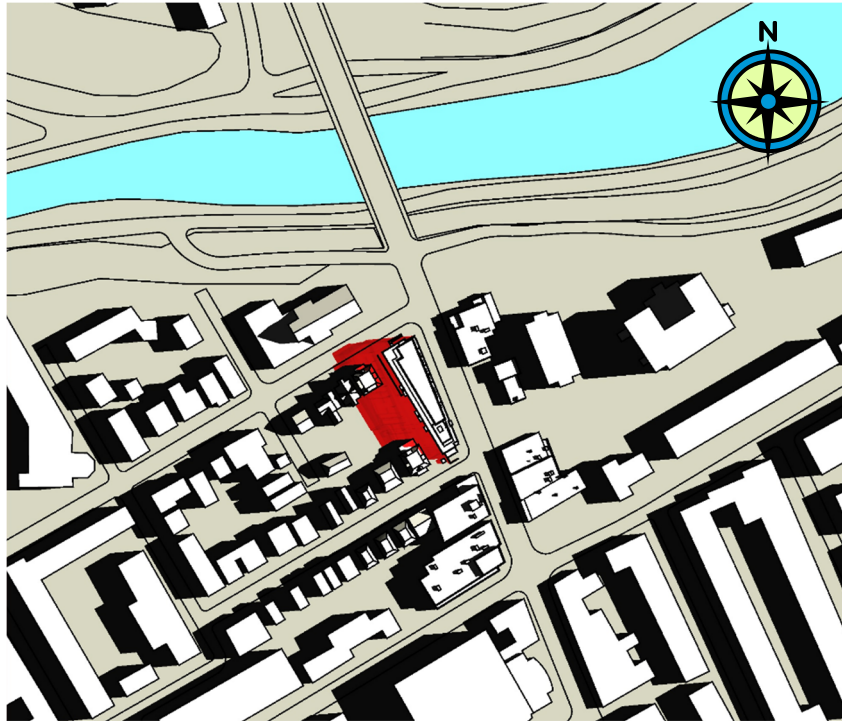


FIGURE A12: JUNE 21, 08:15

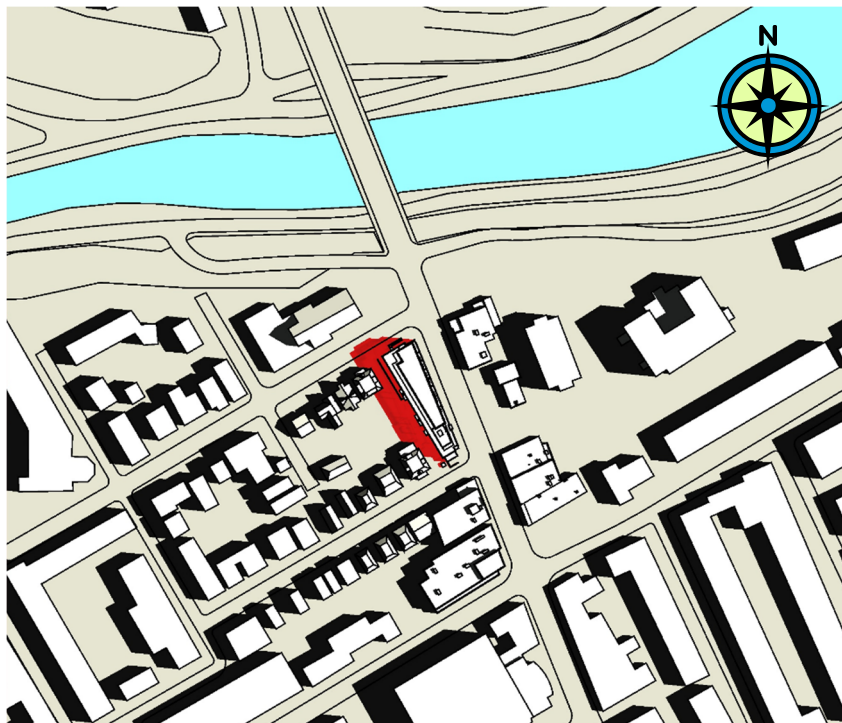
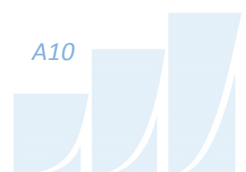


FIGURE A13: JUNE 21, 09:15



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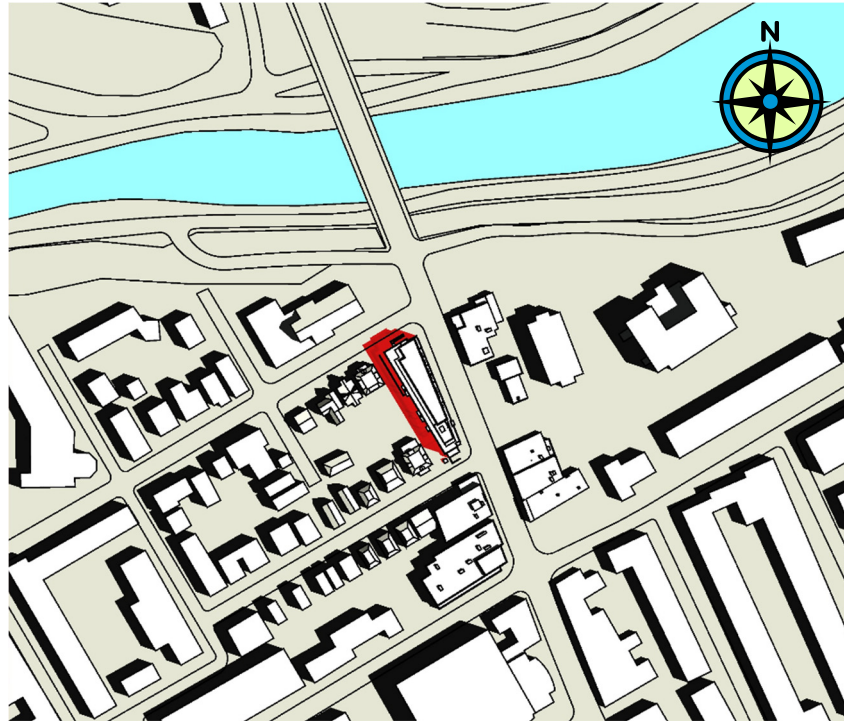


FIGURE A14: JUNE 21, 10:15

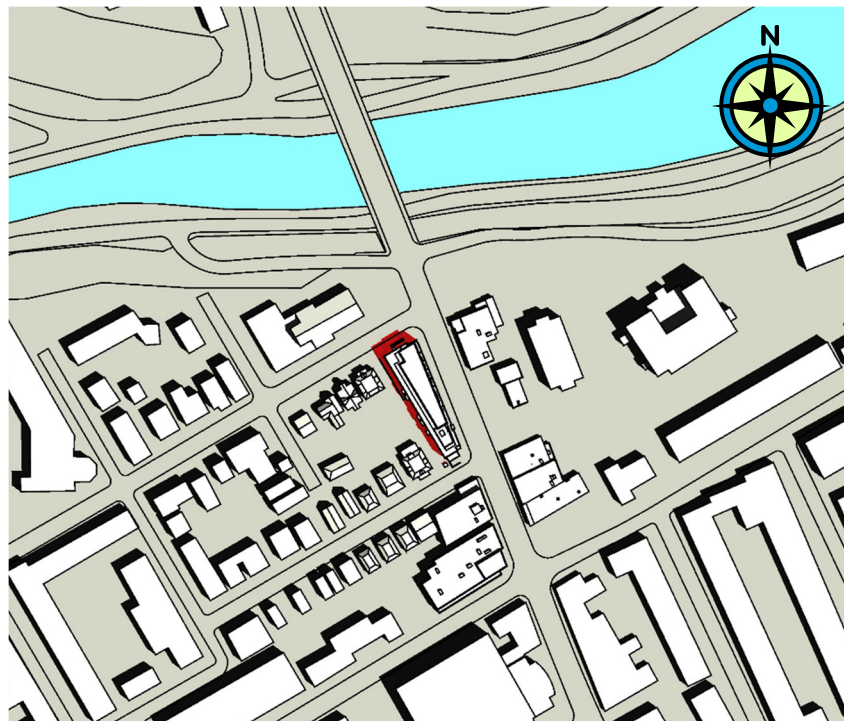


FIGURE A15: JUNE 21, 11:15



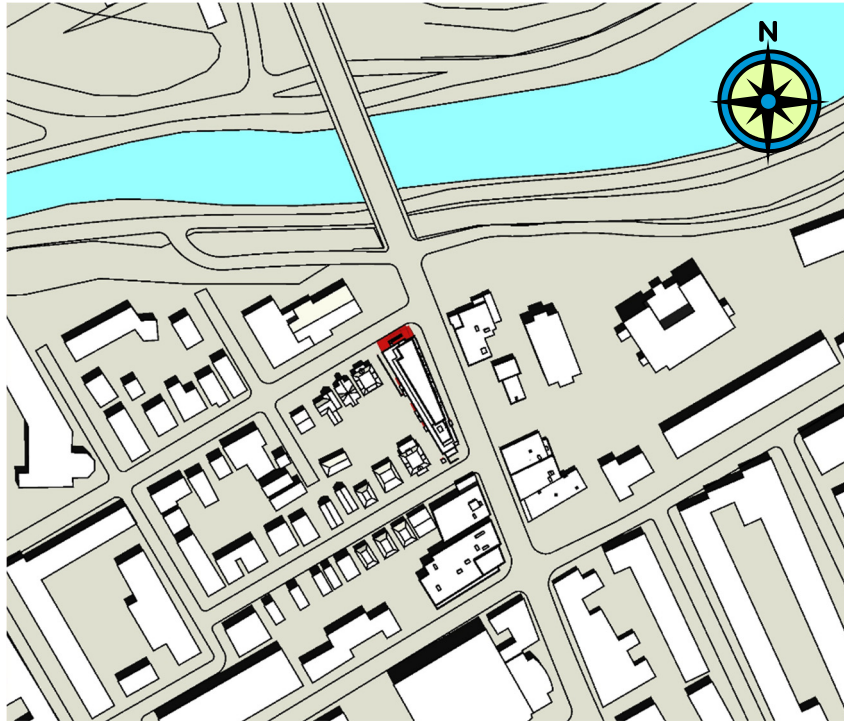


FIGURE A16: JUNE 21, 12:15

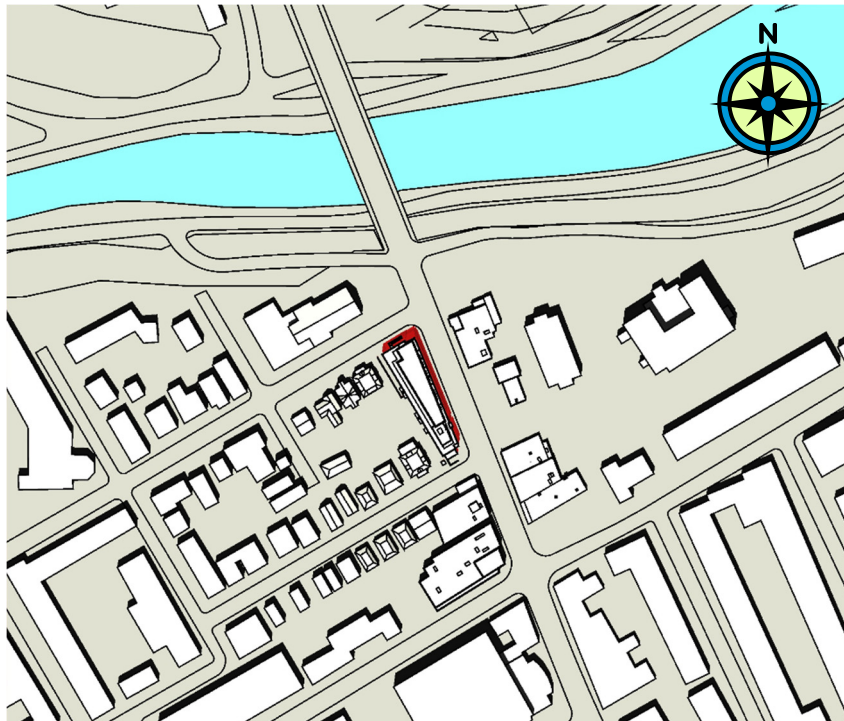


FIGURE A17: JUNE 21, 13:15



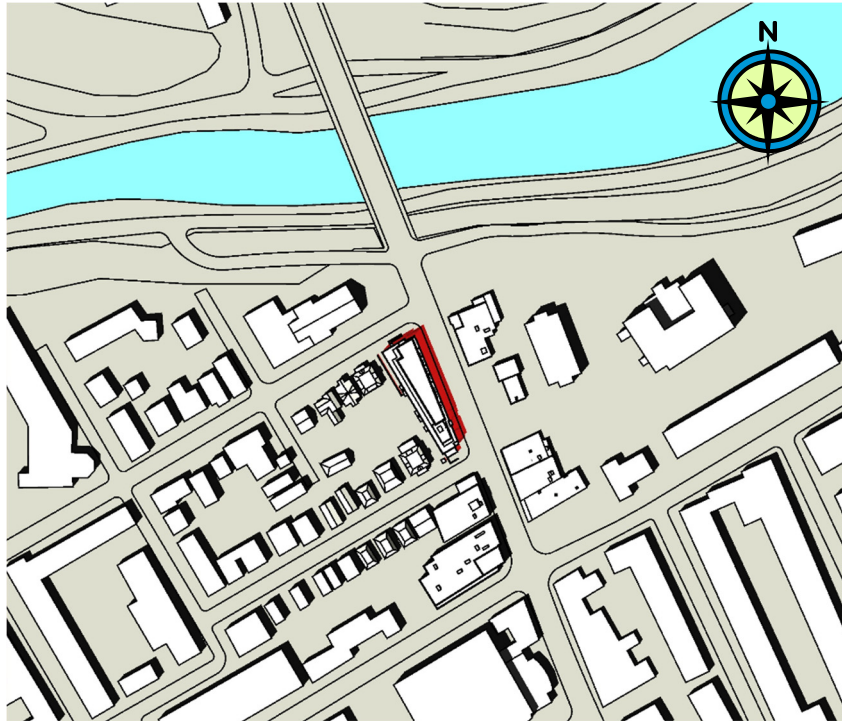


FIGURE A18: JUNE 21, 14:15

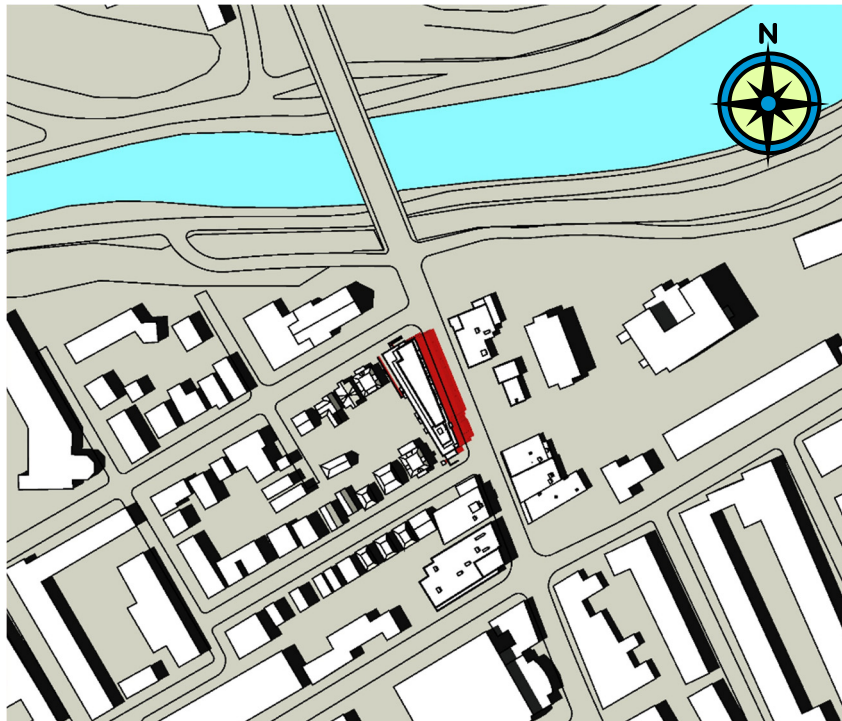


FIGURE A19: JUNE 21, 15:15



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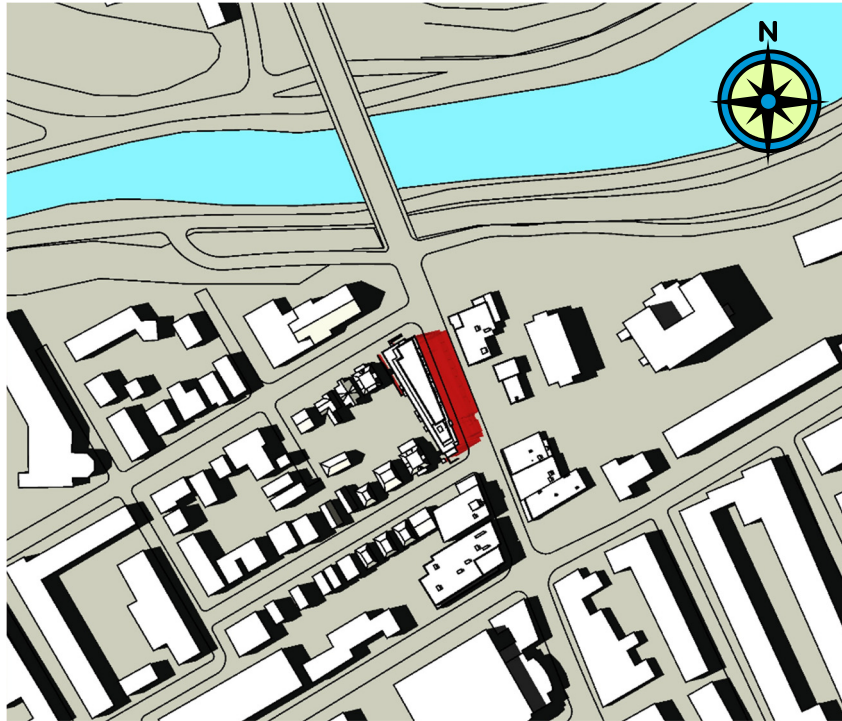


FIGURE A20: JUNE 21, 16:15



FIGURE A21: JUNE 21, 17:15





FIGURE A22: JUNE 21, 18:15



FIGURE A23: JUNE 21, 19:15

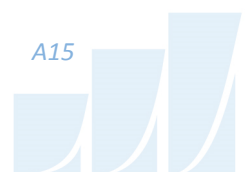




FIGURE A24: JUNE 21, 20:15

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

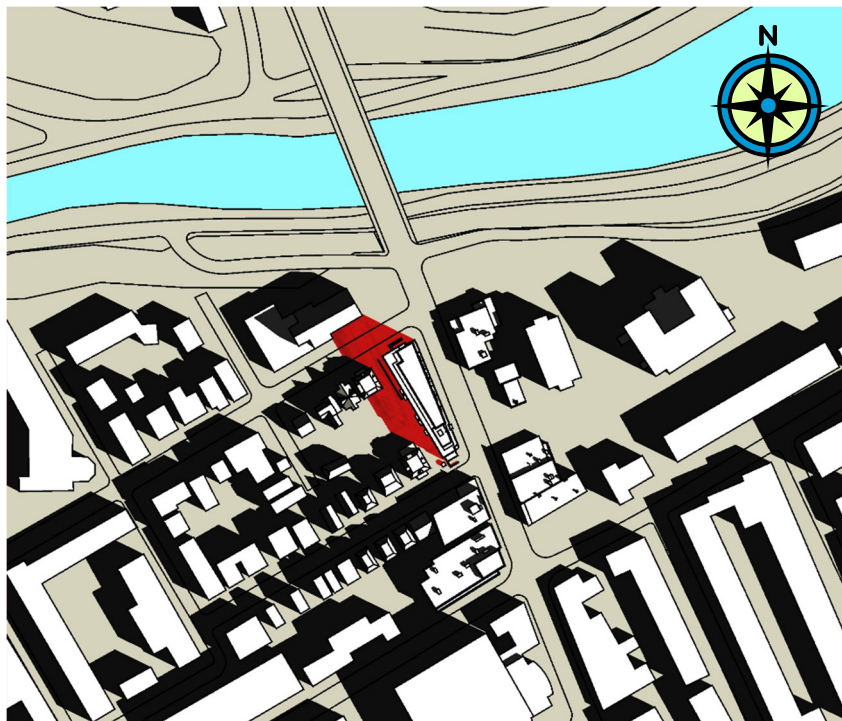


FIGURE A26: SEPTEMBER 21, 09:15



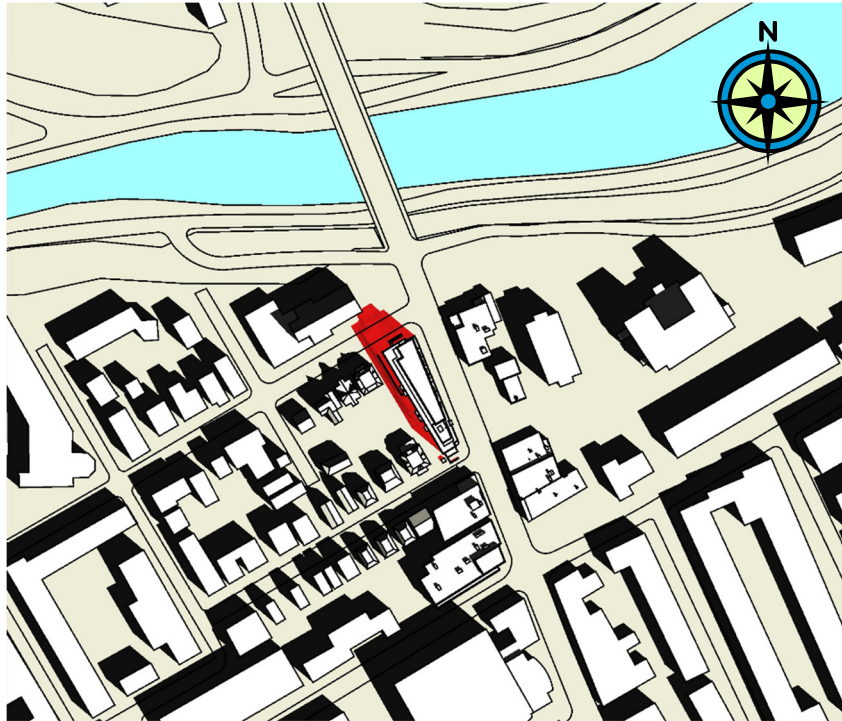


FIGURE A27: SEPTEMBER 21, 10:15

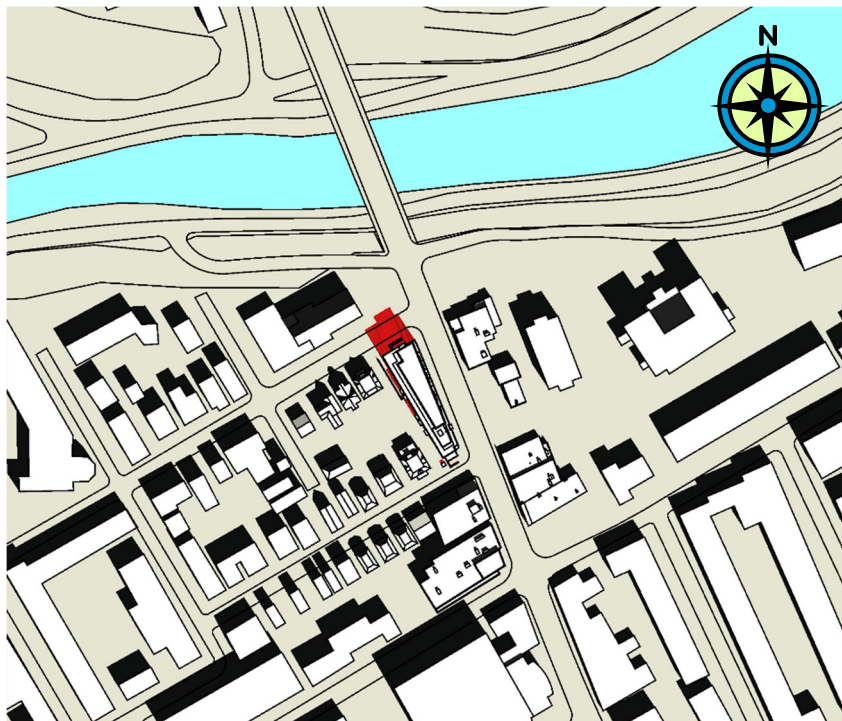
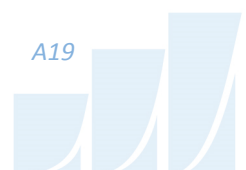


FIGURE A28: SEPTEMBER 21, 11:15



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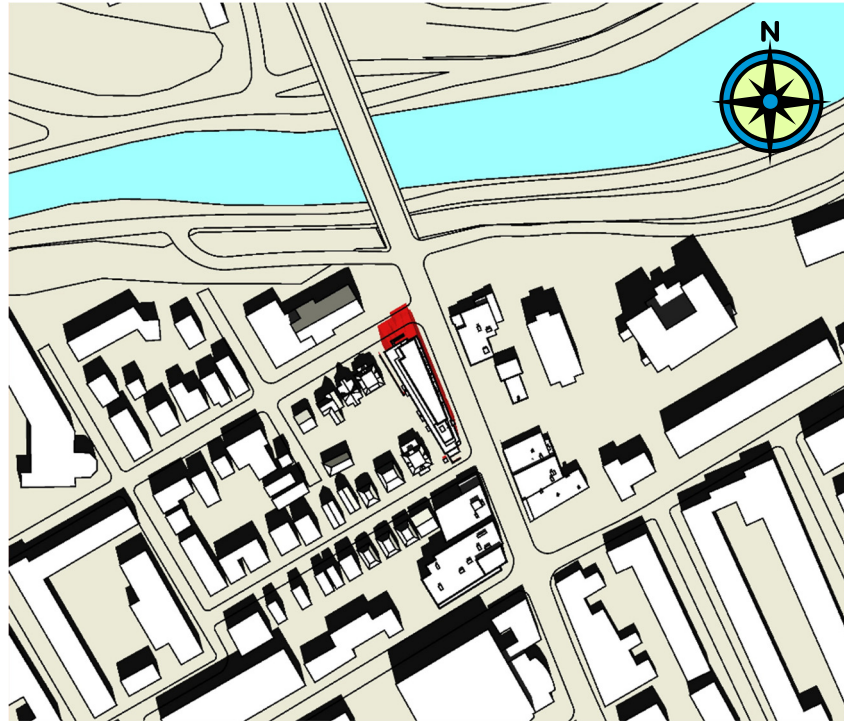


FIGURE A29: SEPTEMBER 21, 12:15

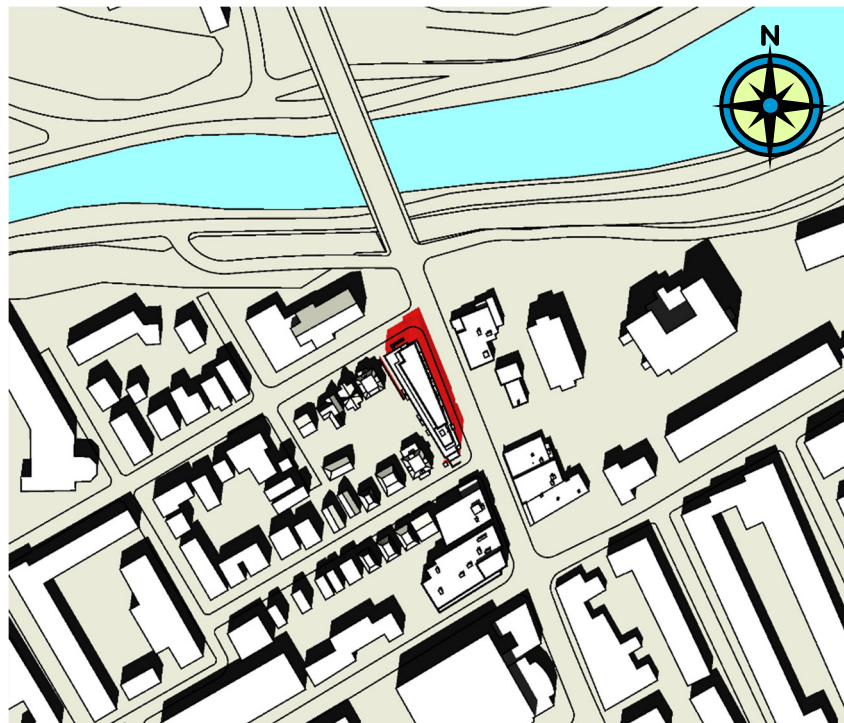
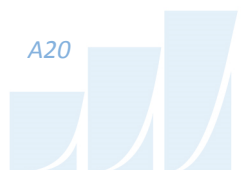


FIGURE A30: SEPTEMBER 21, 13:15



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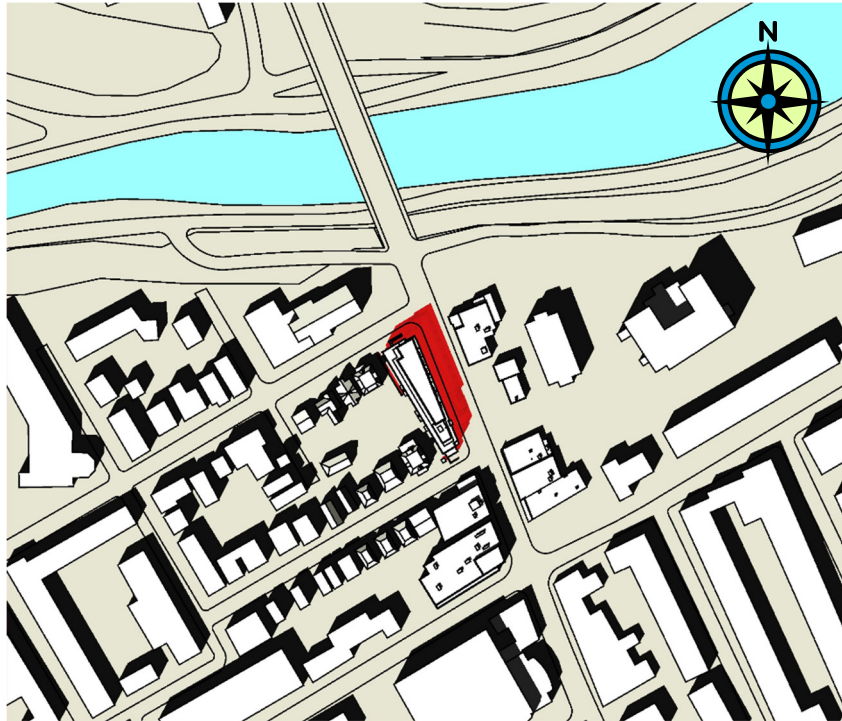


FIGURE A31: SEPTEMBER 21, 14:15

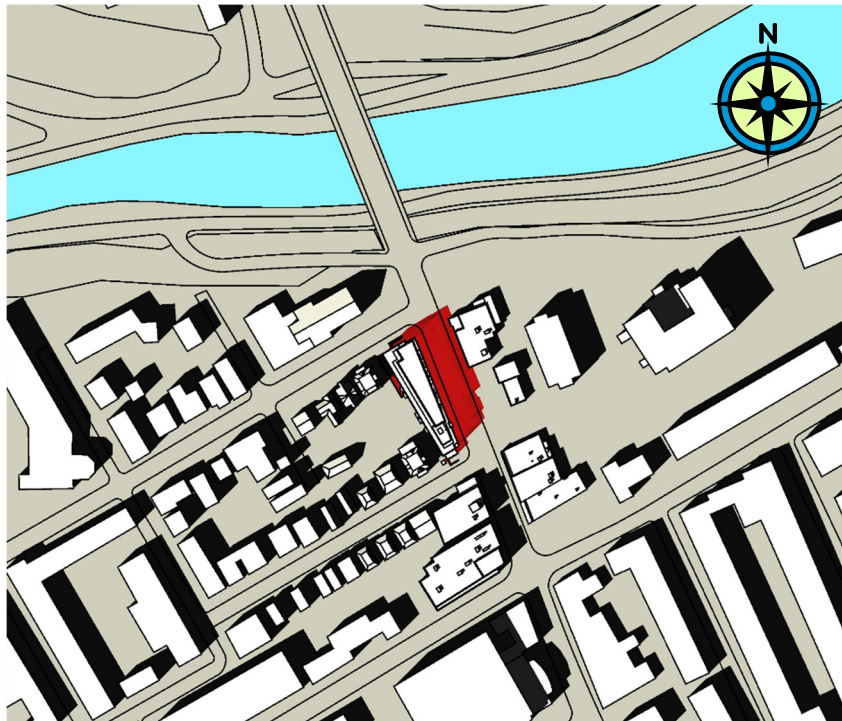


FIGURE A32: SEPTEMBER 21, 15:15



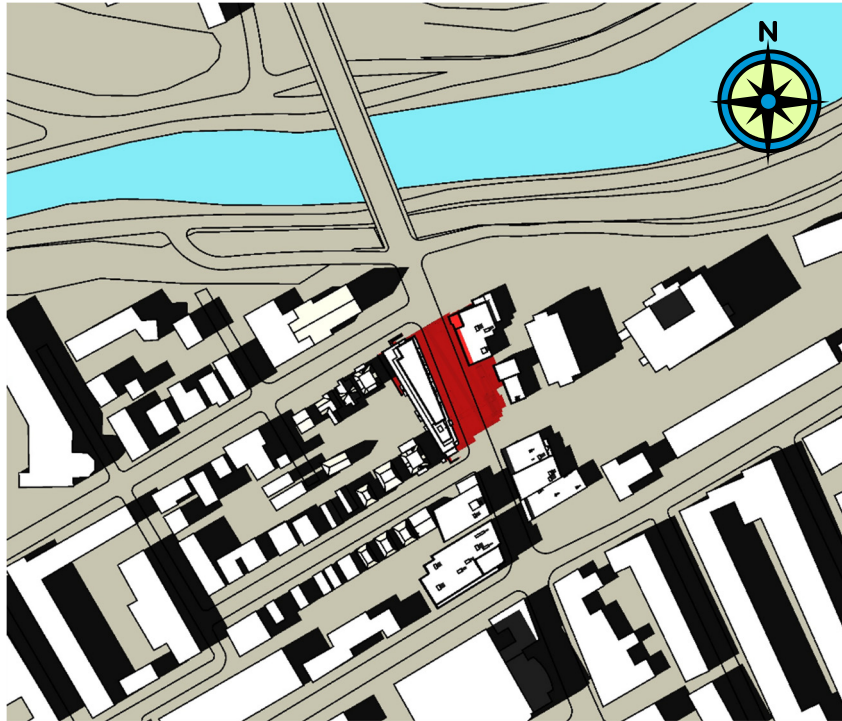


FIGURE A33: SEPTEMBER 21, 16:15



FIGURE A34: SEPTEMBER 21, 17:15

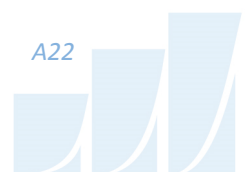




FIGURE A35: SEPTEMBER 21, 18:15

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

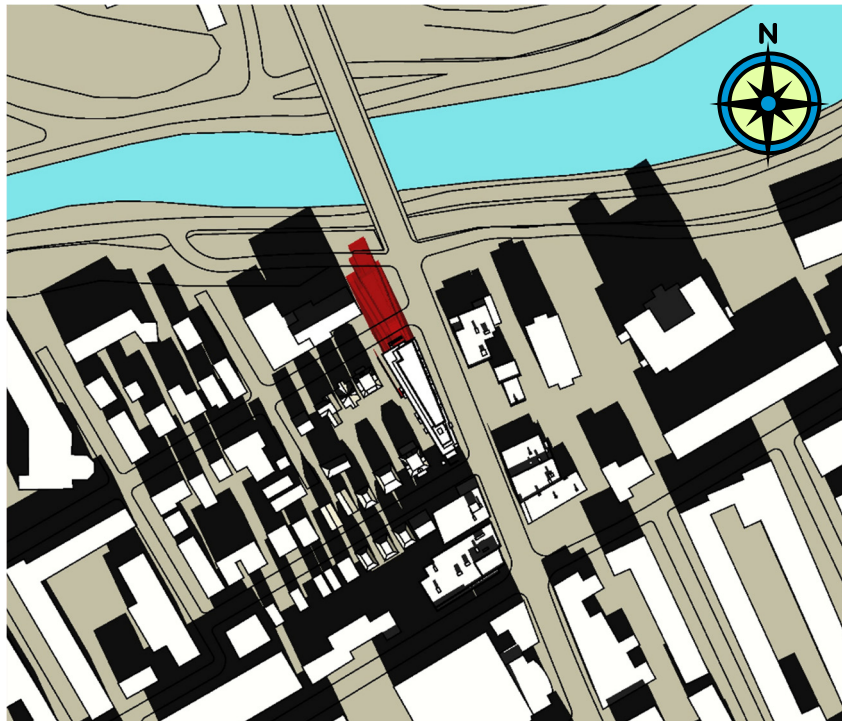
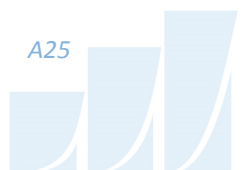


FIGURE A37: DECEMBER 21, 10:15



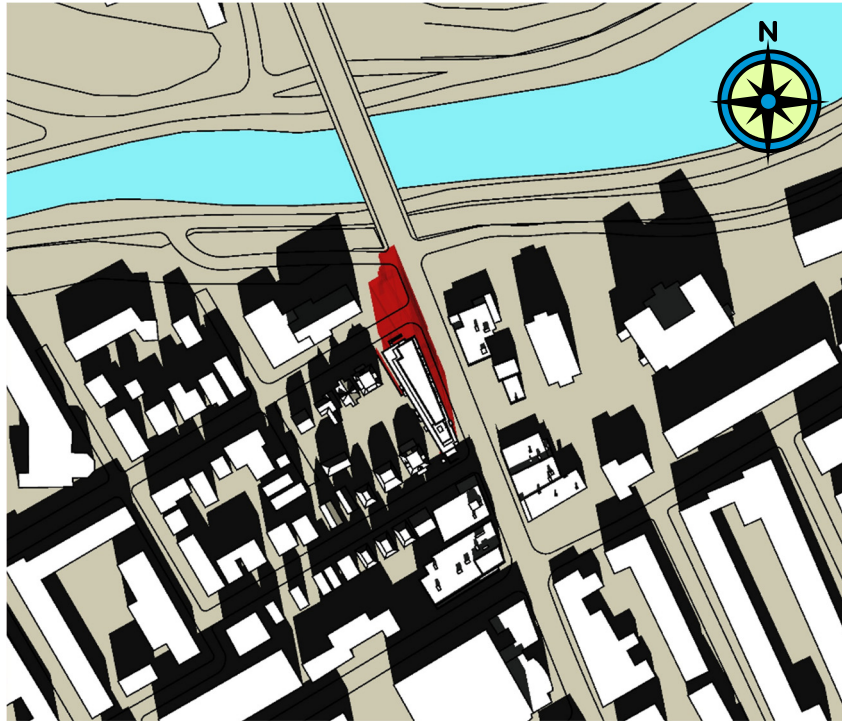


FIGURE A38: DECEMBER 21, 11:15

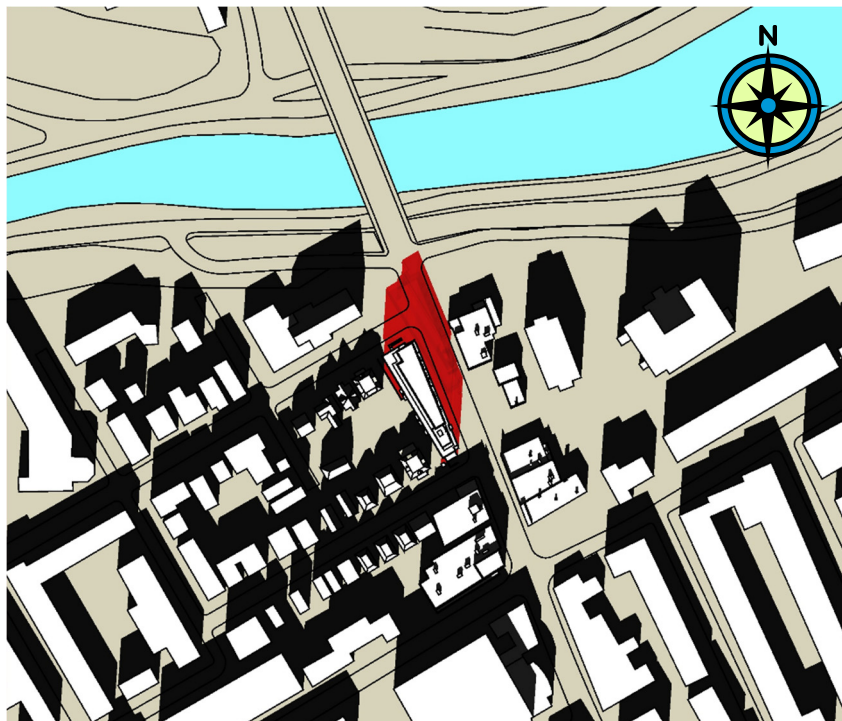


FIGURE A39: DECEMBER 21, 12:15



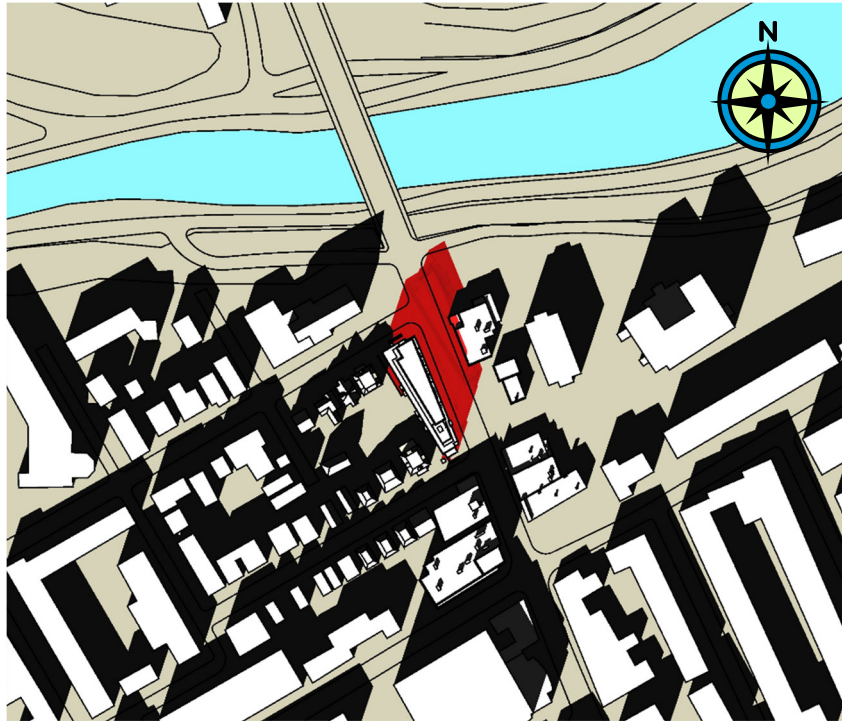


FIGURE A40: DECEMBER 21, 13:15



FIGURE A41: DECEMBER 21, 14:15



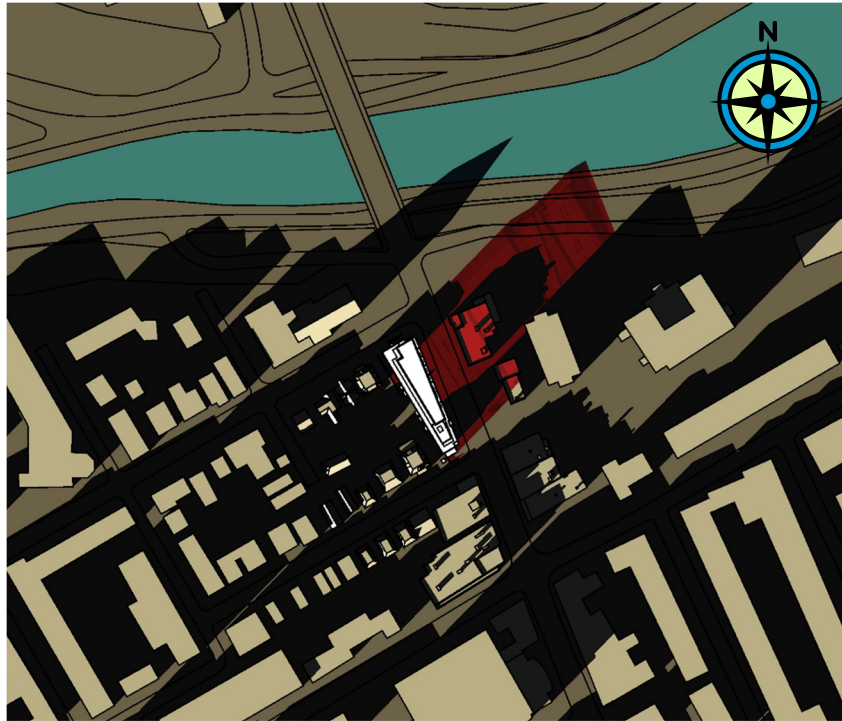


FIGURE A42: DECEMBER 21, 15:15