

Date: November 13th, 2023

Project: Killaly St. West, Port Colborne, ON.

File Ref: 22129

Prepared By: Rami Khoueiry

PARAMETERS

Sun Angles used in this study are based on the following latitude and longitude of the proposed development at Killaly Street West, Port Colborne, ON.

Latitude: 42° 53' 29.4" N
Longitude: 79° 16' 09.9" W

The base plan was drawn from the site survey (December 22, 2022, by Barich Grenkie Surveying Ltd.), the 3D context model was developed from 3D modelling and over google image and street views. The images for this study were produced using SketchUp Shadow Engine. Astronomic North was never altered from the original site survey used for the base plan, and the parameters of the AutoCAD drawing were kept when imported into SketchUp Pro, thus determining Astronomic North.

The subject site proposes a pedestrian friendly residential development comprising of 8 mixed-use buildings facing Killaly Street West and Townhouses of different types further to the south. The majority of the surrounding context to the North of the subject site is made of low-rise, single-family dwellings, with few commercial buildings including 2 storage buildings, and 2 hotels to the Northwest. To the West, the site abuts a Quarry with ponds and large green spaces and few residential single-family dwellings along Main Street West. To the East, we can find a strip of low-rise commercial buildings along Killaly street and low-rise buildings, mainly single-family dwellings further South along Elgin Street West. To the South, the site abuts the Port Colborne Harbour Railway and low-rise, single-family dwellings along Clarence Street.

The Shadow Study adheres to the City of Mississauga's Terms of Reference for shadow studies. A shadow analysis has been conducted for the required dates and seasons: June 21, September 21 and December 21. As per the Terms of Reference, an analysis of March 21 has not been undertaken given that the results are similar to September 21. Shadow drawings are included in this study for the required time periods during each season, including from 1.5 hours after sunrise to 1.5 hours before sunset.

The first page (A101) is the key plan showing the areas surrounding the proposed development that were included in the shadow study. The base mapping encompasses the total extent of shadowing from the proposed development. The Study Area will only include the mixed-use buildings along Killaly Street West and is identified as approximately 4.0 times the height of the development to the North, East and West, and 1.5 times the building height to the South.

The remaining pages, A102 – A119, show the proposed and existing shadow images for the proposed development on June 21, September 21 and December 21.

Study images on all days for the proposed development were analysed for shadow impacts on neighbouring residential private outdoor amenity spaces, communal outdoor amenity areas, public realm, turf and flower gardens in public parks and building faces to allow for the possibility of using solar energy as per the City of Mississauga's Terms of Reference for shadow studies.

ANALYSIS

1- Residential Private Outdoor Amenity Spaces

The Residential Private Outdoor Amenity Spaces have been identified within the Study Area and indicated in blue colour on all slides and labelled as '7.5M residential amenity, no impact zone' in the Legend. These areas are 7.5 metre wide at the rear yard of residential low-rise properties adjacent to the proposed development and include rear yards, decks, patios, and pools of surrounding residential dwellings.

This criterion is met if there is shadow impact for no more than two consecutive hourly test times within the "No impact zone" on June 21 and September 21 / March 21, as per the City of Mississauga's Terms of Reference.

The shadows cast from the development meet the Shadow Study criteria as there are no more than two consecutive test times of shadowing identified within the "no impact zone". All residential properties within the Study Area are exposed to at least two consecutive hours of direct sunlight during the test times.

2- Communal Outdoor Amenity Areas

Communal Outdoor Amenity Areas identified within the Study Area and indicated in dark green colour on all slides and labelled as 'Outdoor Amenity Areas' in the Legend. These areas include children's play areas, school yards, tot lots, features such as sandboxes, wading pools etc., and other outdoor amenity areas that are part of an existing or proposed development, outdoor amenity areas used by seniors and outdoor amenity areas, during spring, summer, fall and winter.

This criterion is met when shadows from proposed development allow for full sun on these areas at least half the time, or 50% sun coverage all the time, on June 21, September 21 and December 21, as per the City of Mississauga's Terms of Reference.

This criterion has been met as the shadows cast from the proposed development have no impact on the Communal Outdoor Amenity Areas identified within the Study Area and all these areas are exposed to the sun for more than 50% of the time on the above dates.

3- Public Realm

The Public Realm includes sidewalks, open spaces, parks and plazas. Areas within the Study Area identified as 'the public realm' include the Quarry with ponds and large green spaces to the West of the site as there are no sidewalks identified along Killay Street on both sides.

The criterion is met when the proposed development allows full sunlight on the opposite boulevard including the full width of the sidewalk on September 21, for a total of at least 5 hours that must include the 2-hour period between: 12:12 p.m. and 2:12 p.m. and an additional 2-hour period from either 9:12 a.m. to 11:12 a.m. or from 3:12 p.m. to 5:12 p.m.

This criterion has been met as the shadows from development do not cast on any Public Realm adjacent to the site on the above dates and testing times.

4- Turf and flower gardens in Public Parks

This criterion is met if full sun is provided on any 7 test times on September 21, from 1.5 hours after sunrise to 1.5 hours before sunset.

This criterion is satisfied since there were no public parks and no turf or flower gardens identified within the Study Area.

5- Building Faces to allow for the possibility of using solar energy

Shadow impacts from proposed developments should not exceed one hour in duration on the roofs, front, rear and exterior side walls of adjacent low rise (one to four storeys) residential buildings including townhouses, detached and semi-detached dwellings on September 21, in order to allow for the possibility of harvesting solar energy.

The area of impact assessment shall be a line at grade, 3 m from the front, rear and exterior side wall of the adjacent low rise residential buildings, identified within the Study Area and indicated in yellow colour on all slides and labelled as '3M solar gain, no impact zone' in the Legend.

This criterion is met if there is shadow impact for no more than two consecutive hourly test times in the "No Impact Zone"

This criterion is satisfied as the proposed development does not cast any shadows on any "No Impact Zone" at any testing time during September 21.

CONCLUSION

In review of the illustrations provided, it is our opinion that the shadow impacts caused by the proposed development on neighbouring properties and the public realm are acceptable and in line with the intent and criteria listed in the City of Mississauga's Terms of Reference for Sun/Shadow Study.

The shadows cast by the development have minimal to no impact on neighbouring residential dwellings, sidewalks and other shadow sensitive areas such as 'no impacts zones', parks, open spaces or natural areas.

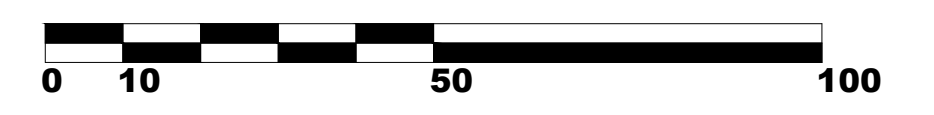


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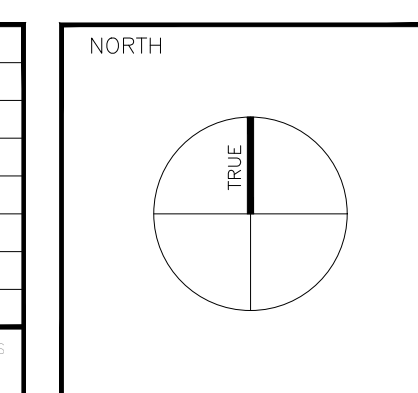
- 3 pages of written analysis for sun/shadow study
- 1 page showing a key plan
- 18 pages of coloured illustrations showing proposed and existing shadows



- Proposed Development (Mixed-use Buildings)
- Proposed Development (Single Family & Townhouses)
- Existing Commercial Buildings
- Outdoor Amenity Areas
- Open Green Space
- 7.5 M Residential Amenity, 'No Impact Zone'
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- Shadow cast from proposed development, (Single Family & Townhouses)
- Shadow cast from Existing Buildings



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**KILLALY STREET
PORT COLBORNE, ON
SHADOW STUDY**

DRAWING TITLE
KEY PLAN

Scale:
A/N

Date:
Nov.15, 2023

Project No.
22129

Drawn by:
RK

Checked by:
RE

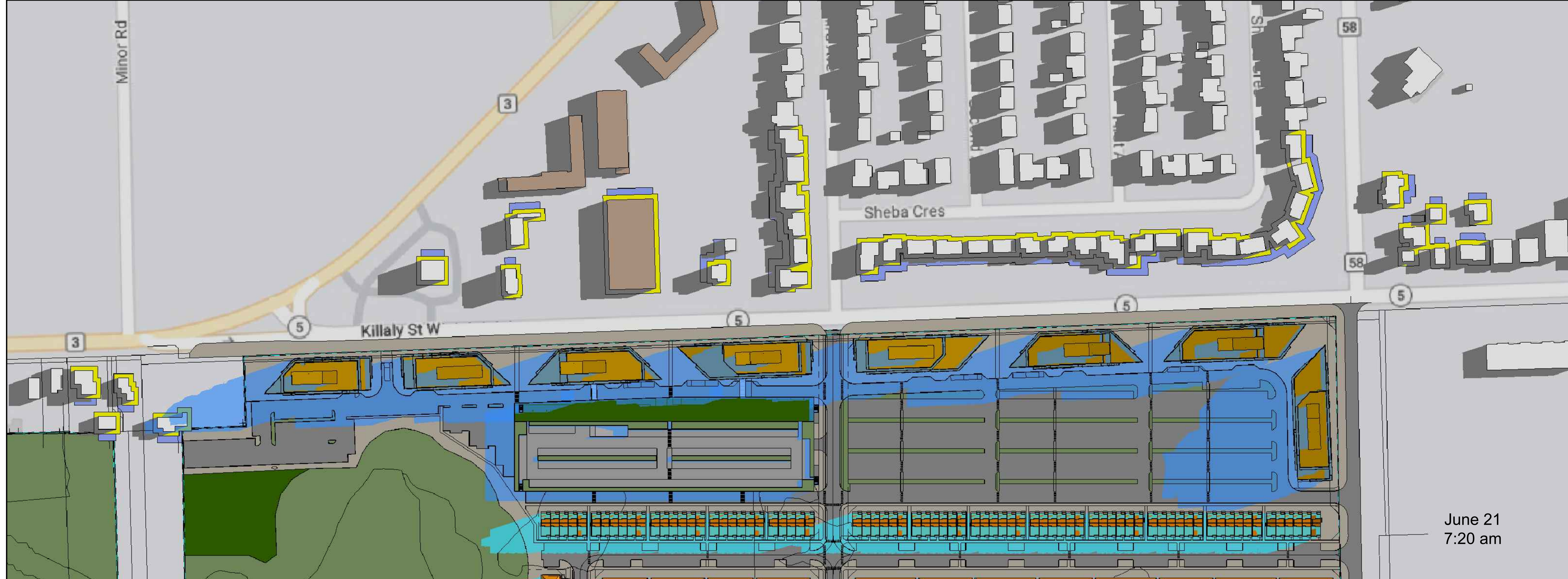
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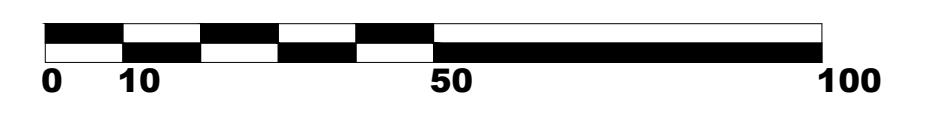


June 21
7:07 am



June 21
7:20 am

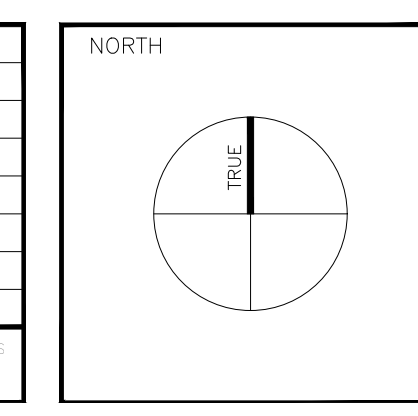
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**KILLALY STREET
PORT COLBORNE, ON
SHADOW STUDY**

DRAWING TITLE
SHADOW STUDY - June 21

Scale:
As Noted

Date:
Nov.15, 2023

Project No.
22129

Drawn by:
RK

Checked by:
RE

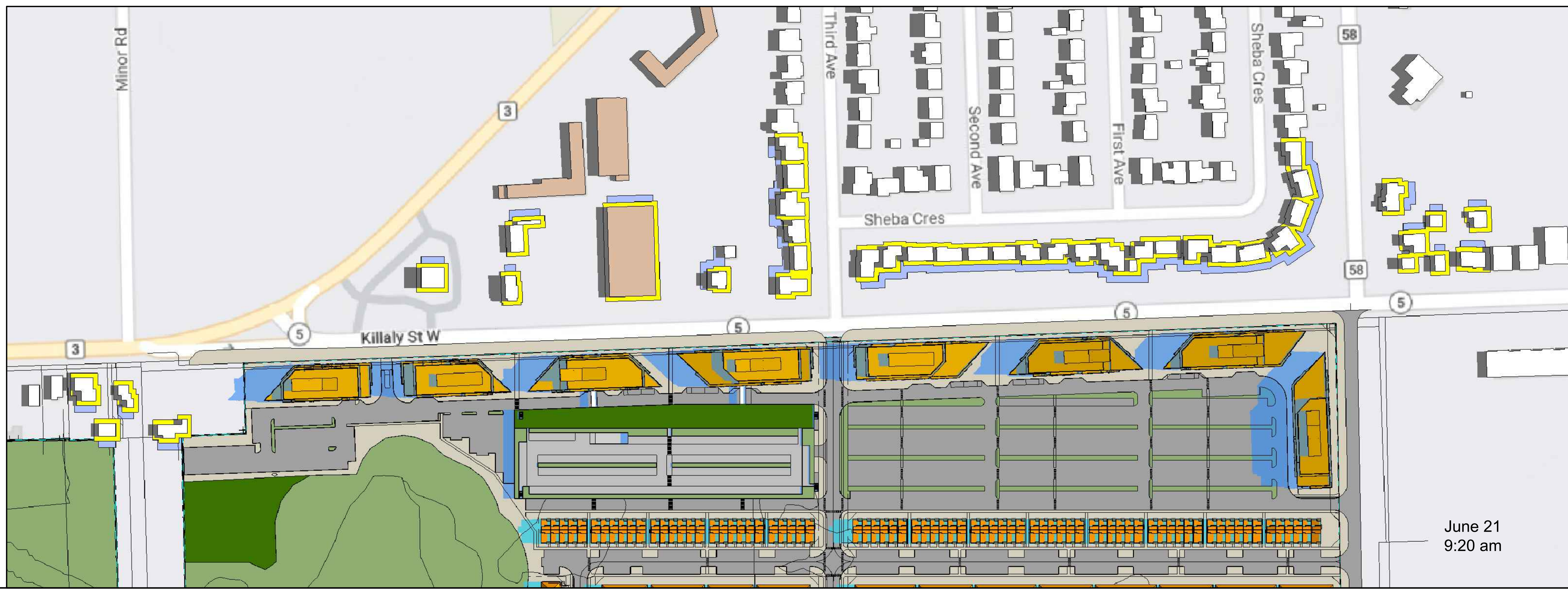
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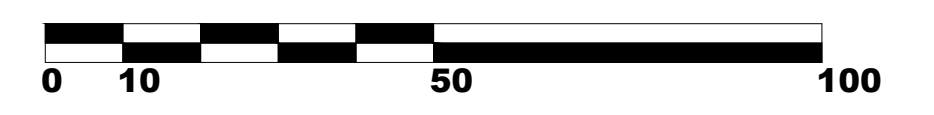


June 21
8:20 am



June 21
9:20 am

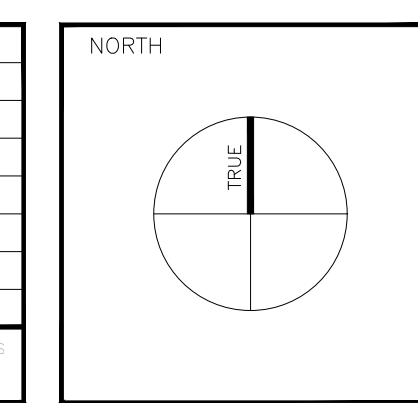
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DRAWING TITLE
SHADOW STUDY - June 21

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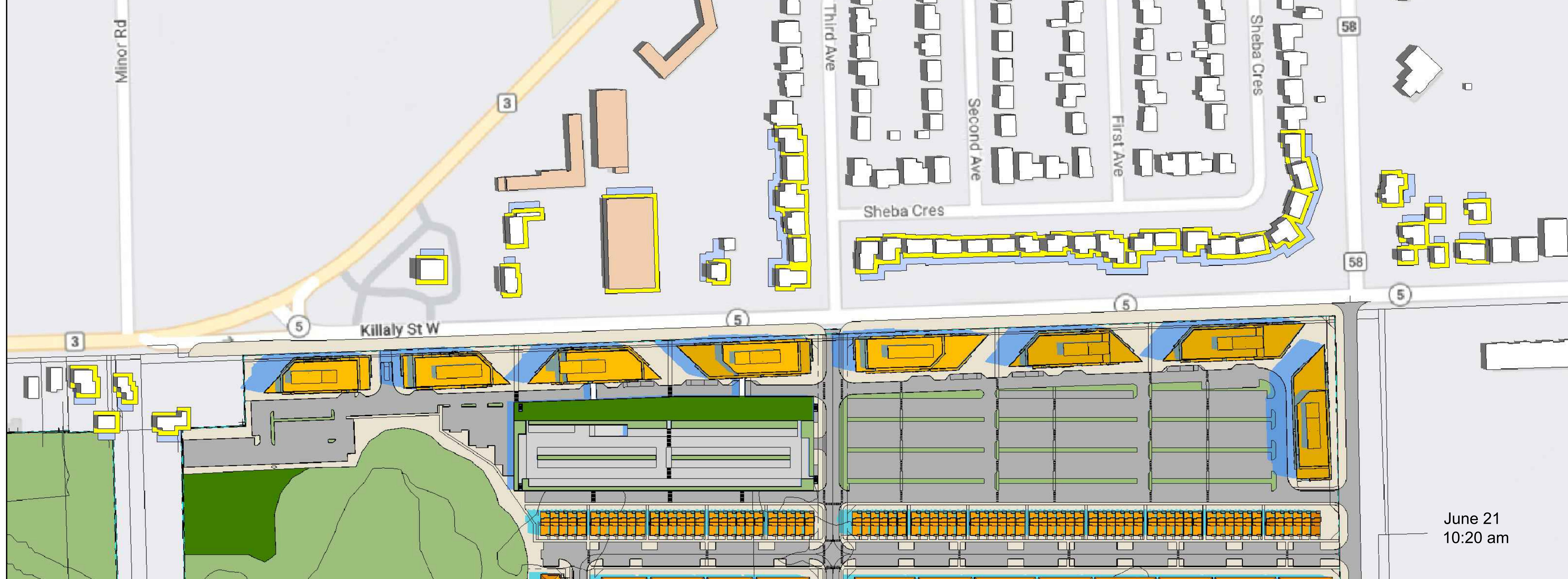
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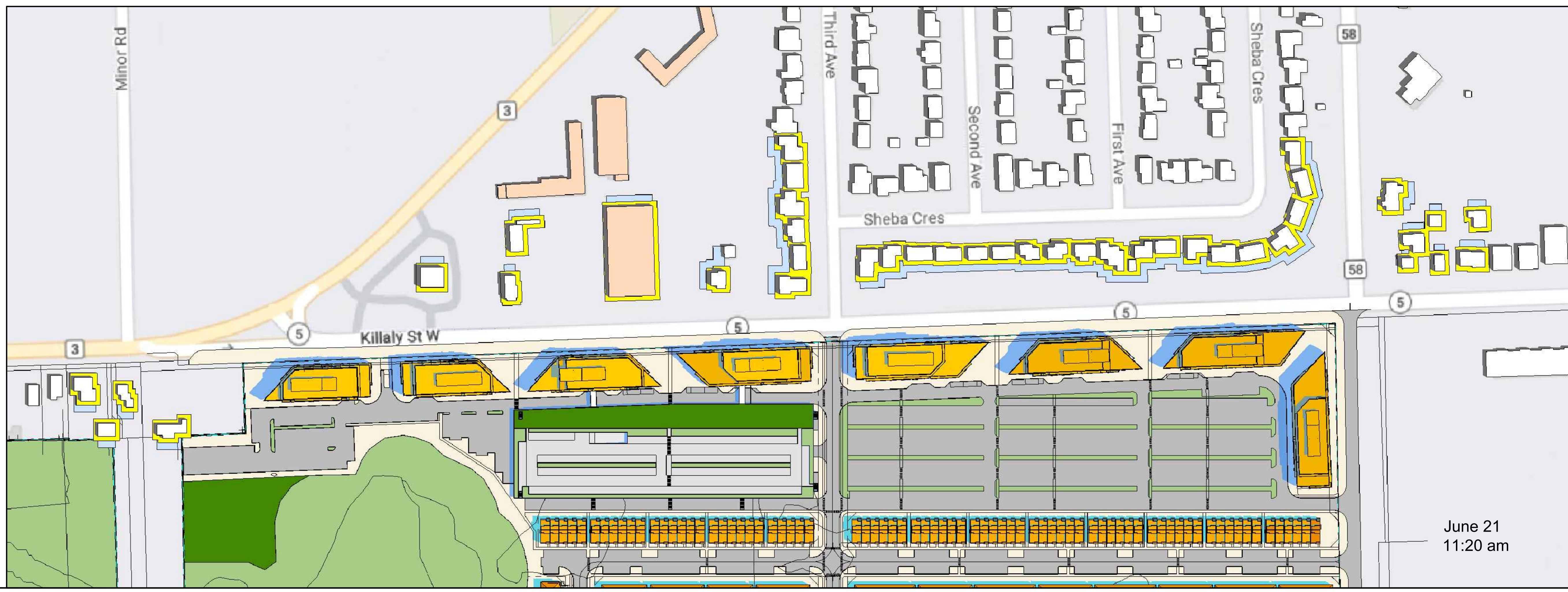
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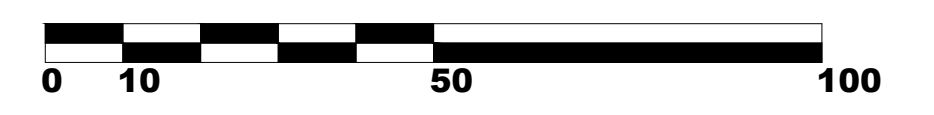


June 21
10:20 am



June 21
11:20 am

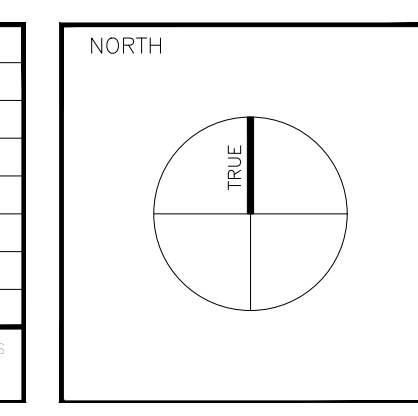
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SHADOW STUDY - June 21

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Nov.15, 2023

Project No.
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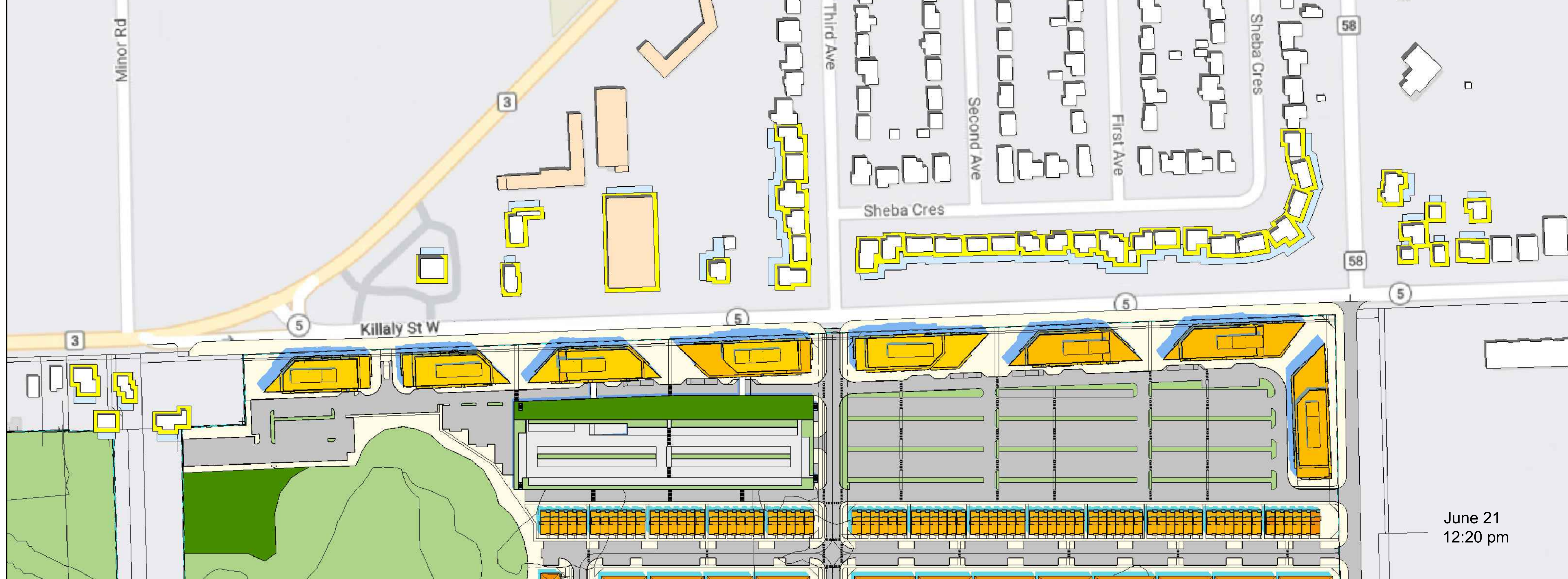
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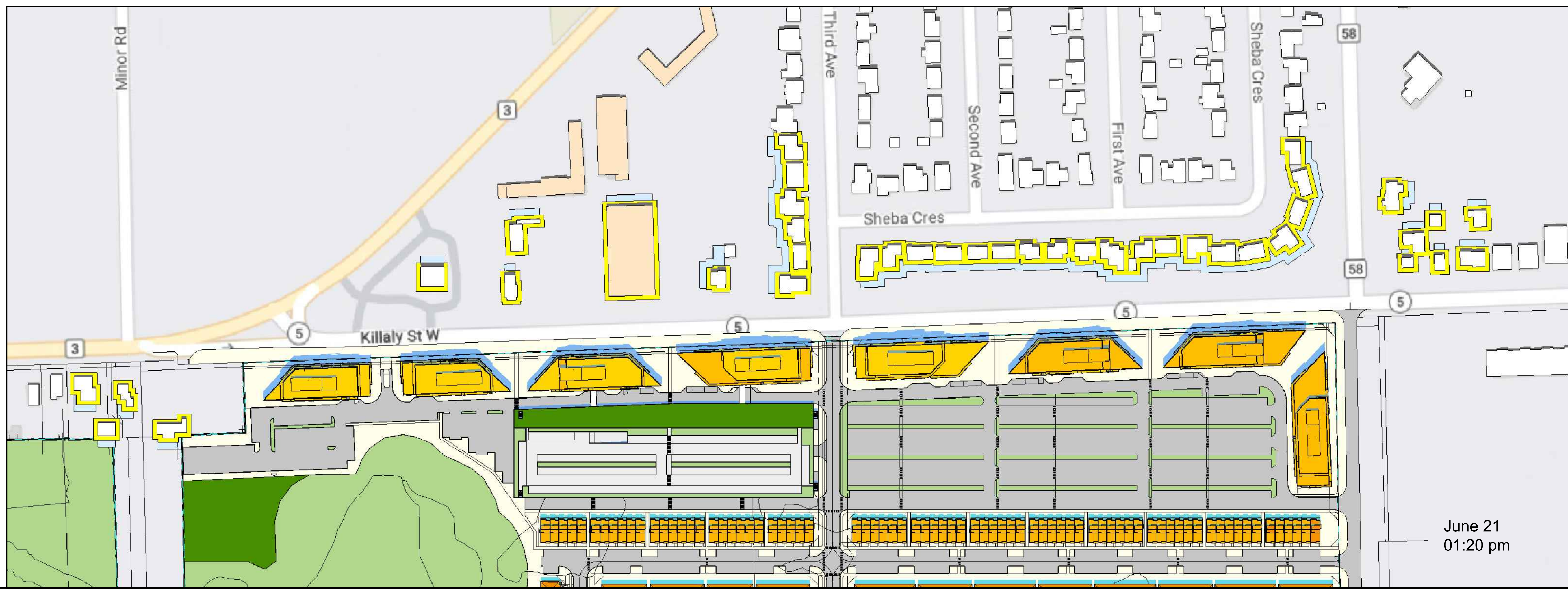
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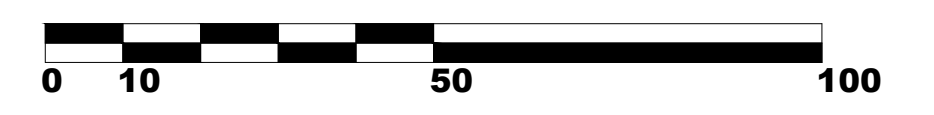


June 21
12:20 pm

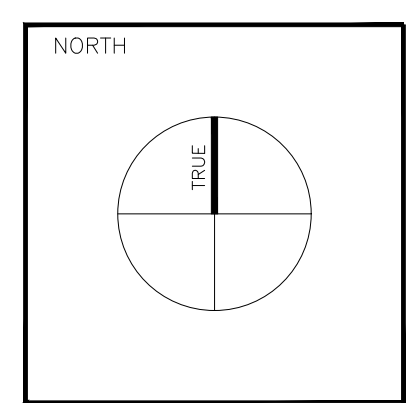


June 21
01:20 pm

- Proposed Development (Mixed-use Buildings)
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SHADOW STUDY - June 21

Scale:
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Project No.
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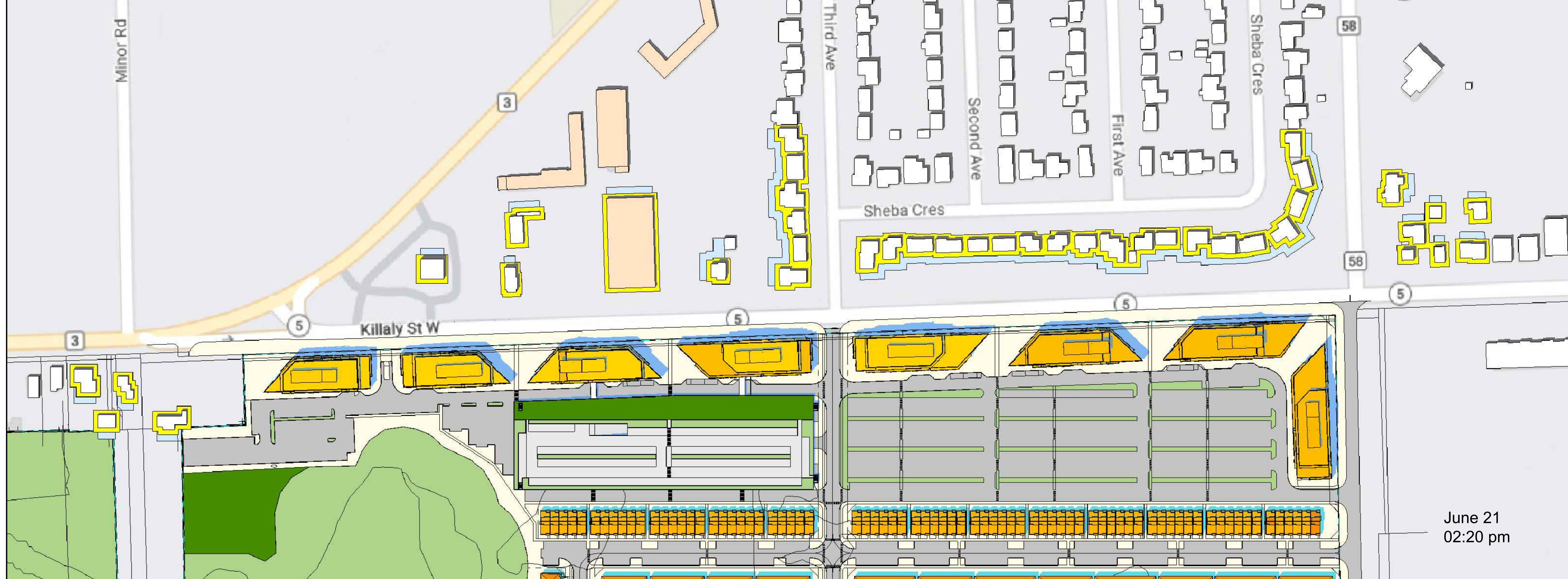
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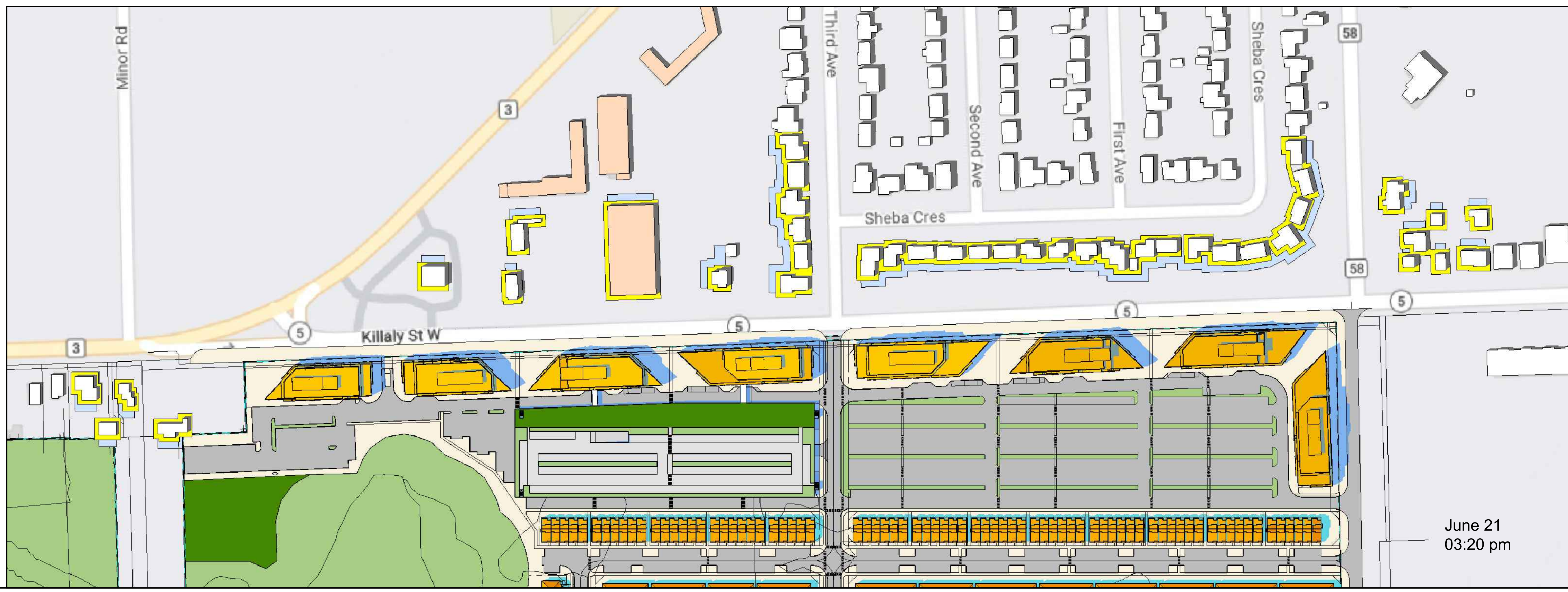
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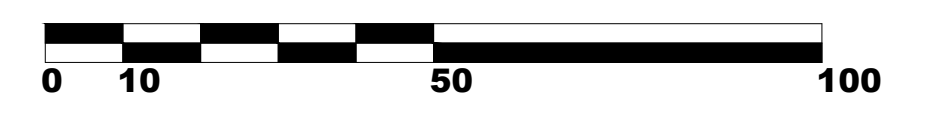


June 21
02:20 pm



June 21
03:20 pm

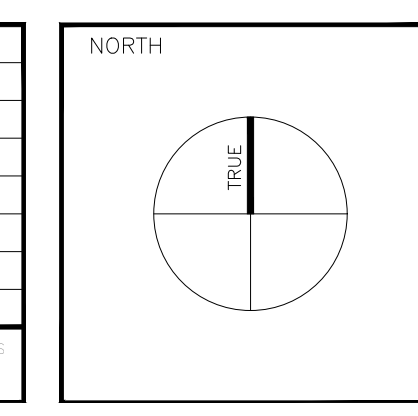
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PORT COLBORNE, ON
SHADOW STUDY**

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SHADOW STUDY - June 21

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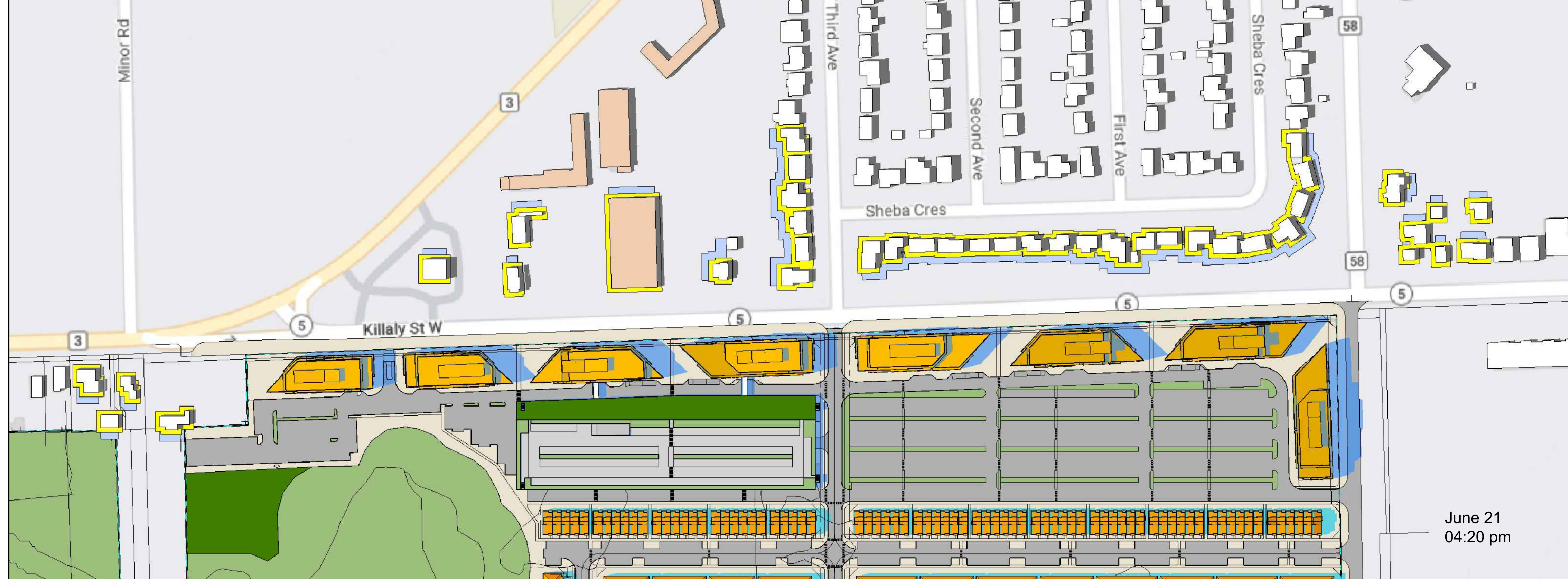
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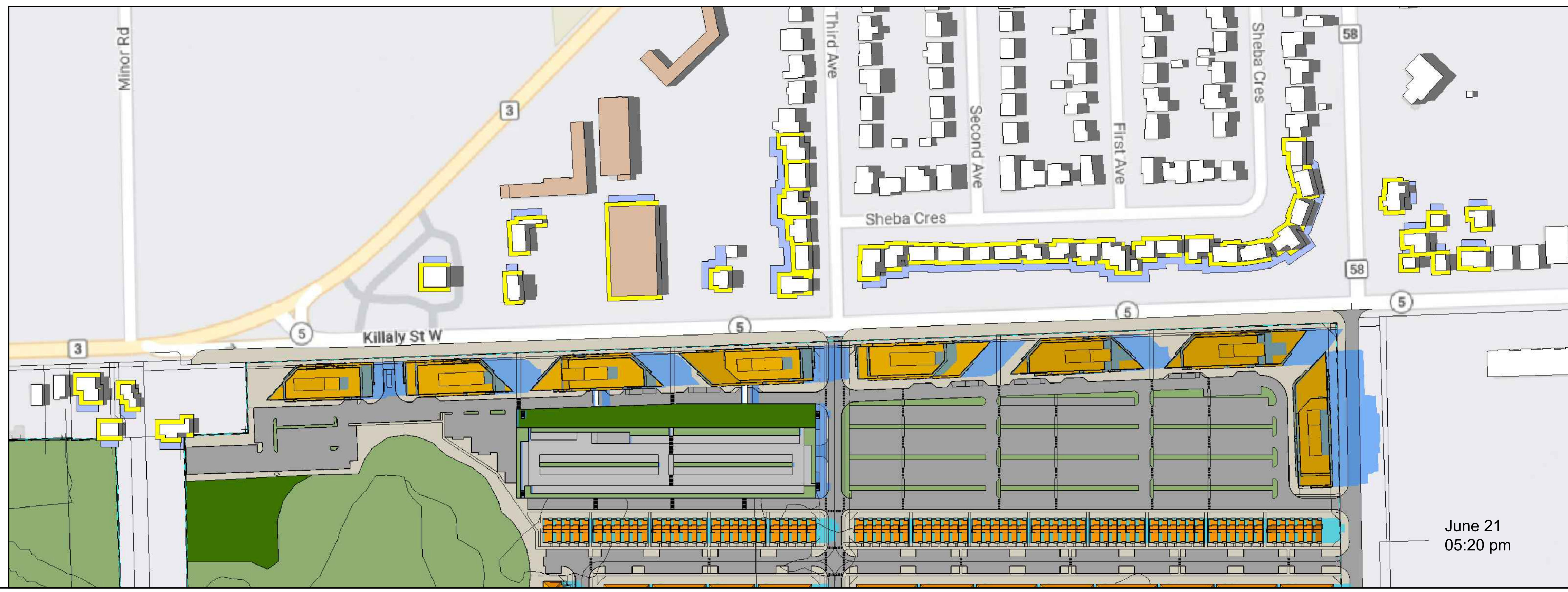
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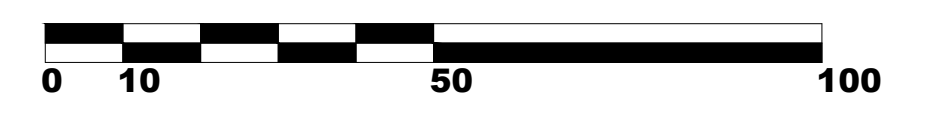


June 21
04:20 pm

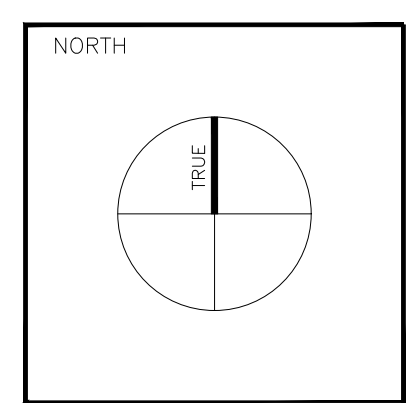


June 21
05:20 pm

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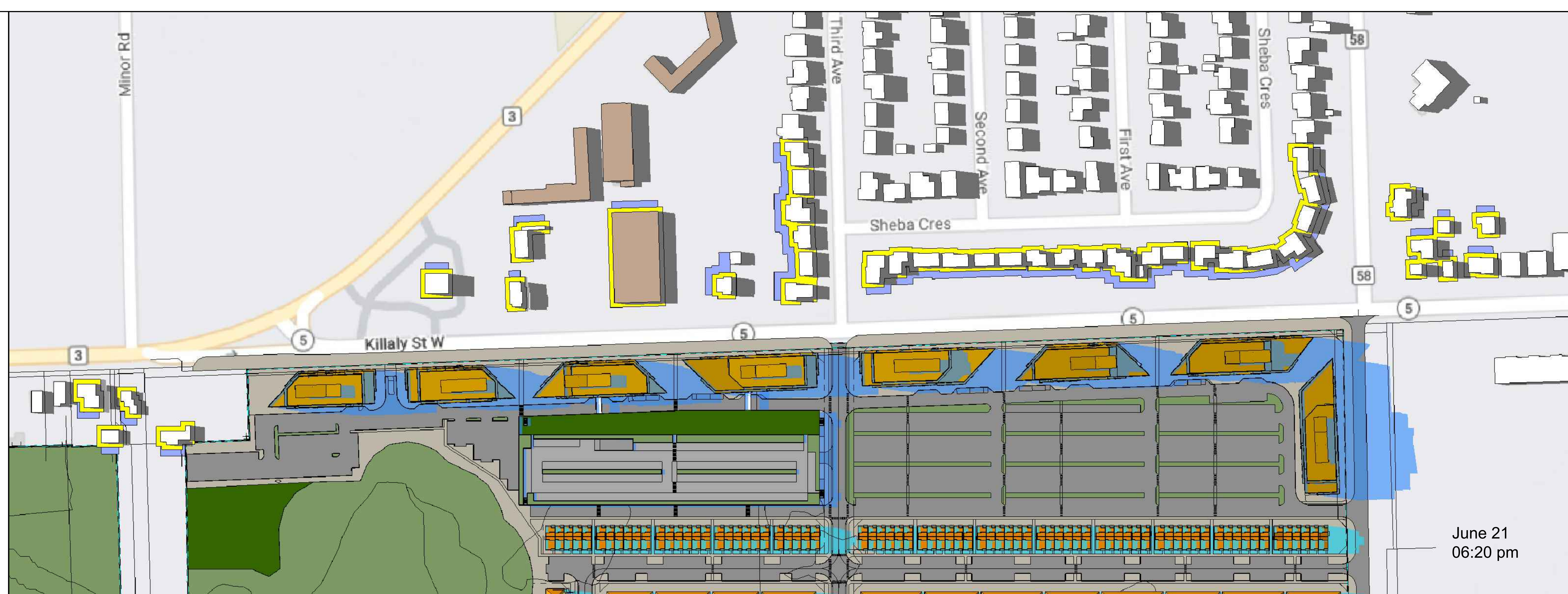
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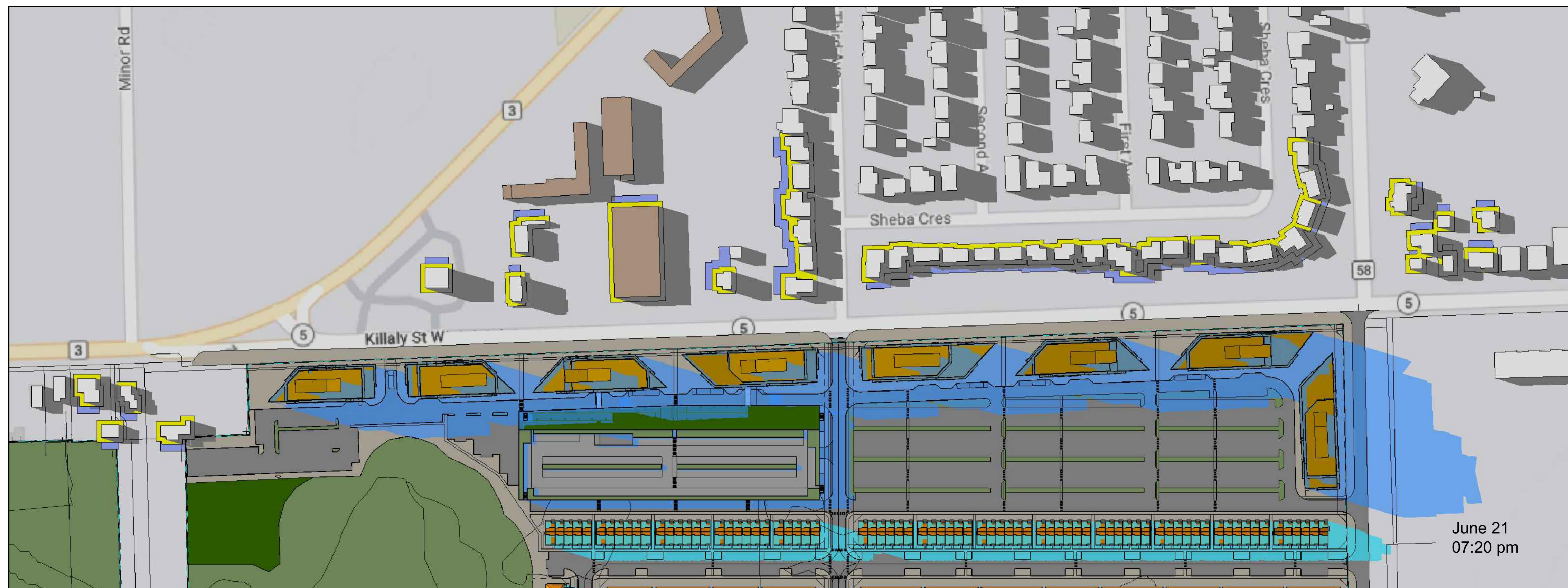
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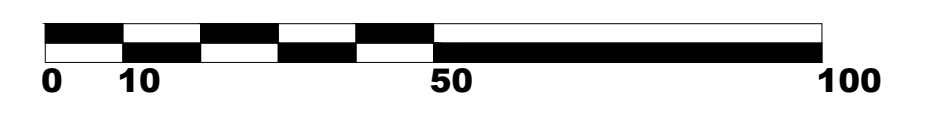


June 21
06:20 pm



June 21
07:20 pm

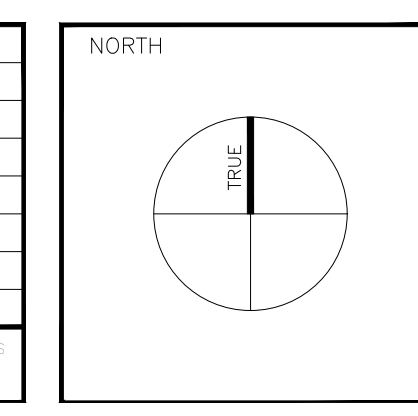
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**KILLALY STREET
PORT COLBORNE, ON
SHADOW STUDY**

DRAWING TITLE
SHADOW STUDY - June 21

Scale:
As Noted

Date:
Nov.15, 2023

Project No.
22129

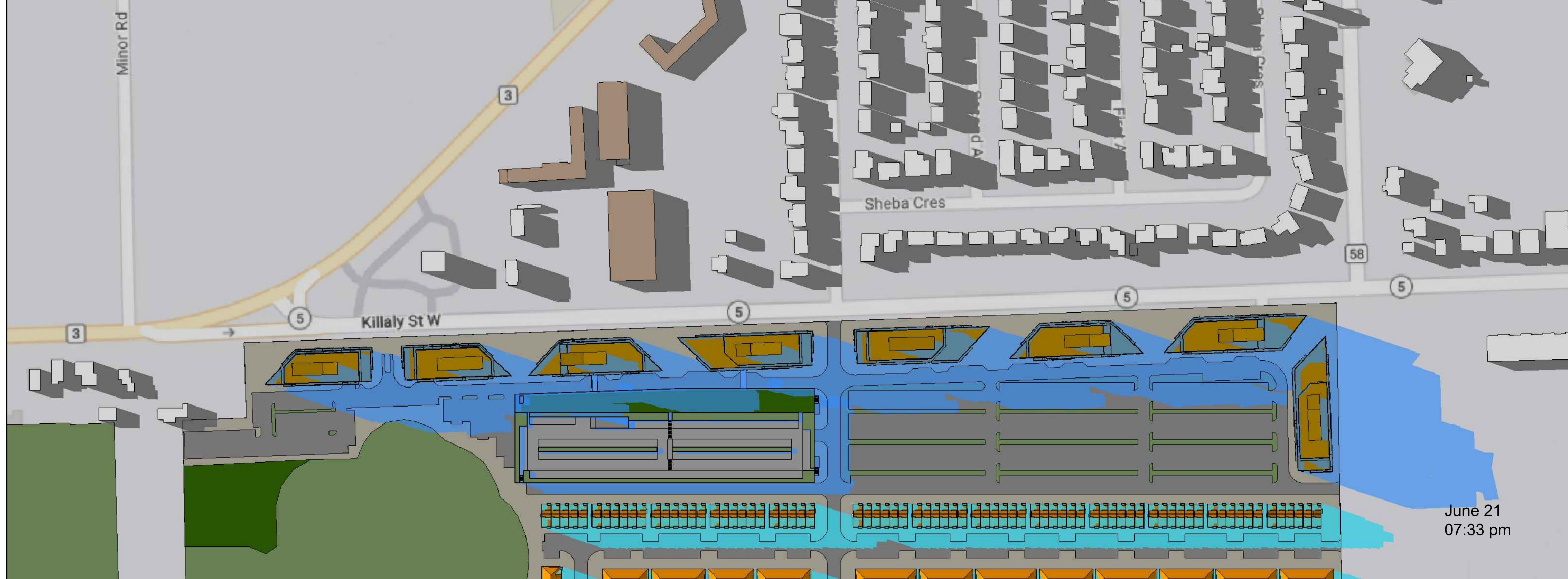
Drawn by:
RK

Checked by:
RE

Drawing No.
A108

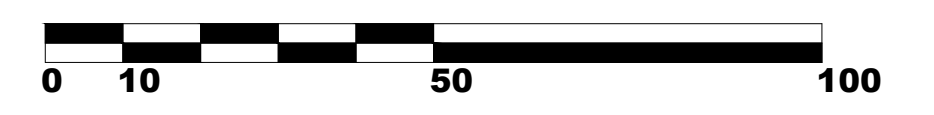
815-4788 YONGE ST. TORONTO
ON M4M 1B7
TEL: 416-224-0505 FAX: 416-224-0504





June 21
07:33 pm

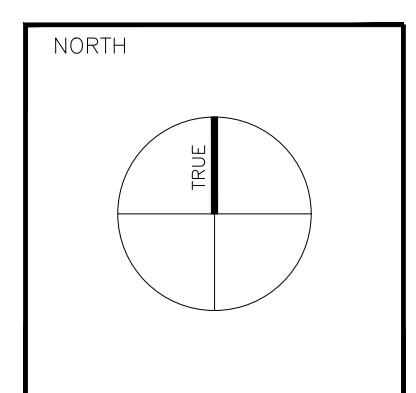
- Proposed Development (Mixed-use Buildings)
- Proposed Development (Single Family & Townhouses)
- Existing Commercial Buildings
- Outdoor Amenity Areas
- Open Green Space
- 7.5 M Residential Amenity, 'No Impact Zone'
- 3 M Solar Gain, 'No Impact Zone'
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**KILLALY STREET
PORT COLBORNE, ON
SHADOW STUDY**

DRAWING TITLE
SHADOW STUDY – June 21

Scale:
As Noted

Date:
Nov.15, 2023

Project No.
22129

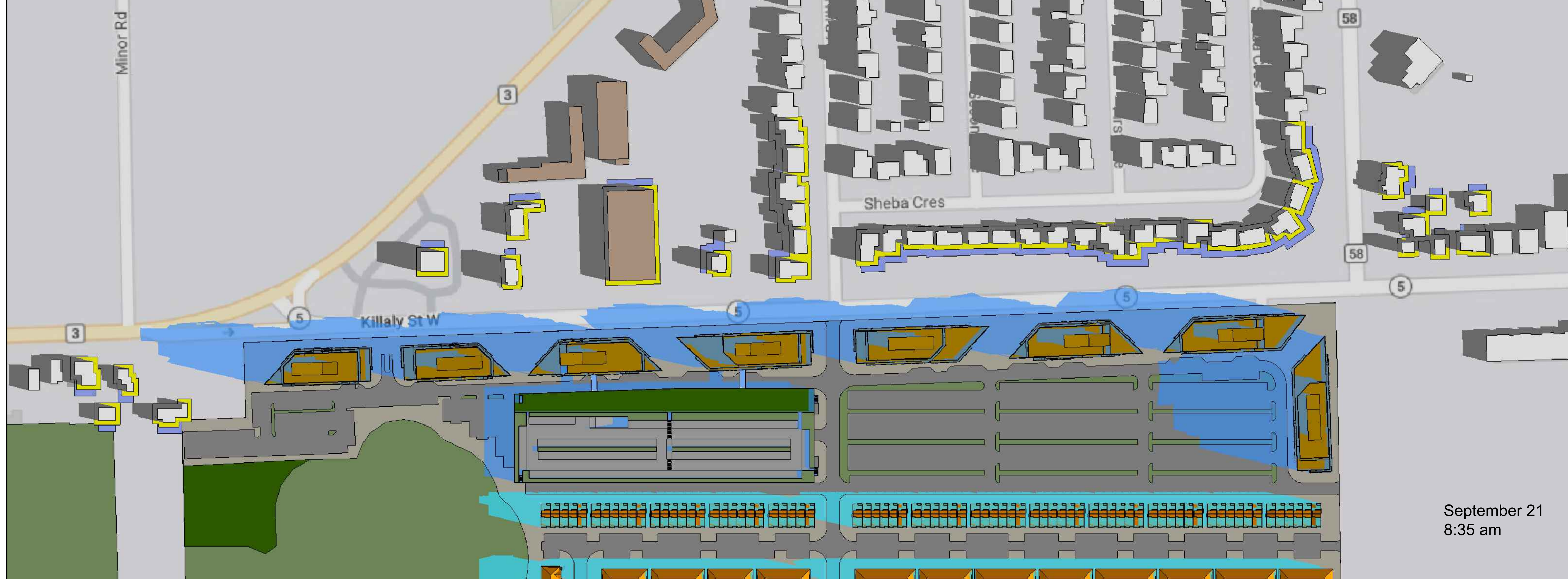
Drawn by:
RK

Checked by:
RE

Drawing No.
A109

815-4788 YONGE ST. TORONTO
ON M4M 1B7
TEL: 416-224-0505 FAX: 416-224-0504



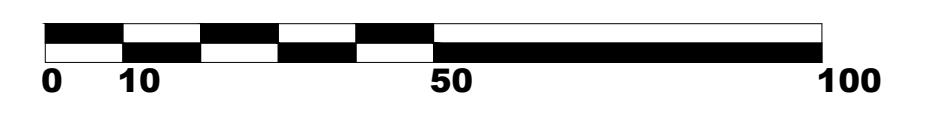


September 21
8:35 am

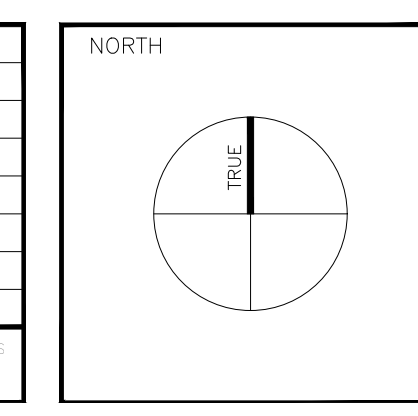


September 21
9:12 am

- Proposed Development (Mixed-use Buildings)
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**KILLALY STREET
PORT COLBORNE, ON
SHADOW STUDY**

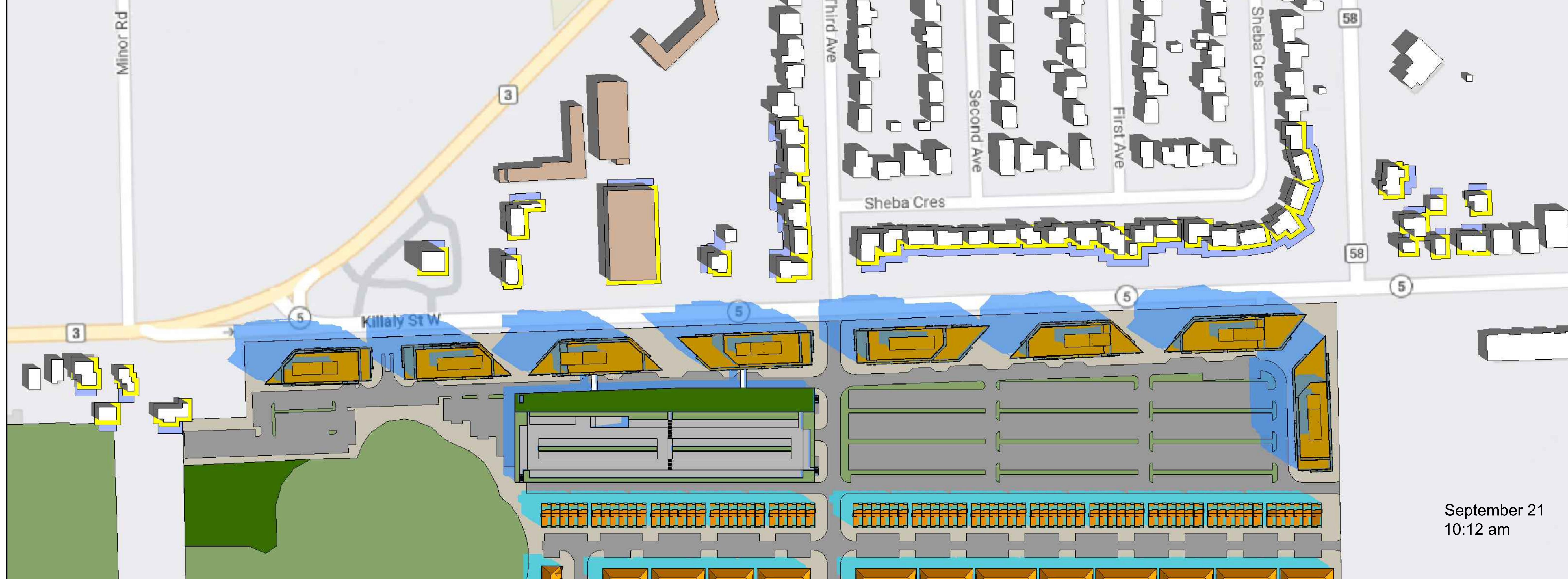
DRAWING TITLE
SHADOW STUDY – September 21

Scale: As Noted
Date: Nov.15, 2023
Project No. 22129

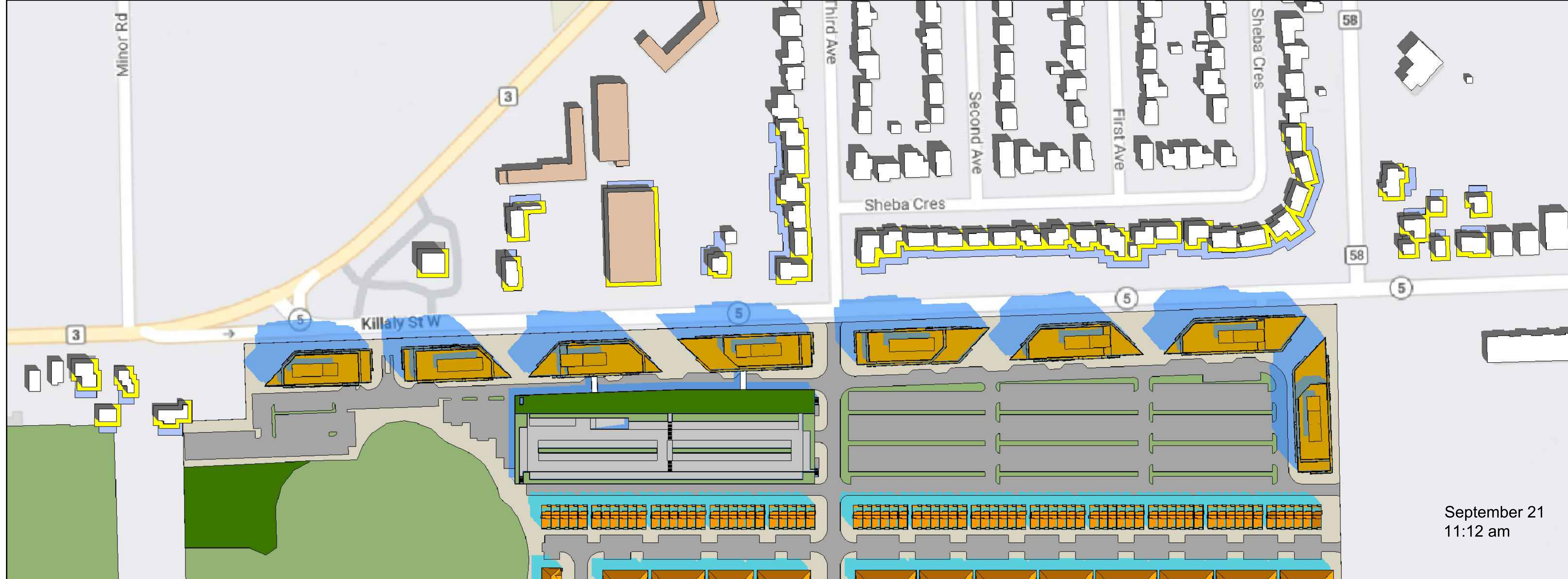
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Checked by: RE
Drawing No. A110

815-4788 YONGE ST. TORONTO ONTARIO M4W 1G5
TEL: 416-224-0505 FAX: 416-224-0504



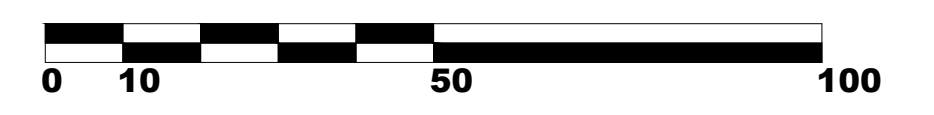


September 21
10:12 am

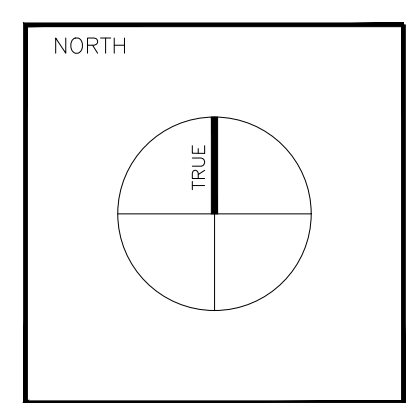


September 21
11:12 am

- Proposed Development (Mixed-use Buildings)
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- Open Green Space
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**KILLALY STREET
PORT COLBORNE, ON
SHADOW STUDY**

DRAWING TITLE
SHADOW STUDY - September 21

Scale: As Noted
Date: Nov.15, 2023
Project No. 22129

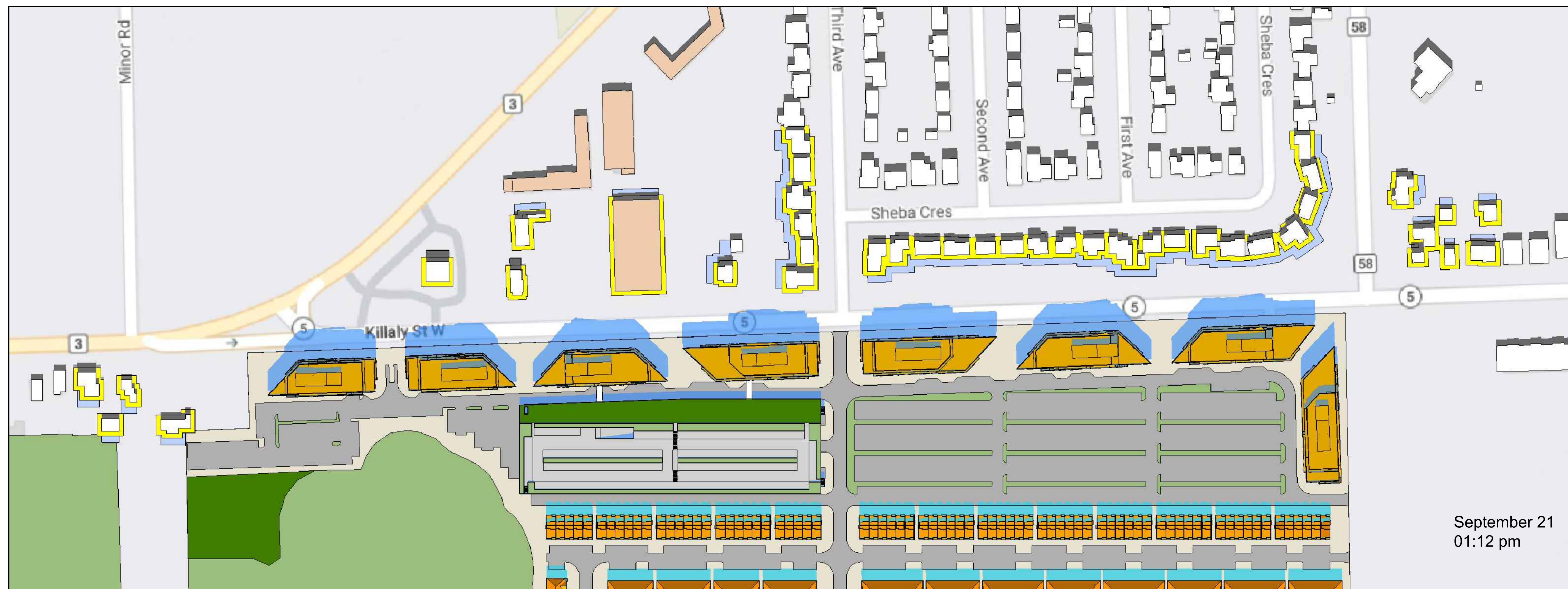
Drawn by: RK
Checked by: RE
Drawing No. A111

615-4788 YONGE ST. TORONTO ONTARIO M4M 1A4
TEL: 416-224-0505 FAX: 416-224-0504



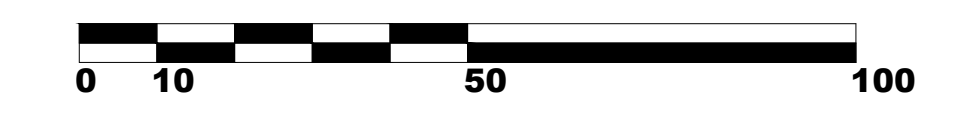


September 21
12:12 pm

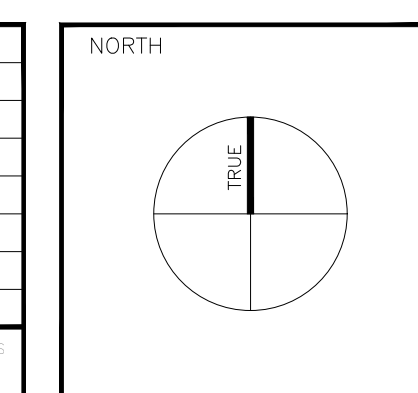


September 21
01:12 pm

- Proposed Development (Mixed-use Buildings)
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**KILLALY STREET
PORT COLBORNE, ON
SHADOW STUDY**

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DRAWING TITLE
SHADOW STUDY - September 21

Scale:
As Noted

Date:
Nov.15, 2023

Project No.
22129

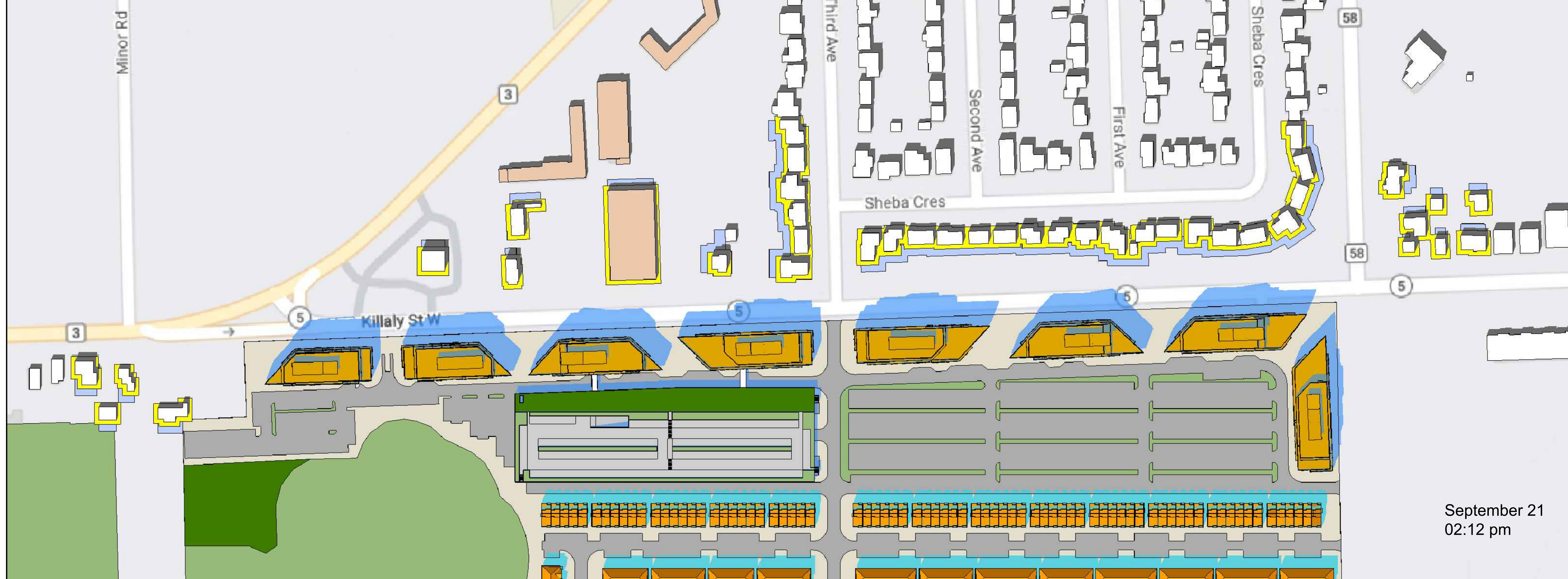
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Checked by:
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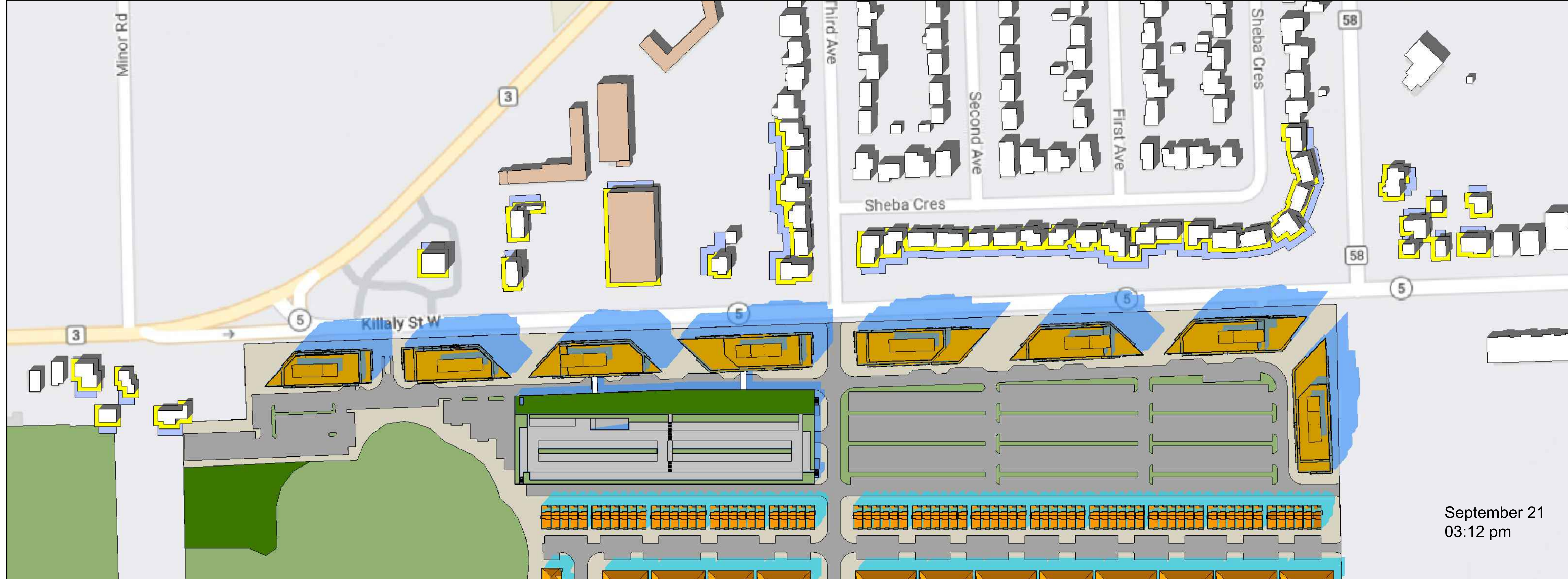
Drawing No.
A112

815 - 4788 YONGE ST. TORONTO ONTARIO M4N 1K5
TEL: 416-224-0505 FAX: 416-224-0504

**ICON
ARCHITECTS**

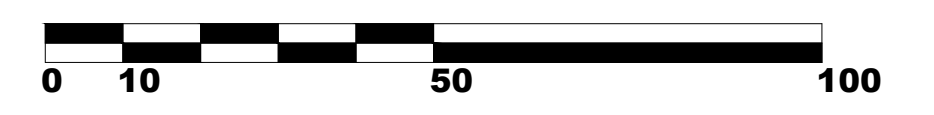


September 21
02:12 pm



September 21
03:12 pm

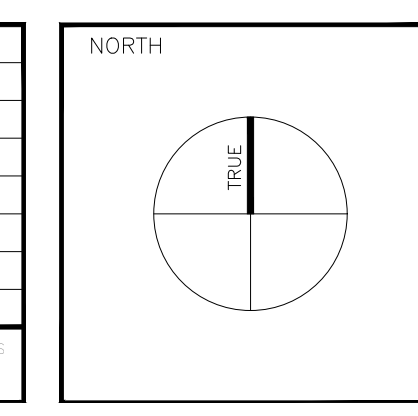
- Proposed Development (Mixed-use Buildings)
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**KILLALY STREET
PORT COLBORNE, ON
SHADOW STUDY**

**KILLALY STREET
PORT COLBORNE, ON
SHADOW STUDY**

**KILLALY STREET
PORT COLBORNE, ON
SHADOW STUDY**

DRAWING TITLE
SHADOW STUDY - September 21

Scale:
As Noted

Date:
Nov.15, 2023

Project No.
22129

Drawn by:
RK

Checked by:
RE

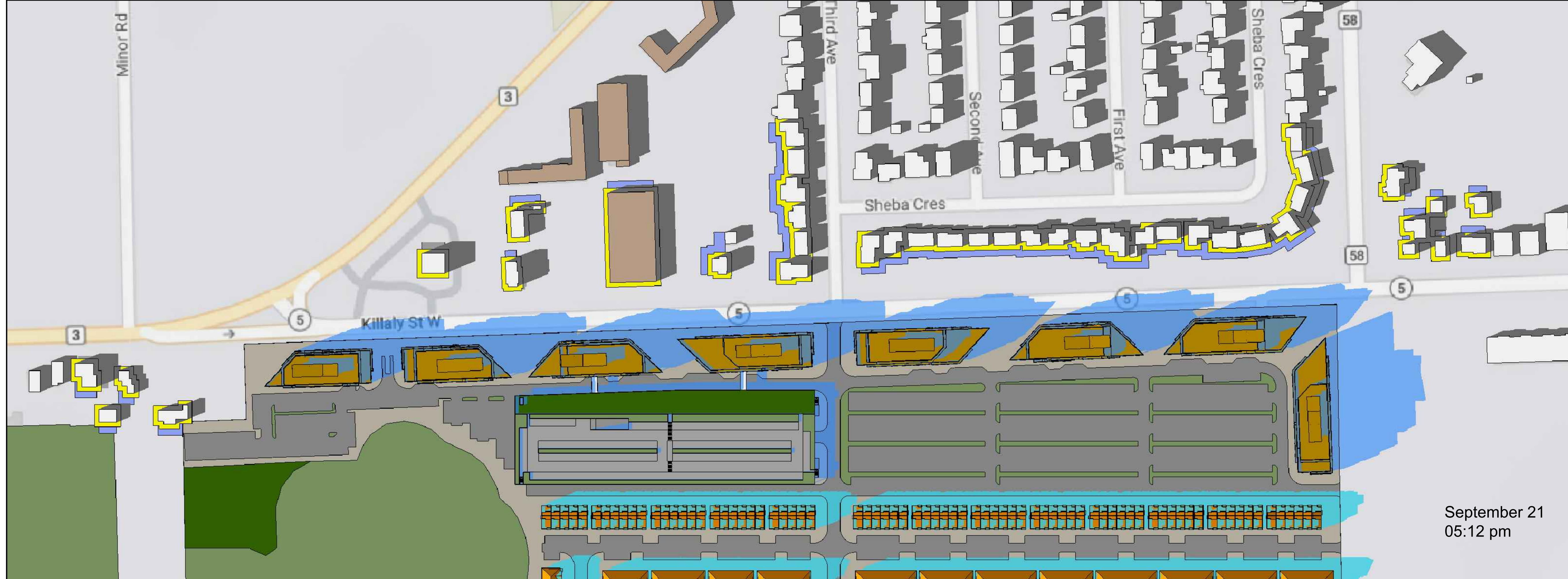
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815 - 4788 YONGE ST. TORONTO ONTARIO M4M 1B7
TEL: 416-224-0505 FAX: 416-224-0504



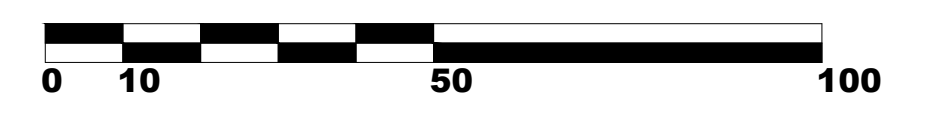


September 21
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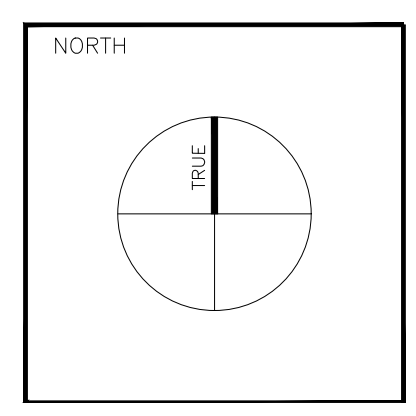


September 21
05:12 pm

- Proposed Development (Mixed-use Buildings)
- Proposed Development (Single Family & Townhouses)
- Existing Commercial Buildings
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**KILLALY STREET
PORT COLBORNE, ON
SHADOW STUDY**

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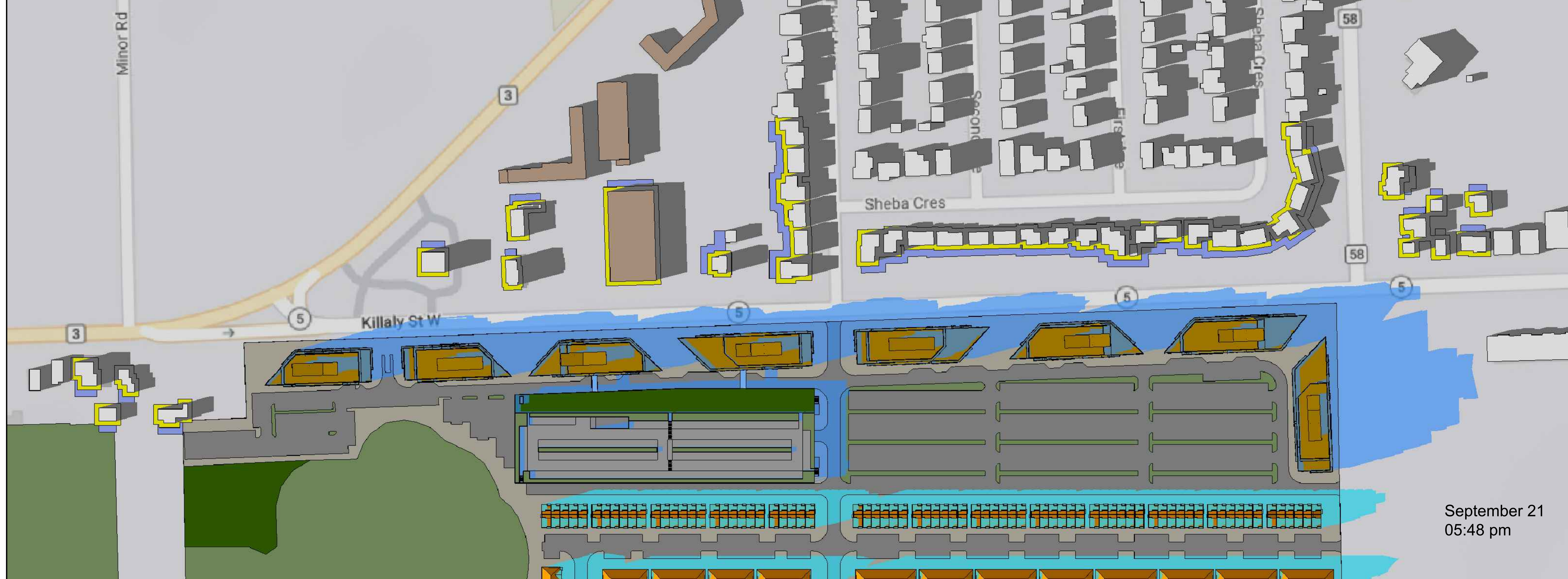
DRAWING TITLE
SHADOW STUDY - September 21






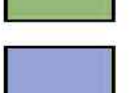

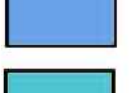

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Date: Nov.15, 2023
Project No. 22129

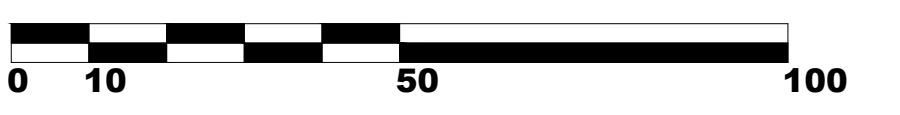
Drawn by: RK
Checked by: RE
Drawing No. A114

815-4788 YONGE ST. TORONTO ONTARIO M4W 1G5
TEL: 416-224-0505 FAX: 416-224-0504

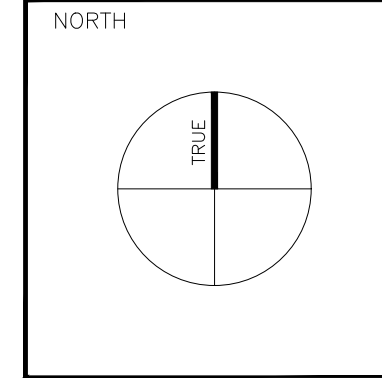




-  Proposed Development (Mixed-use Buildings)
-  Proposed Development (Single Family & Townhouses)
-  Existing Commercial Buildings
-  Outdoor Amenity Areas
-  Open Green Space
-  7.5 M Residential Amenity, 'No Impact Zone'
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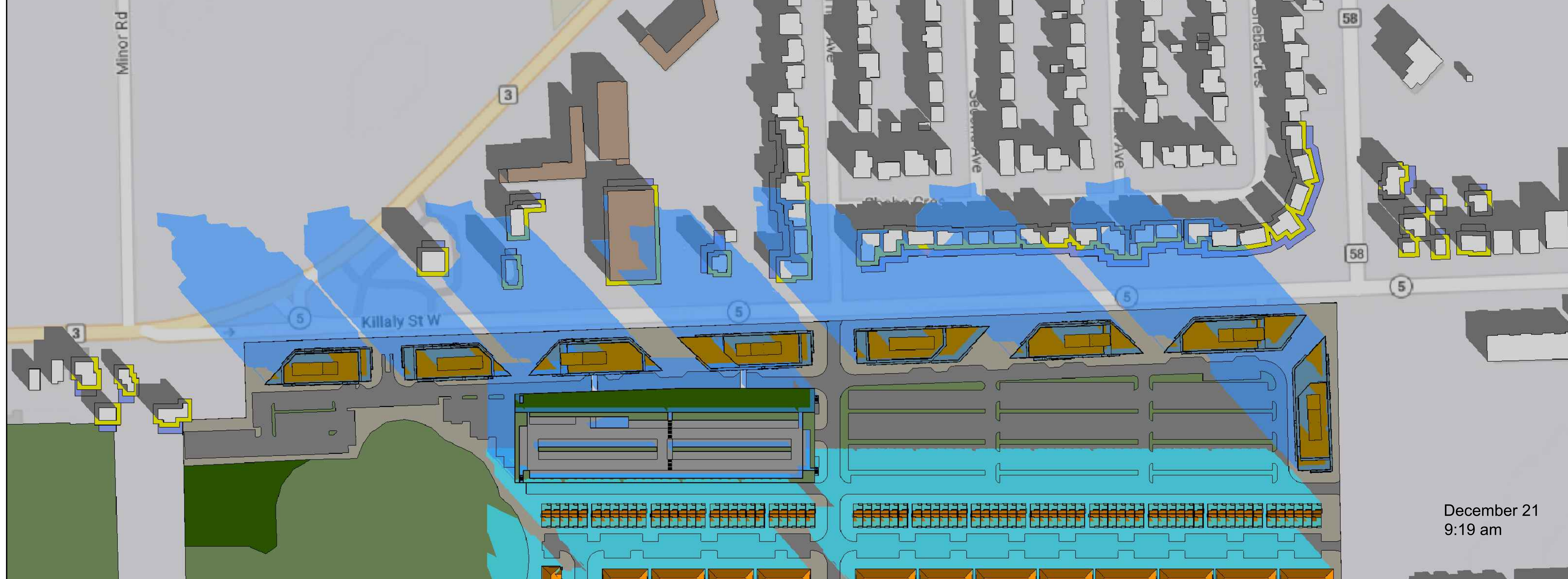


**KILLALY STREET
PORT COLBORNE, ON
SHADOW STUDY**

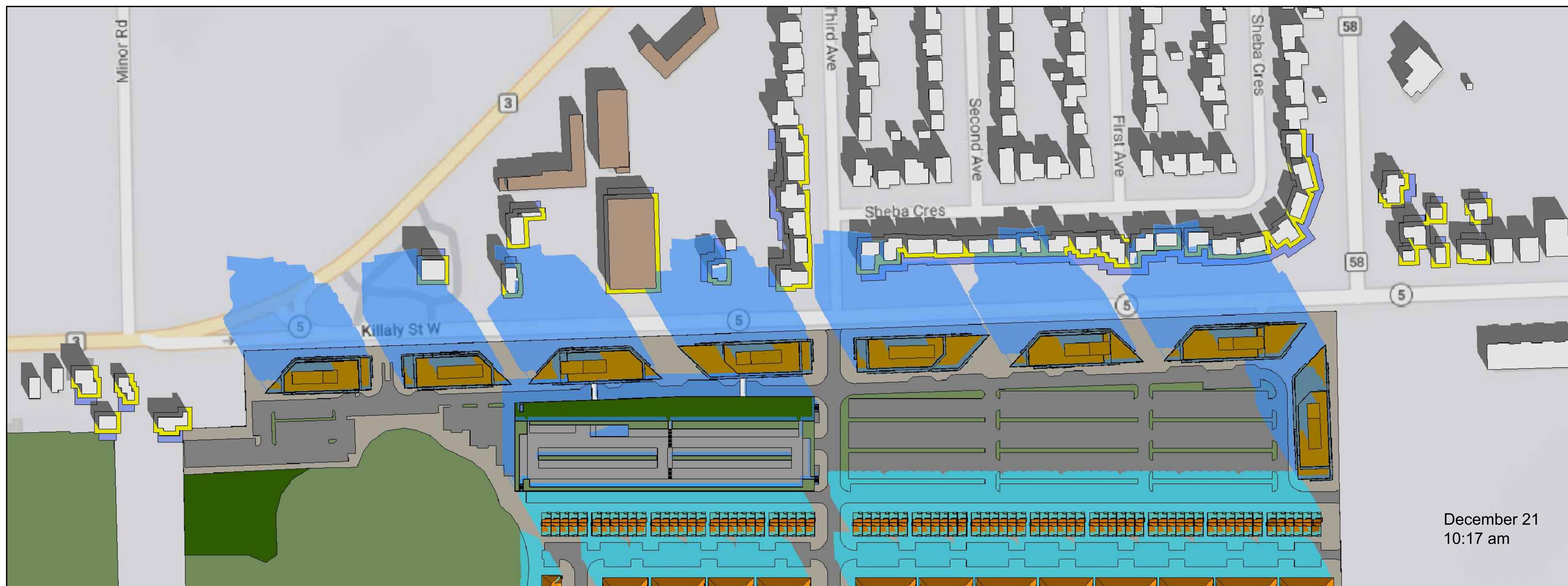
DRAWING TITLE
SHADOW STUDY - September 21
Scale: As Noted
Date: Nov.15, 2023
Project No. 22129
Drawn by: RK
Checked by: RE
Drawing No. A115

815 - 4788 YONGE ST. TORONTO, ONTARIO M6K 1M5
TEL: 416-224-8585 FAX: 416-224-8584



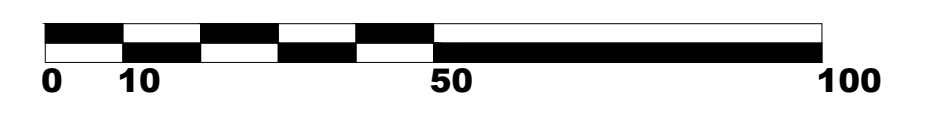


December 21
9:19 am



December 21
10:17 am

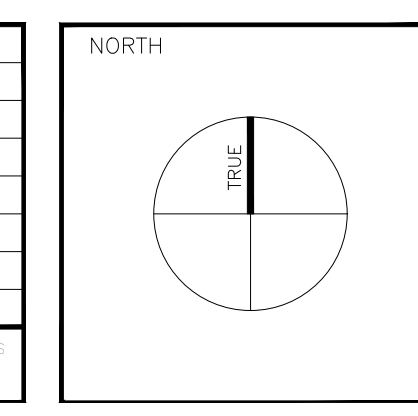
- Proposed Development (Mixed-use Buildings)
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**KILLALY STREET
PORT COLBORNE, ON
SHADOW STUDY**

DRAWING TITLE
SHADOW STUDY – December 21

Scale:
As Noted

Date:
Nov.15, 2023

Project No.
22129

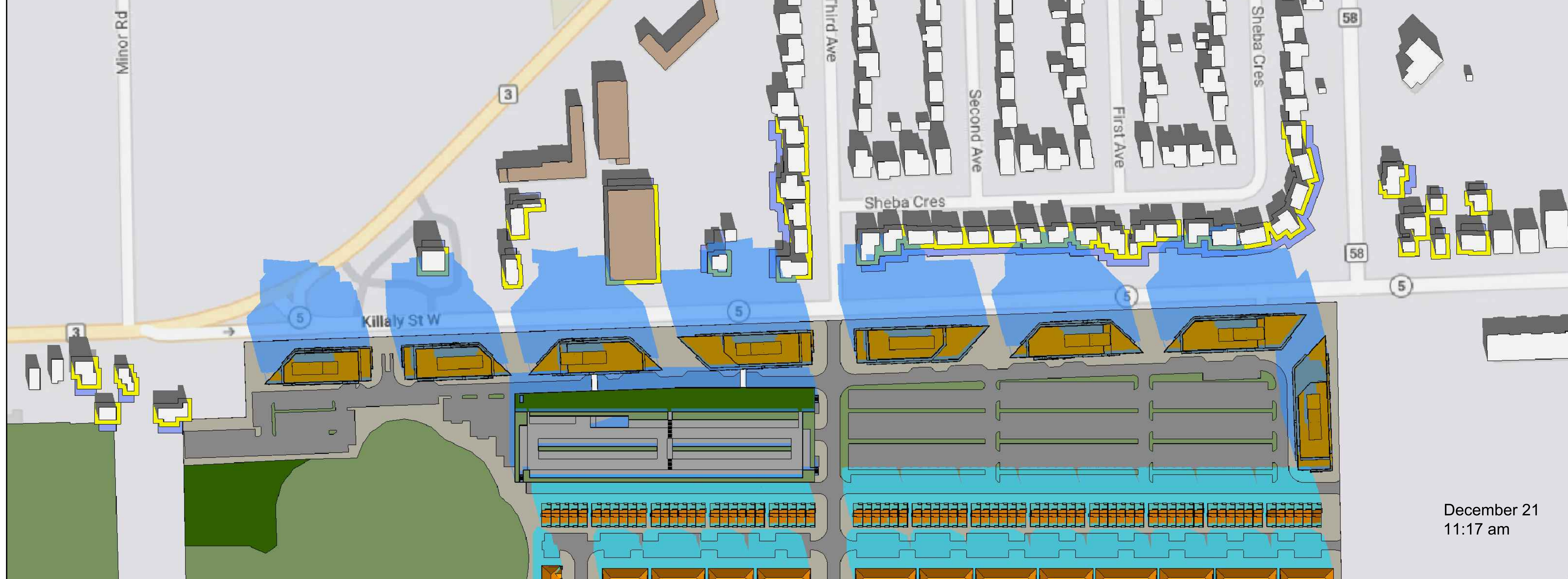
Drawn by:
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Checked by:
RE

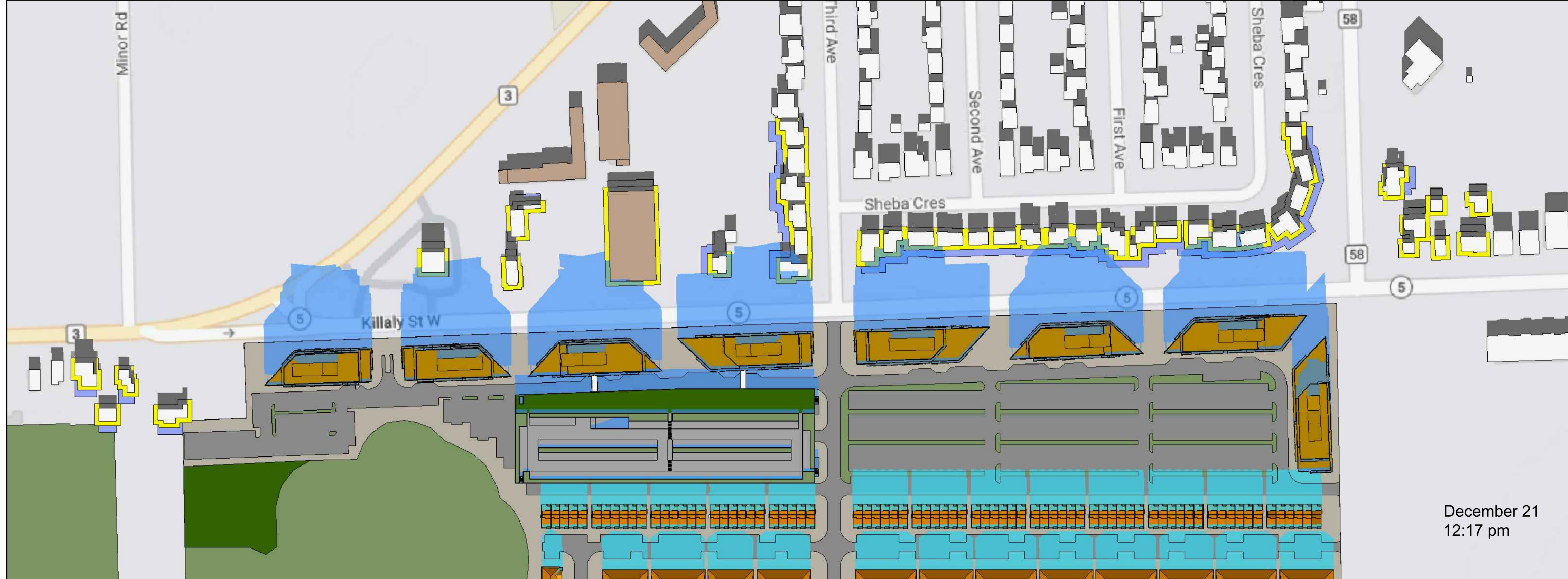
Drawing No.
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815-4788 YONGE ST. TORONTO
ON M4W 1A4
TEL: 416-224-0505 FAX: 416-224-0504



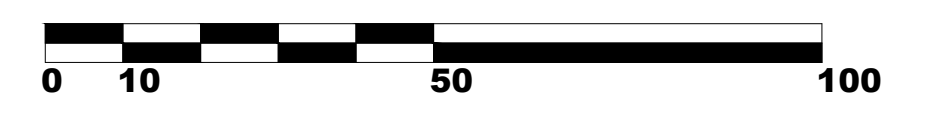


December 21
11:17 am

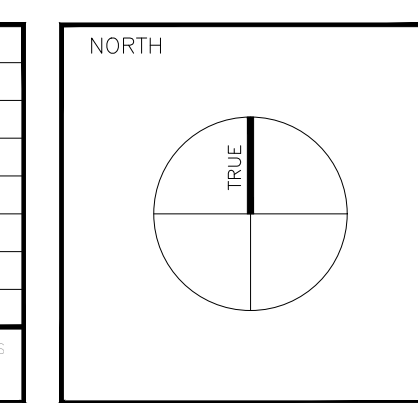


December 21
12:17 pm

- Proposed Development (Mixed-use Buildings)
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PORT COLBORNE, ON
SHADOW STUDY**

DRAWING TITLE
SHADOW STUDY – December 21

Scale:
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Date:
Nov.15, 2023

Project No.
22129

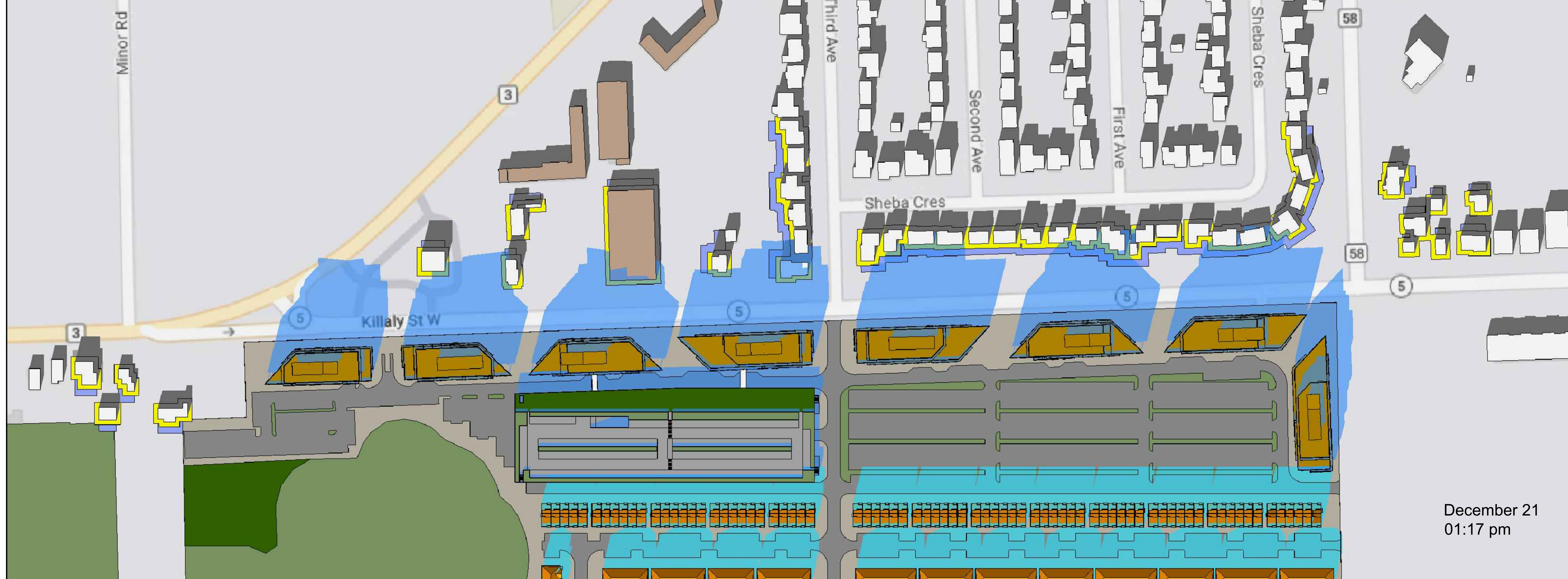
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RK

Checked by:
RE

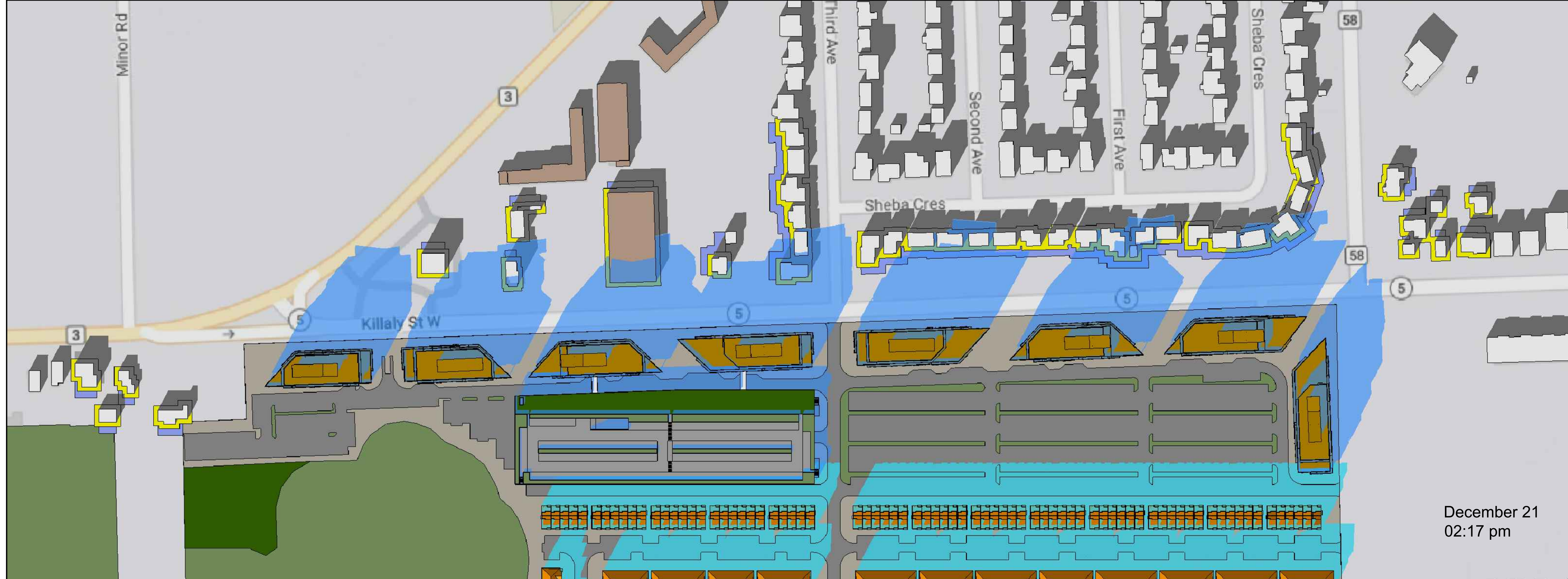
Drawing No.
A117

815-4788 YONGE ST. TORONTO ONTARIO M4W 1G4
TEL: 416-224-0505 FAX: 416-224-0504



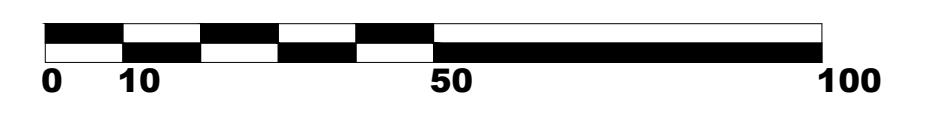


December 21
01:17 pm

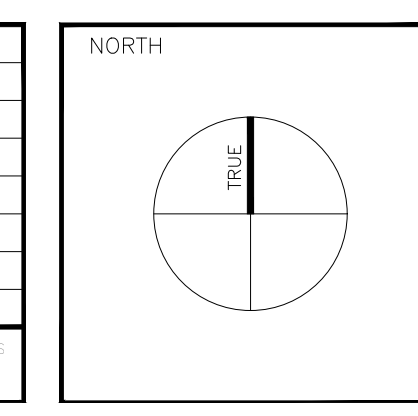


December 21
02:17 pm

- Proposed Development (Mixed-use Buildings)
- Proposed Development (Single Family & Townhouses)
- Existing Commercial Buildings
- Outdoor Amenity Areas
- Open Green Space
- 7.5 M Residential Amenity, 'No Impact Zone'
- 3 M Solar Gain, 'No Impact Zone'
- Shadow cast from proposed development, (Mixed-use Buildings)
- Shadow cast from proposed development, (Single Family & Townhouses)
- Shadow cast from Existing Buildings



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**KILLALY STREET
PORT COLBORNE, ON
SHADOW STUDY**

DRAWING TITLE
SHADOW STUDY – December 21

Scale:
As Noted

Date:
Nov.15, 2023

Project No.
22129

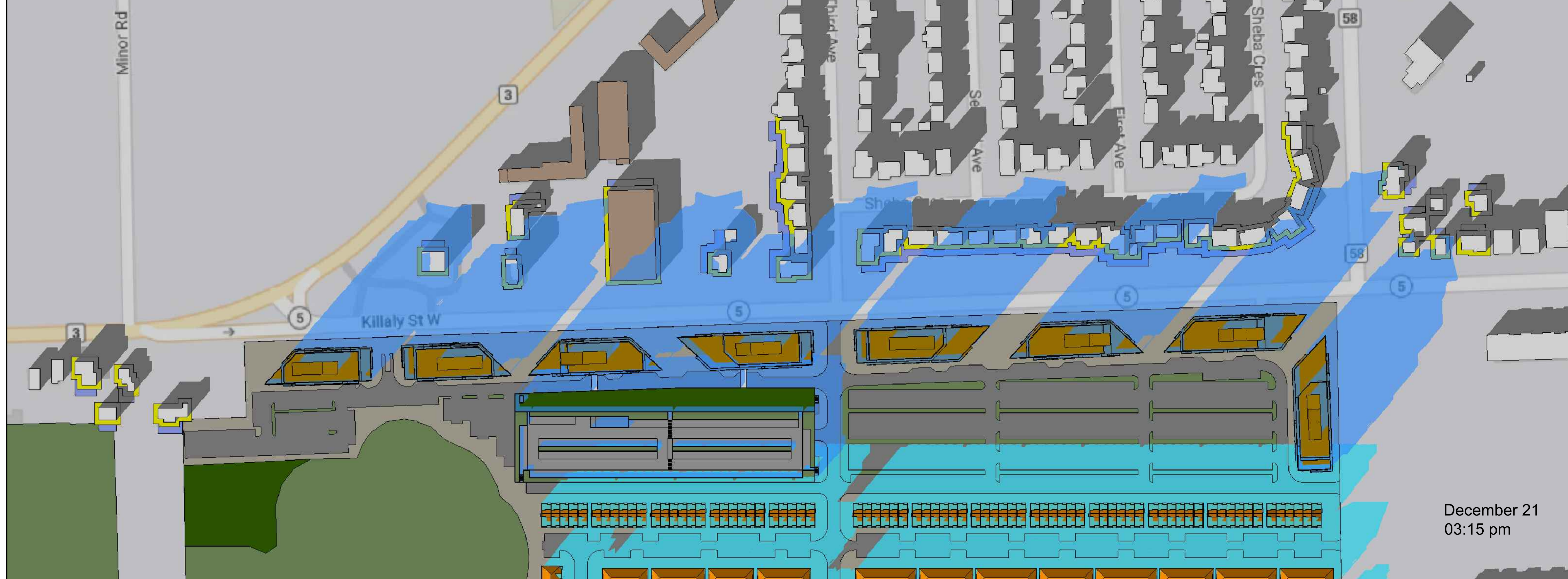
Drawn by:
RK

Checked by:
RE

Drawing No.
A118

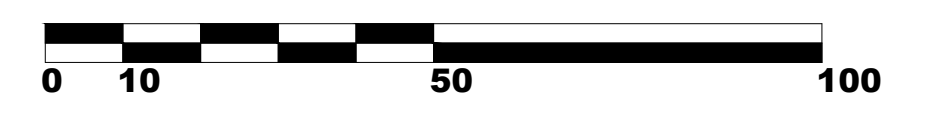
615-4788 YONGE ST. TORONTO ONTARIO M4W 1G5
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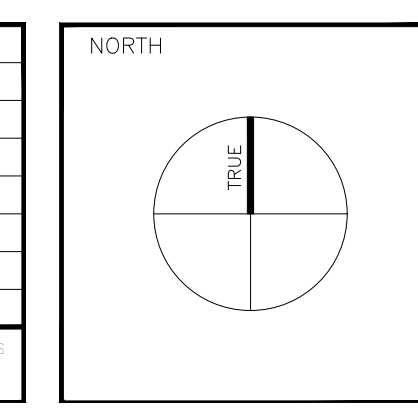


December 21
03:15 pm

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