

# SUN SHADOW STUDY

## *499 Mohawk Road East*

Proposed Mixed-Use Development

499 Mohawk Road East

City of Hamilton

Prepared for:

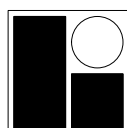
New Horizon Development Group

Prepared by:

Ralph Bouwmeester, P. Eng.

RBA File: S21023

JULY 22, 2022



**R. BOUWMEESTER & ASSOCIATES**

Sun & Shadow Position Specialists

165 Browning Trail, Barrie ON Tel/Fax (705) 726-3392

Web: [www.sunposition.com](http://www.sunposition.com) Email: [rba@sunposition.com](mailto:rba@sunposition.com)

1. This report should be read in conjunction with shadow study Drawings RH-1 and SS-1 to SS-12 all dated July 22, 2022.
2. Site latitude and longitude used for this study are based on the latitude and longitude of the subject site as follows:  
  
Latitude: 43° 13' 25" N (43.2236° N)  
  
Longitude: 79° 51' 14" W (79.8539° W)
3. Time Zone: Eastern  
  
Daylight Time: UT – 4 hours (applies on Mar 21 and Sep 21)
4. Site Orientation: North Limit Mohawk Road N71°43'55"W (UTM Grid)

The bearing of the site's south boundary (north limit of Mohawk Road) is shown as N71°43'55"W (UTM Grid) on a Topographic Survey dated November 1, 2021, by A.T. McLaren Limited Legal and Engineering Surveys. The conversion between grid bearings (as used in the City's mapping which is referenced to UTM Zone 17, NAD83) and astronomic bearings applicable to this site is shown on the north arrow in the diagrams. Shadow directions in this study are referenced to True (Astronomic) North.

5. The base plan used in this analysis was obtained from the City of Hamilton open data mapping portal. The 3D massing model of the proposal was provided by Graziani + Corazza Architects.
6. Shadows are shown at ground level on existing terrain and reflect changes in grade as depicted by the contours shown on the diagrams. The buildings were set on the terrain with finished ground floor elevations (FFE) set per the Graziani + Corazza architectural plans.
7. The shadow study includes hourly test times before and after solar noon including solar noon, 1.5 hours after sunrise, and 1.5 hours before sunset on Mar 21 and Sep 21 per "Terms of Reference: Shadow Impact Study for Downtown Hamilton" (Appendix "F" to Report PED18074).
8. Review of Shadow Drawings

The current zoning permits a building height of 14m with minimum setbacks of 4.5m to the west (i.e. interior side yard) and 7.5m to the north (i.e. rear yard). As-of-right shadowing is generally described in the sections that follow.

The proposed perimeter 3-storey townhouses are generally about 9m in height and set back a little over 7m from the property lines.

Based on the above, shadows from the proposed townhouses will not reach as far into the adjacent back yards as would as-of-right. This is particularly true to the west where the as-of-right setback is less than proposed.

Since 3D massing information for existing buildings is not available, actual shadow coverage will be less than shown in certain cases. Existing shadowing is generally described in the sections that follow.

In the descriptions that follow, the words 'shadow', 'shadows' and 'shadowing' mean 'incremental shadow', 'incremental shadows' and 'incremental shadowing', unless specified otherwise. And it should be noted that 'incremental' means new net shadowing over and above existing and as-of-right permissions.

The proposed shadows are described below.

#### Mar 21

At 8:51 AM, shadows fall to the west reaching across the rear yards of the adjacent lots. As noted above, as-of-right shadows would reach further by a factor of about 1.5x plus 3m (due to the greater permitted height and lesser permitted setback). Shadows from the proposed taller buildings within the site reach across East 27<sup>th</sup> Street to the front yards of some dwellings on the west side, and beyond to a portion of the Burkholder United Cemetery. Shadowing of rear yards west of East 27<sup>th</sup> Street is limited due to self-shadowing by dwellings on those lots.

At 9:26 AM, shadows from the towers no longer reach the cemetery but rather reach the front yards of a couple of dwellings on the west side of East 27<sup>th</sup> Street. As compared to as-of-right, there is no new shadowing on the adjacent rear yards to the west.

At 10:26 AM, shadows fall solely on the adjacent rear yards, however, new shadowing, from Tower A only, is negligible. The remaining shadows are absorbed by as-of-right.

From 11:26 AM to 1:26 PM, the proposed shadows generally remain within the site.

At 2:26 PM, shadows from the north tier of townhouses just begin to cross the property line, however, these shadows fall within the permitted reach of as-of-right shadows. All tower shadows remain within the site.

At 3:26 PM, the north townhouse shadows reach about 4m into the adjacent lots to the north. As-of-right shadows would almost reach the three closest dwellings. 3:26 PM is the first test time at which the shadows fall into the Upper Sherman Avenue right-of-way.

At 4:26 PM, the north townhouse shadows reach about 6m into the adjacent lots to the north and as-of-right shadows would reach the three closest dwellings. Shadows from Tower D reach northeast across Upper Sherman Avenue to the front yards of three dwellings across the street. Tower C shadows reach a portion of the front yard of the Community of Christ Church on the southeast corner of Upper Sherman Avenue and Cameo Avenue. They also reach the front yards of the two lots on the northeast corner. Given the location of a large cedar hedge along the north side of Cameo Avenue and the self-shadowing by the dwellings and garages on these lots, new net shadowing is limited. The shadows do not reach the west-facing rear yards of the lots fronting onto the west side of Carmen Avenue.

At 5:26 PM, the north townhouse shadows reach about 9m into the adjacent lots to the north and just reach several of the dwellings. Again, as-of-right shadows reach further. Shadows reach the front yards of the church and eight dwellings across Upper Sherman Avenue. The church has no west or south-facing windows that could be impacted by the proposal. Shadows extend north-east across three tiers of lots east of Upper

Sherman Avenue and north of Cameo Avenue. Allowing for self-shadowing due to dwellings and garages, we expect new shadowing on only the west-facing rear yards of the middle tier. The shadows do not reach Macassa Park.

At 6:03 PM, that is, 1.5 hours before sunset, the north townhouse shadows reach about 13m into the adjacent lots to the north. As before, as-of-right shadows would reach further. This is the only test time at which shadows reach Macassa Park. They originate from Towers D and H and extend a maximum of about 15m into the park although some of the shadows may be from the existing homes and garages along the park’s south boundary. We do not expect the shadows to reach the soccer fields.

Sep 21

Sep 21 shadows are quite similar to those on Mar 21; therefore, our Mar 21 comments generally apply to Sep 21 at the equivalent times of day.

9. Summary:

- a) Incremental shadows are off the opposite sidewalk of East 27<sup>th</sup> Street on Mar 21 before the 10:26 AM test time (and the 10:12 AM test time on Sep 21). The opposite sidewalk of Mohawk Avenue is not impacted by shadows from the proposal. Proposed shadows do not reach the opposite sidewalk of Upper Sherman Avenue until the 3:26 PM test time on Mar 21 (3:12 PM on Sep 21). Therefore, as required by the City, 3 hours of sun coverage is provided between 10:00 AM and 4:00 PM as measured from Mar 21 to Sep 21 on public sidewalks.
- b) We have identified no “public and private outdoor amenity space such as patios, sitting areas, and other similar programs” within the reach of the proposed shadows on the test dates and times.
- c) We have identified no “public plazas, parks and open spaces, school yards, and playgrounds” within the reach of the proposed shadows on the test dates and times save and except the minor shadowing on Macassa Park at 6:03 PM on Mar 21 (5:48 PM on Sep 21) as identified earlier.
- d) The proposed shadows do not reach any of the “primary gathering spaces” identified in the City’s Terms of Reference.
- e) Finally, shadowing of the public realm and neighbouring properties is minor and meets the intent of the City’s policies.

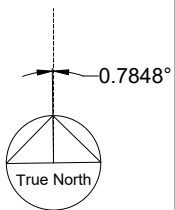


View of the area subject to morning and mid-day shadows  
Looking NW



View of the area subject to mid-day and afternoon shadows  
Looking NE

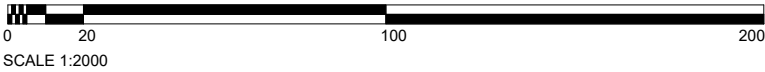
- NOTES:
- 1. SHADOWS INCLUDE PARAPETS, BALCONY SLABS & RAILINGS, AND ROOF-TOP FEATURES, WHERE APPLICABLE.
  - 2. BUILDING HEIGHTS ARE GIVEN IN THE NUMBER OF STOREYS.
  - 3. BUILDING HEIGHTS WERE DERIVED FROM A 3D MODEL AND PLANS BY GRAZIANI + CORAZZA ARCHITECTS.
  - 4. SHADOWS ARE SHOWN ON EXISTING TERRAIN AND REFLECT CHANGES IN GRADE AS DEPICTED BY THE CONTOURS SHOWN.
  - 5. BASE MAPPING OBTAINED FROM CITY OF HAMILTON OPEN DATA PORTAL.
  - 6. SITE SURVEY DATA PROVIDED BY A.T. McLAREN LIMITED.



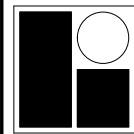
KEY PLAN & PROPOSED HEIGHTS

GEOGRAPHIC SITE LOCATION:  
LATITUDE: 43° 13' 25" N  
LONGITUDE: 79° 51' 14" W

TIME ZONE:  
EASTERN  
- STANDARD TIME (EST) (UT - 5 hrs)  
- DAYLIGHT TIME (EDT) (UT - 4 hrs)



KEY PLAN & HEIGHTS  
SUN SHADOW STUDY  
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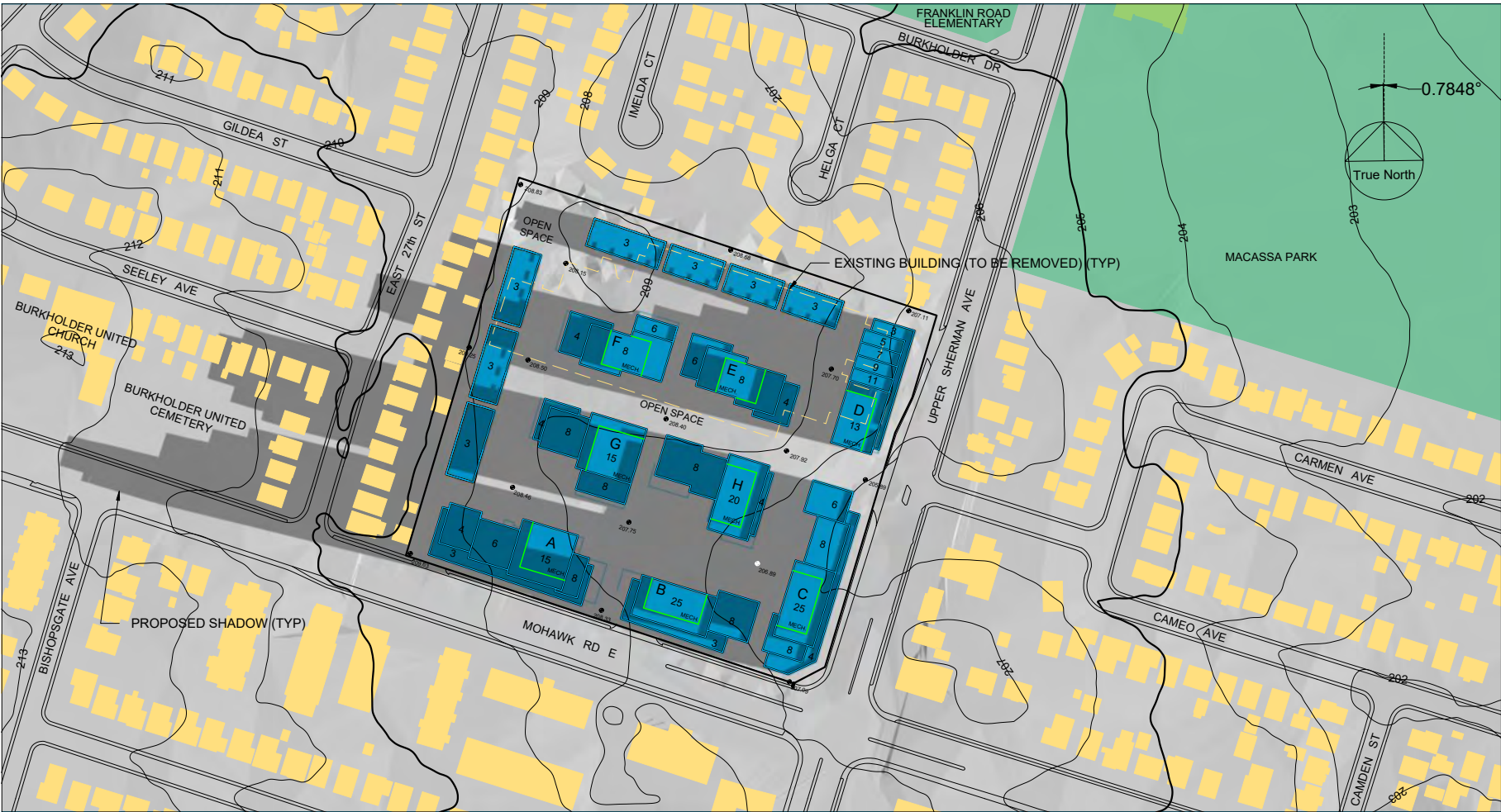


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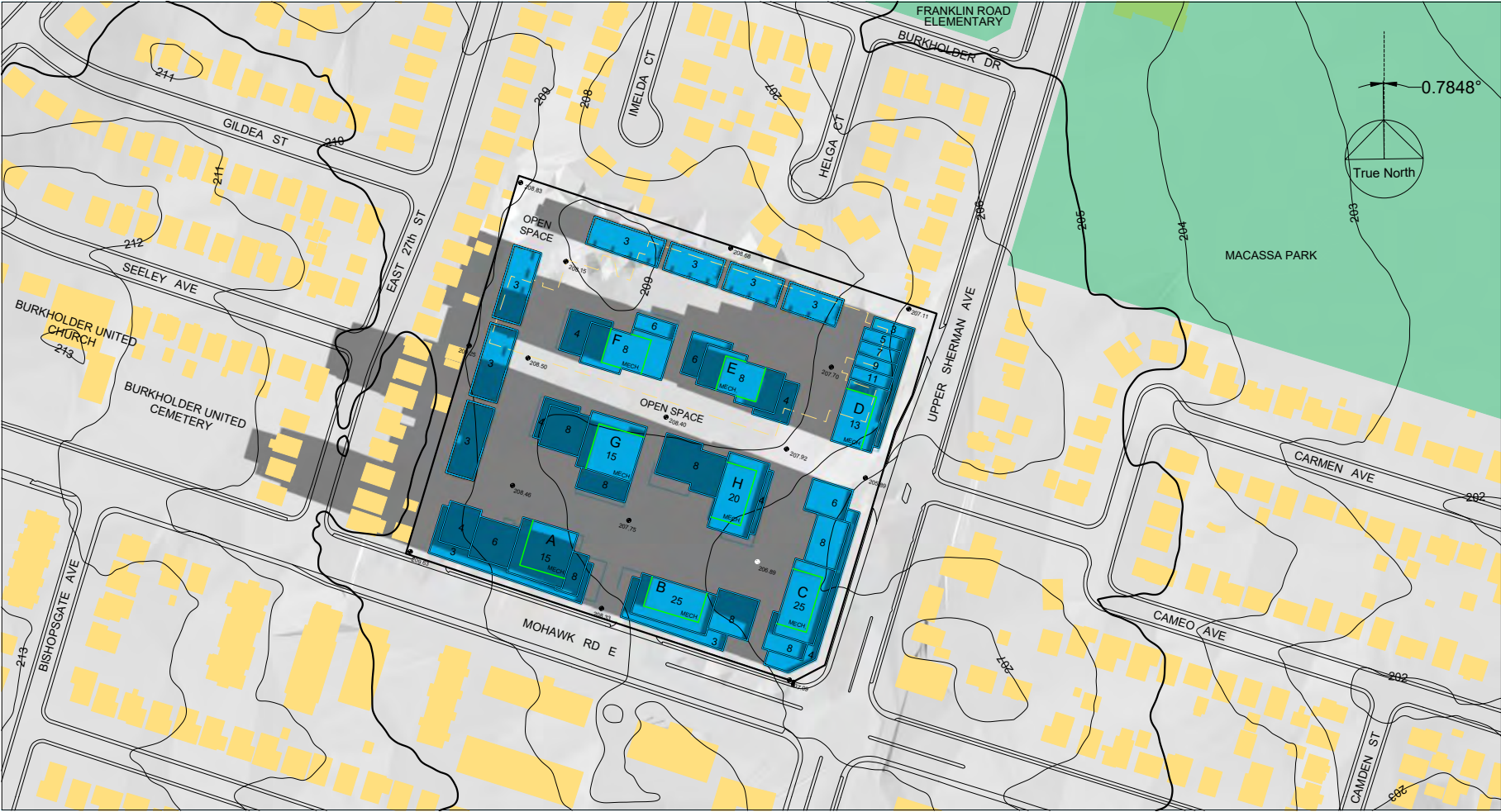
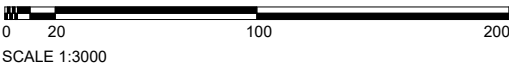
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Drawing No.:	RH-1





8:51 AM<sup>EDT</sup>



9:26 AM<sup>EDT</sup>

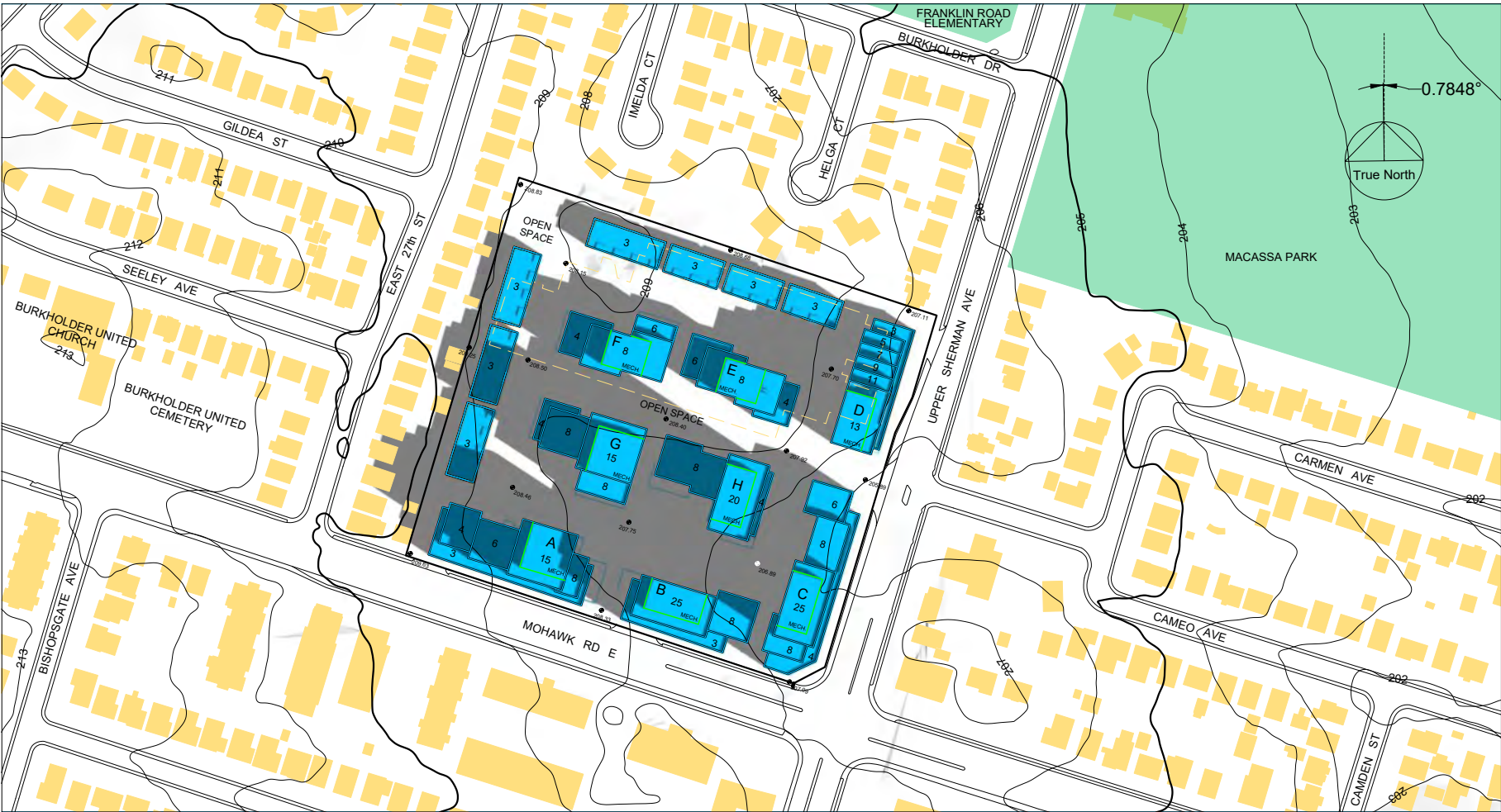
MAR 21

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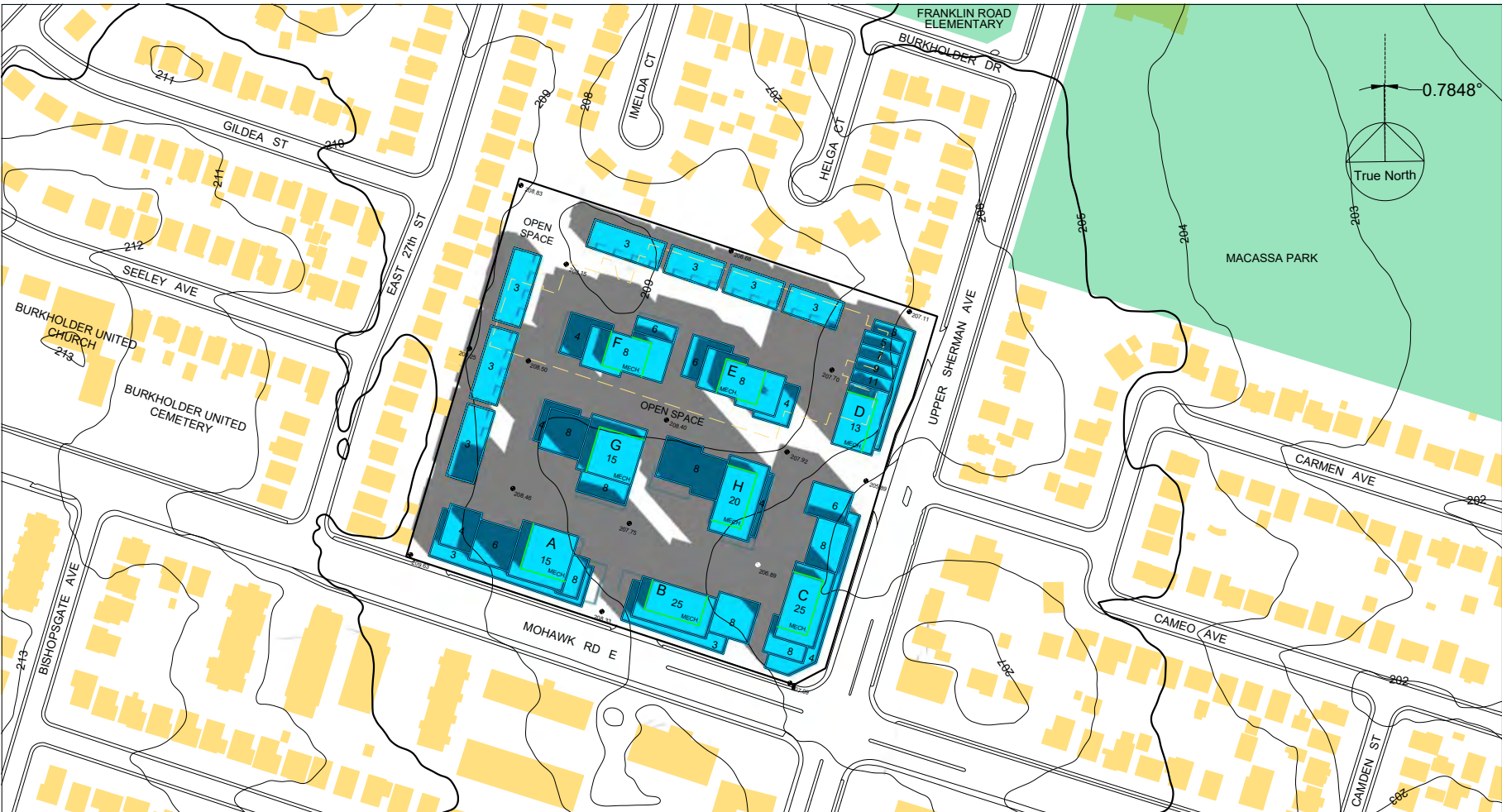
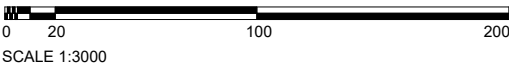
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10:26 AM<sup>EDT</sup>



11:26 AM<sup>EDT</sup>

MAR 21

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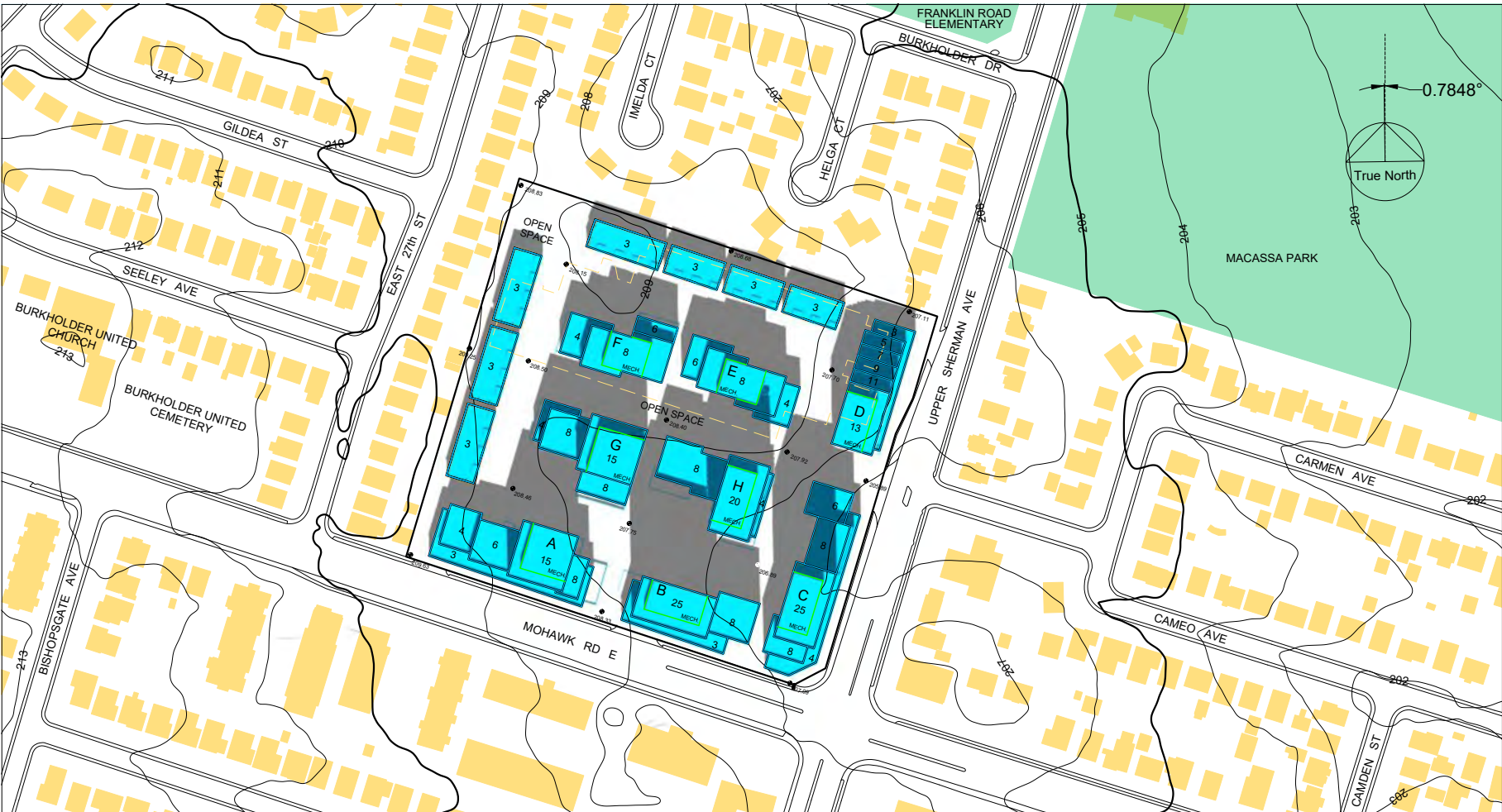
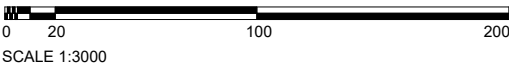
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12:26 PM<sup>EDT</sup>



1:26 PM<sup>EDT</sup>

MAR 21

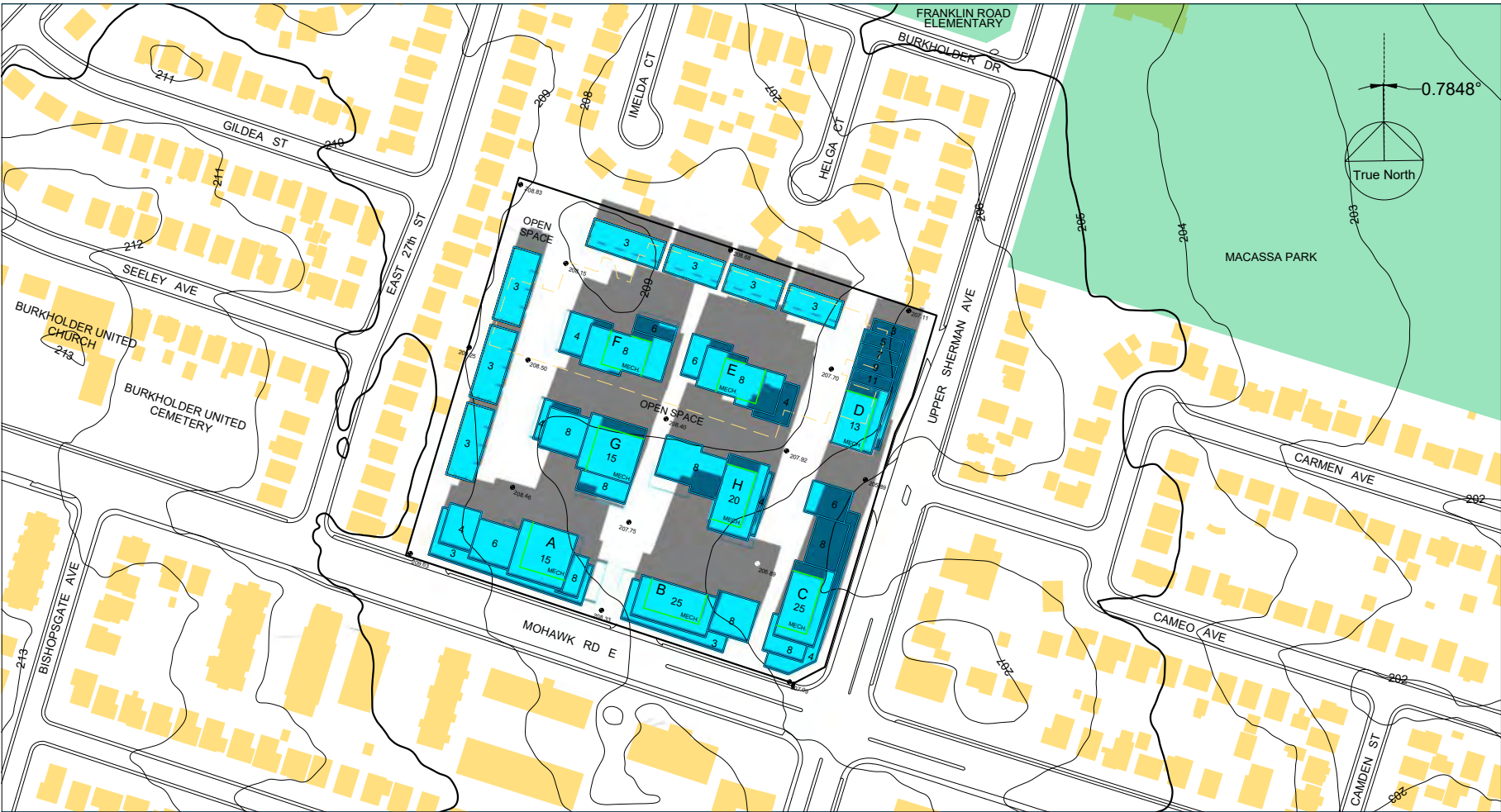
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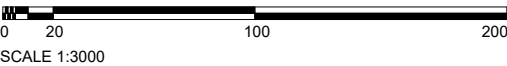
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2:26 PM<sup>EDT</sup>



3:26 PM<sup>EDT</sup>

MAR 21

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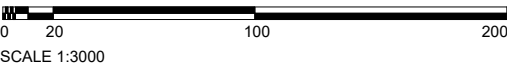
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4:26 PM<sup>EDT</sup>



5:26 PM<sup>EDT</sup>

MAR 21

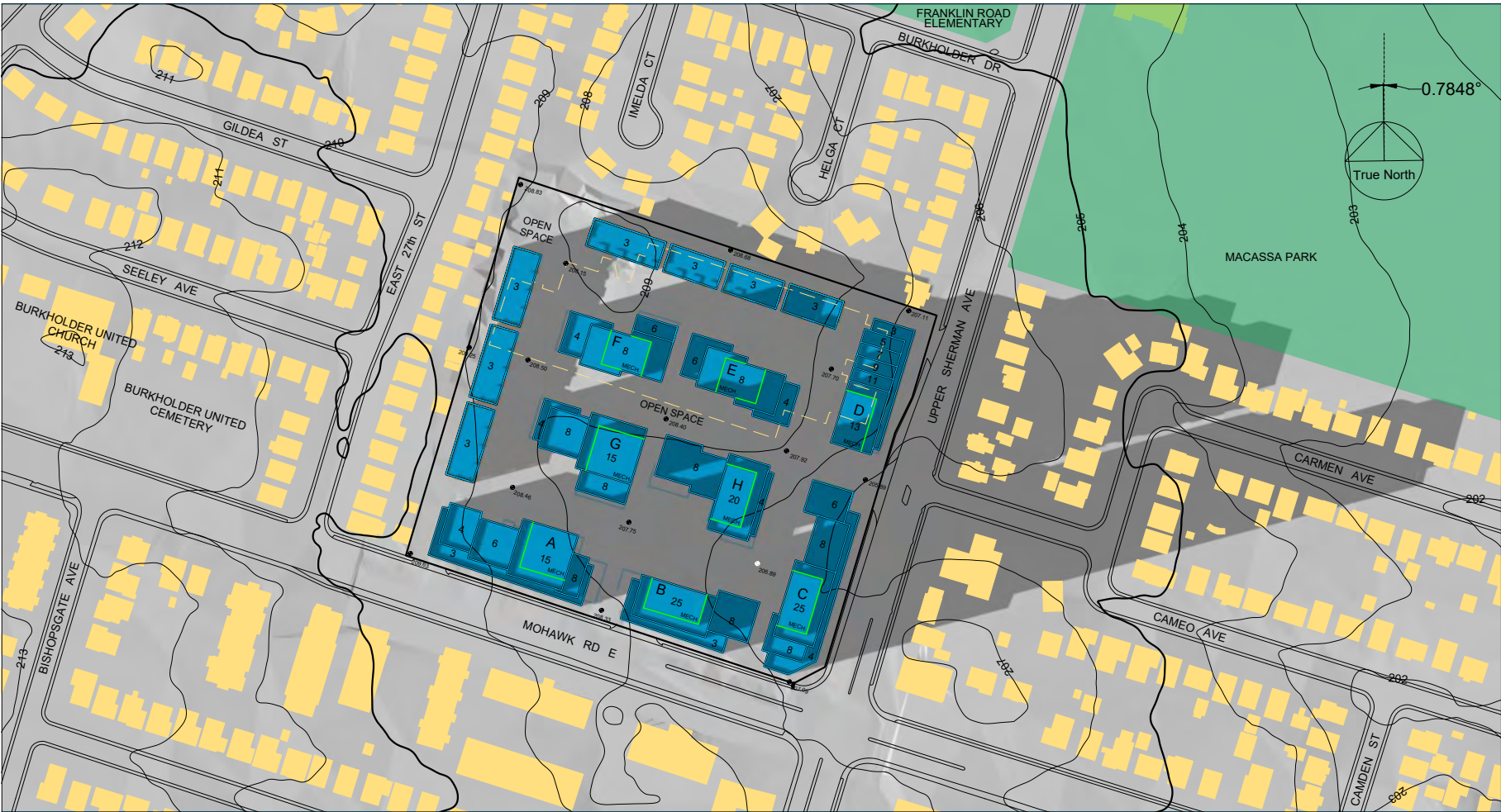
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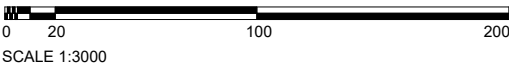
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SS-5



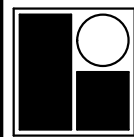


6:03 PM<sup>EDT</sup>



MAR 21

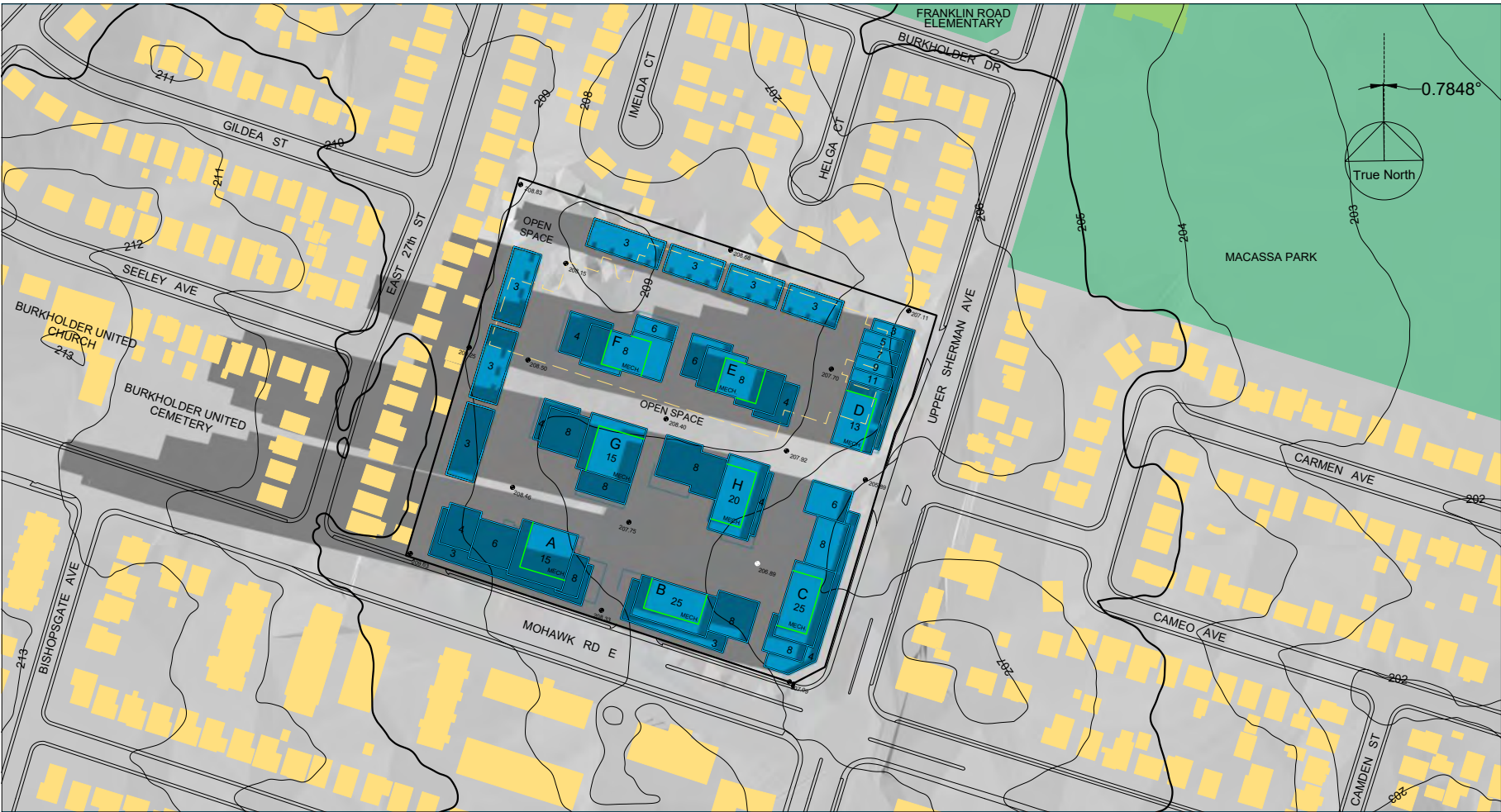
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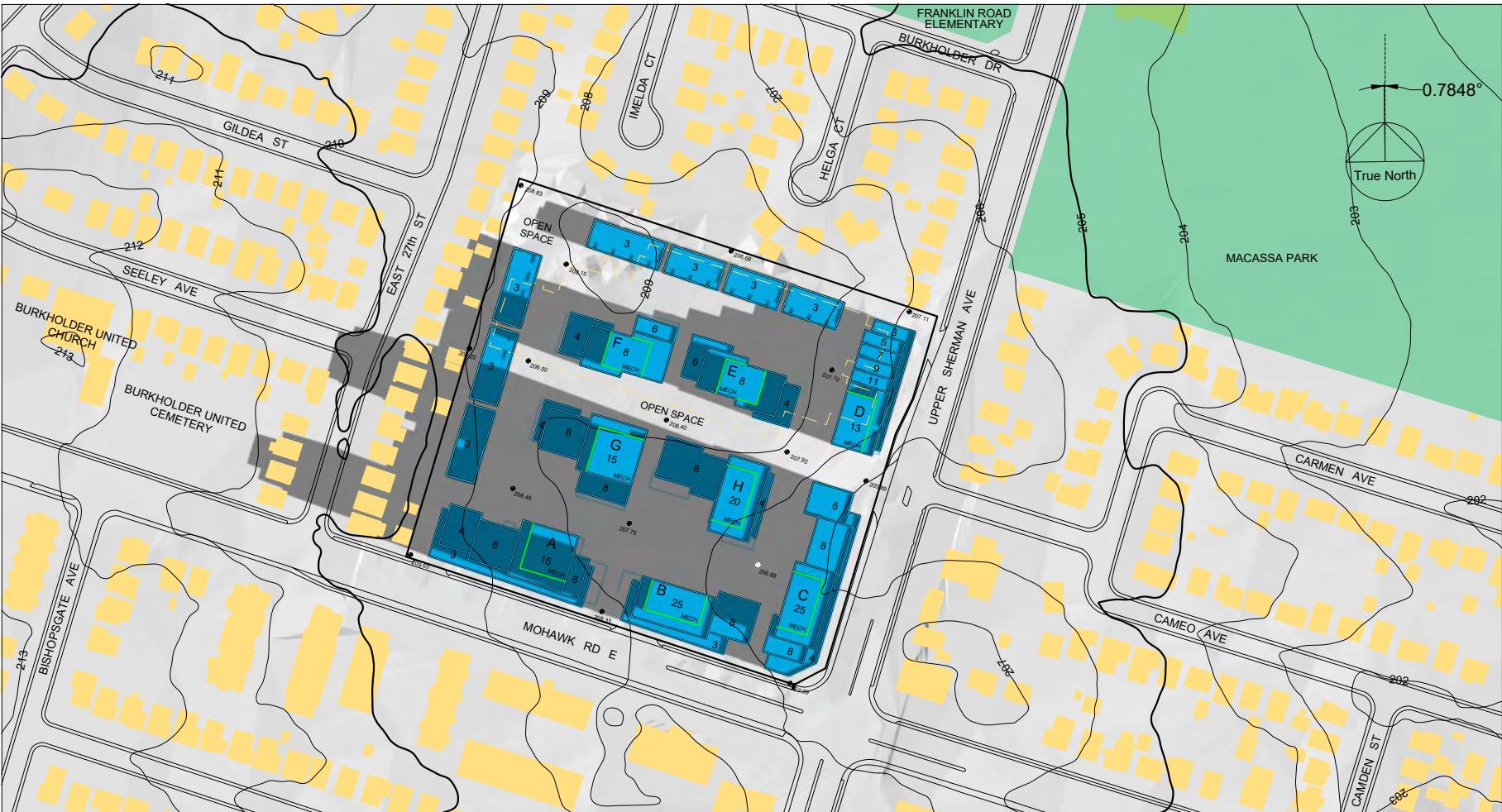
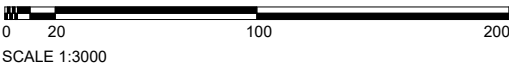
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8:36 AM<sup>EDT</sup>



9:12 AM<sup>EDT</sup>

SEP 21

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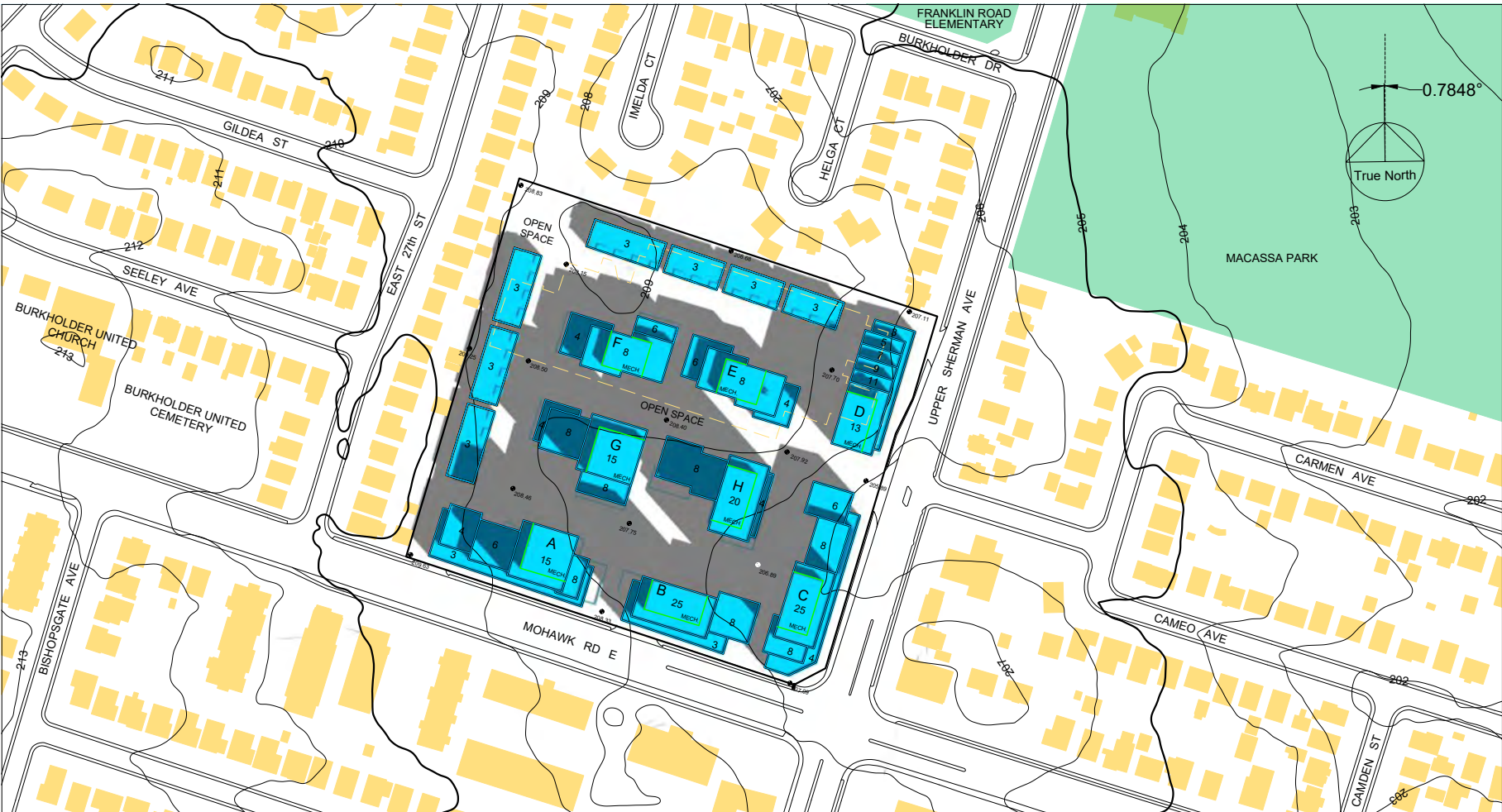
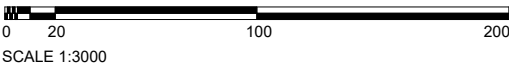
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10:12 AM<sup>EDT</sup>



11:12 AM<sup>EDT</sup>

SEP 21

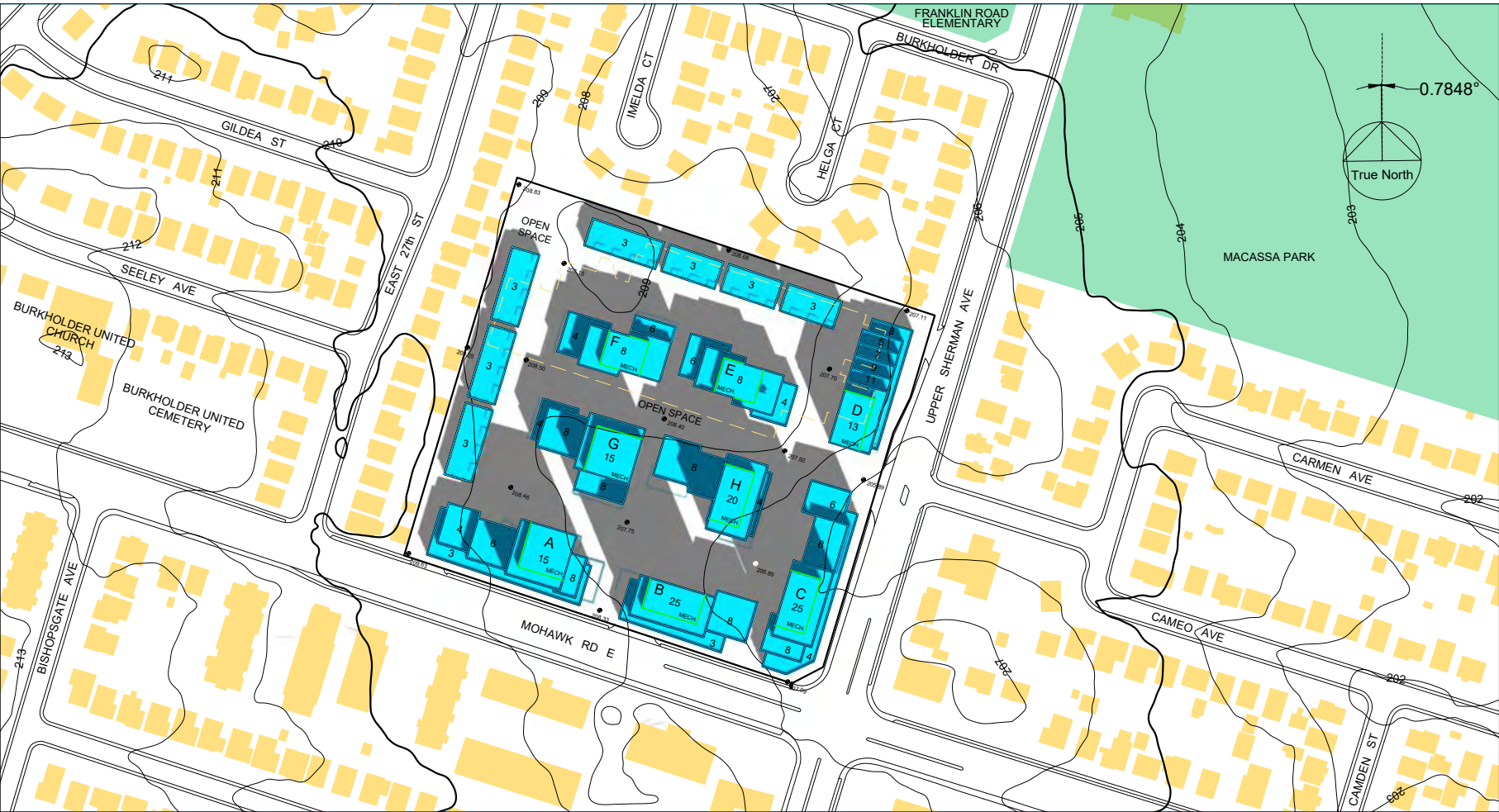
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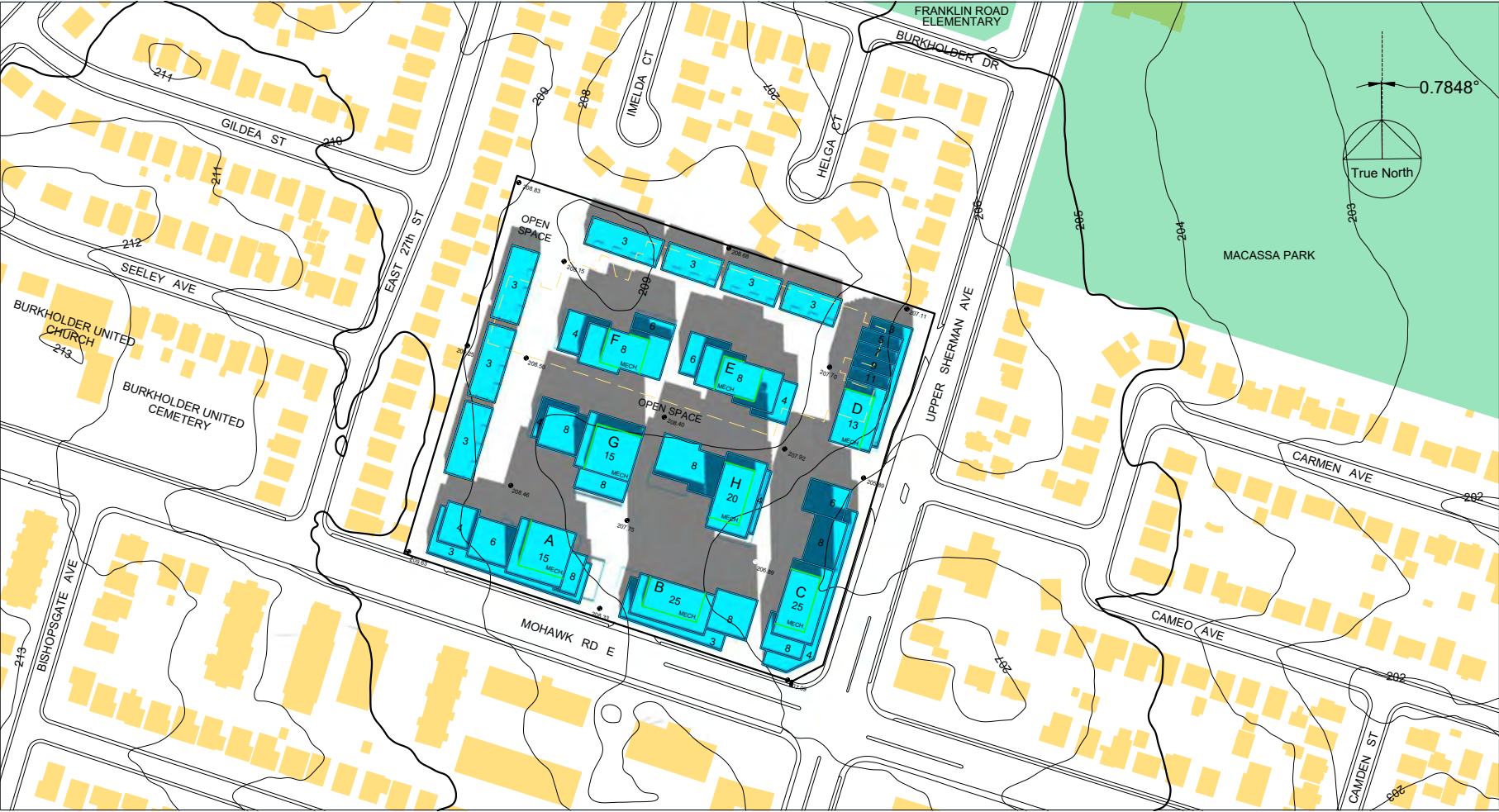
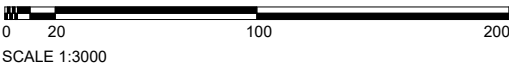
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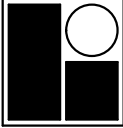
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1:12 PM<sup>EDT</sup>

SEP 21

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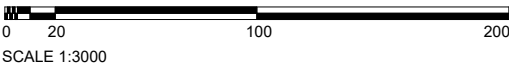
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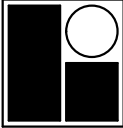
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3:12 PM<sup>EDT</sup>

SEP 21

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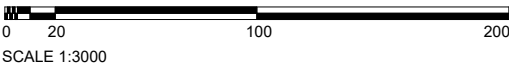
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4:12 PM<sup>EDT</sup>



5:12 PM<sup>EDT</sup>

SEP 21

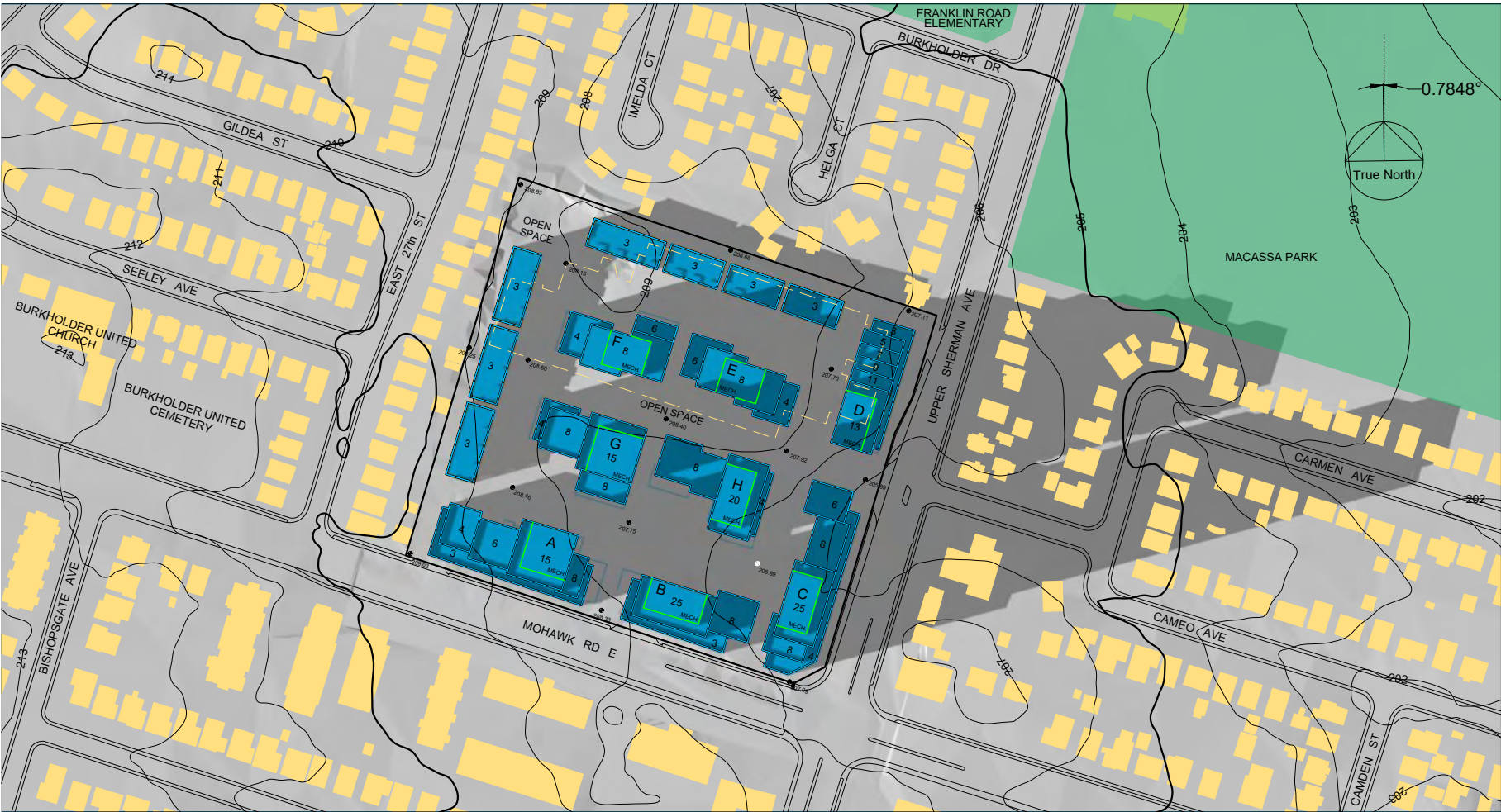
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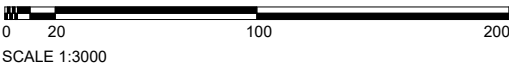
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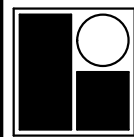


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SEP 21

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SS-12