

240925_ClarksonGO: Shadow Study

Notes developed referencing the City of Mississauga’s “Urban Design Terms of Reference: Standards for Shadow Studies, June 2014”

Project: Clarkson Go, Mississauga

- The site latitude and longitude were used in shadow drawings, and the astronomic north was determined using Rhino.
- The study assessed the new shadow impacts on June 21, September 21, and December 21, conducted at Solar Noon, and at hourly intervals before and after Solar Noon, up to and including 1.5hrs after sunrise and 1.5hrs before sunset. (A3.000, A3.001, A3.002, A3.003, A3.004, A3.005)

3.1 RESIDENTIAL PRIVATE OUTDOOR AMENITY SPACES

Proposed shadows must not exceed **one hour duration (two consecutive hourly test times)** on areas such as private rear yards, decks, patios, and pools of surrounding residential dwellings on June 21 and Sept 21.

For Criteria 3.1, the proposed shadows do not hit the “No Impact Zone” for more than two consecutive hourly test times on June 21. On the other hand, on September 21 shadow from the proposed development hit portions of the south-east townhouse complex’s private outdoor amenity (private rear yards) at 16:12, 17:12 and 17:48.

3.2 COMMUNAL OUTDOOR AMENITY AREAS

Included in the surrounding of our site: kids play areas, park features, senior outdoor areas, outdoor amenity areas associated with commercial + employment areas.

1. SURROUNDING:

This criterion applies to public amenity areas and common outdoor amenity areas that are part of a proposed or existing development. These areas include:

- Twin Spruce + Centennial Park
- The Walden Club
- Western Residential Playground + Outdoor Amenity
- Eastern Neighborhood Playground
- SE Outdoor Amenity (previously outdoor patios, currently vacant lot)

**JUNE 21:
SURROUNDING AREA STUDY**

June 21 requires full sun at least half the time, or 50% sun coverage all the time.

TIME	AREA AFFECTED BY SHADOW
7:07	
7:20	
8:20	
9:20	
10:20	
11:20	
12:20	
13:20	
14:20	
15:20	
16:20	SE Outdoor Amenity
17:20	SE Outdoor Amenity
18:20	SE Outdoor Amenity
19:20	SE Outdoor Amenity
19:33	SE Outdoor Amenity

**SEPT 21:
SURROUNDING AREA STUDY**

Sept 21 requires full sun at least half the time, or 50% sun coverage all the time.

TIME	AREA AFFECTED BY SHADOW
8:35	
9:12	
10:12	
11:12	
12:12	
13:12	
14:12	
15:12	Twin Spruce + Centennial Park
16:12	Twin Spruce + Centennial Park, SE Outdoor Amenity (restaurant patios)
17:12	SE Outdoor Amenity (restaurant patios), Eastern Neighbourhood Playground
17:48	SE Outdoor Amenity (restaurant patios), Eastern Neighbourhood Playground

**DEC 21:
SURROUNDING AREA STUDY**

Dec 21 requires full sun at least half the time, or 50% sun coverage all the time.

TIME	AREA AFFECTED BY SHADOW
9:19	
10:17	
11:17	
12:17	
13:17	Twin Spruce + Centennial Park
14:17	Twin Spruce + Centennial Park
15:15	Twin Spruce + Centennial Park

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For Criteria 3.2, the Key Plan (A3.000, A3.001, A3.002) outlines the public amenity areas and common outdoor amenity areas close to the proposed site. Shadows from the proposed development allow for full sun on the surrounding existing amenities for more than half the time on all required dates, following the criteria.

2. IN SUBJECT SITE (A3.003, A3.004, A3.005):

For Criteria 3.2, the plan outlines the communal indoor and outdoor amenities on the podium level. Shadows from the proposed development allow for more than 50% sun coverage on Phase 1. For Phase 2, the proposed development will provide more than 50% sun coverage on June 21st and December 21st, and 42% sun coverage on September 21st. See sun Shadow Explainer pages 5 & 7 in Appendix.

3.3 PUBLIC REALM CRITERIA: SUN ON THE OPPOSITE BOULEVARD

(3b Along Mixed Use, Commercial, Employment and High Density Residential Streets)

Sept 21 requires full sun on the opposite boulevard including the full width of the sidewalk for at least 5hrs that must include 2hr period between 12:12pm-2:12pm, and an additional 2hr period from either 9:12-11:12 or from 3:12-5:12

SEPT 21: PUBLIC REALM CRITERIA

TIME	AREA AFFECTED BY SHADOW
9:12	Clear
10:12	Clear
11:12	Clear
12:12	Clear
13:12	Southdown Rd
14:12	Southdown Rd

Criteria 3.3 (Opposite Boulevard) outlines there should be no shadow at specific intervals on September 21st along Mixed Use, Commercial, Employment and High-Density Residential Streets. On September 21, at 13:12,14:12pm, there is a portion of the proposed shadow hitting the opposite boulevard along Southdown Rd. See angular plane limit diagrams (A3.001)

3.3 PUBLIC REALM CRITERIA: PUBLIC OPEN SPACES, PARKS AND PLAZAS

(3b Along Mixed Use, Commercial, Employment and High Density Residential Streets)

Developments should be designed to provide **sun access factor** of at least 50% on public open spaces, parks and plazas on **Sept 21**

1. SURROUNDING (A3.001):

For Criteria 3.3 (Public Open Spaces), the proposed development has shadows hitting the adjacent Twin Spruce + Centennial Park, as well as the South-east public patio area. The sun access factor for these areas is above 50% which meets the public realm criteria.

2. IN SUBJECT SITE (A3.004):

For Criteria 3.3 (Public Open Spaces), the required portion (10% of site area) of the development parkland on the site has more than 50% sun coverage which meets the public realm criteria. See sun Shadow Explainer page 8 in Appendix.

3.4 TURF AND FLOWER GARDENS IN PUBLIC PARKS

Sept 21 requires turf and flower gardens in public parks to have direct sunlight for 7 test times.

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For Criteria 3.4, the proposed development shadows hit surrounding turf and flower gardens in public parks for a range of 4 hours. Therefore, the remaining 7 hours of sunlight meets the minimum requirement of 7 test times in full sunlight.

3.5 BUILDING FACES TO ALLOW FOR POSSIBILITY OF USING SOLAR ENERGY

Shadow impacts from proposed developments should not exceed **1hr in duration** on roofs, front, rear and exterior side walls of adjacent low rise (1-4 storeys) residential buildings on **Sept 21** in order to allow for possibility of harvesting solar energy. The "no impact zone" is a 3m radius around residential properties.

The south-eastern townhouse complex will be impacted by the proposed developments shadows during September 21. There is one additional hour (48mins) that the shadow is impacting the townhouses: 16:12, 17:12 and 17:48.

CONCLUSIONS

- Setbacks and step backs used in the design and placement of this development were referenced from the Mississauga Downtown Core: Built Form Standards, Schedule 21A. The minimum required 3m dimension for setbacks and step-backs were used throughout, with an additional step back of 1.5m for a total of 4.5m on the eastern side of the property's podium, to mitigate shadowing towards the east.
- Generous tower separation has been integrated in the design to limit shadow impacts on the parkland within the site and maximize access to sunlight and open views of the sky from the public realm.
- There are minimal shadow impacts on the public realm and surrounding properties. There is minimal shadowing resulting from the proposed development during December.

Clarkson GO REDEVELOPMENT

APPENDIX - Sun Shadow Explainer
September, 2024



Sun Shadow Explainer

Summary

Criteria 3.1.
Residential private outdoor amenity spaces

June 21st
Sun Coverage



Sept 21st
Sun coverage



Criteria 3.2.
Communal Outdoor Amenity Areas

Phase 1
West Block



Phase 2
East Block



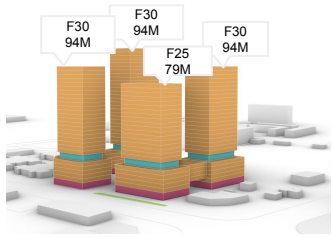
Criteria 3.3.
Public Realm

Parkland
Sun Coverage



Criteria 3.1. Residential private outdoor amenity spaces

Masterplan



SEPTEMBER 21st
16:12



17:12



17:48



Sun Coverage:

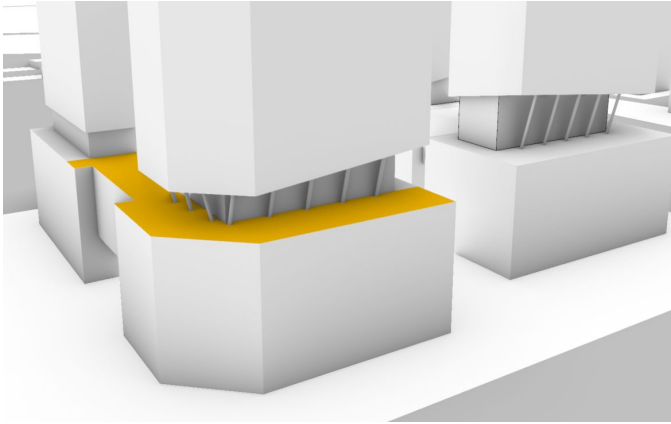
**Maximum GFA shadowing only 3 time period
(2 periods allowed)**

- Meets the criteria on June 21
- On September 21 shadows from the proposed development hit portions of the south-east townhouse complex's private outdoor amenity (private rear yards) at 16:12, 17:12 and 17:48.

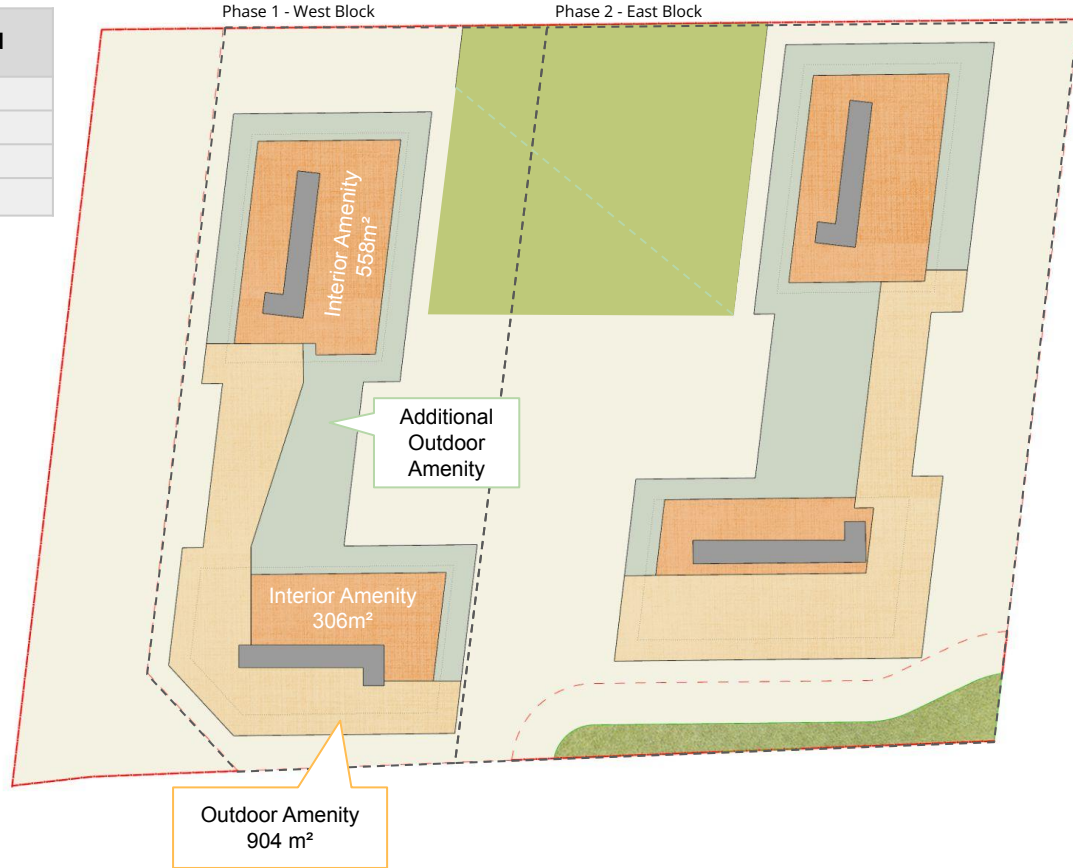
Criteria 3.2. Communal Outdoor Amenity Areas

Phase 1 - West Block

PHASE 1	MIN. REQUIRED	Proposed
Podium roof - level 7	2,066 m ²	2,716 m ²
Level 7 Indoor Amenity	1,033 m ²	864 m ²
Level 7 Outdoor Amenity	1,033 m ²	904 m ²
Level 7 Additional Outdoor Amenity		948 m ²



- Indoor Amenity
- Outdoor Amenity
- Parkland
- Additional Outdoor Amenity

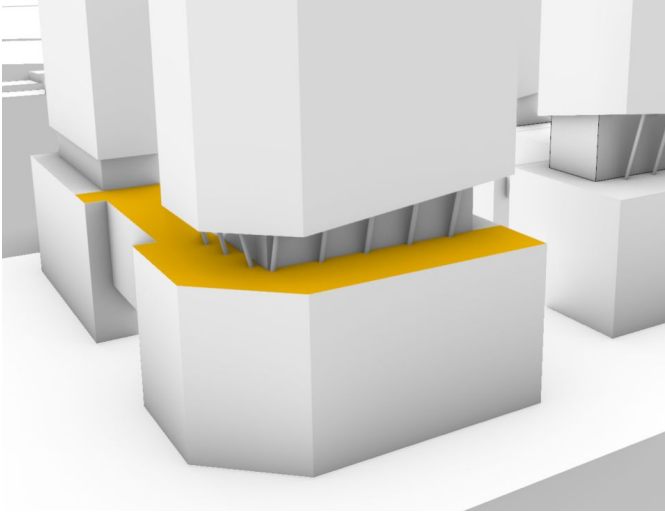


Criteria 3.2. Communal Outdoor Amenity Areas

Phase 1 - West Block

Sun Coverage:

- Shadows from proposed development allows for full sun on the podium amenity, for 50% sun coverage all the time on each of the following dates.



21-Jun	
TIME	
7:07	
7:20	
8:20	
9:20	
10:20	
11:20	
12:20	
13:20	
14:20	
15:20	
16:20	
17:20	
18:20	
19:20	
19:33	
AVG	50 % sun coverage

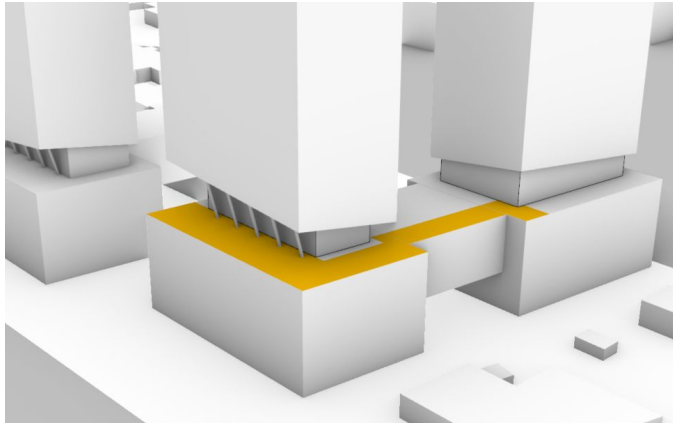
21-Sep	
TIME	
8:35	
9:12	
10:12	
11:12	
12:12	
13:12	
14:12	
15:12	
16:12	
17:12	
17:48	
AVG	65 % sun coverage

21-Dec	
TIME	
9:19	
10:17	
11:17	
12:17	
13:17	
14:17	
15:17	
AVG	90 % sun coverage

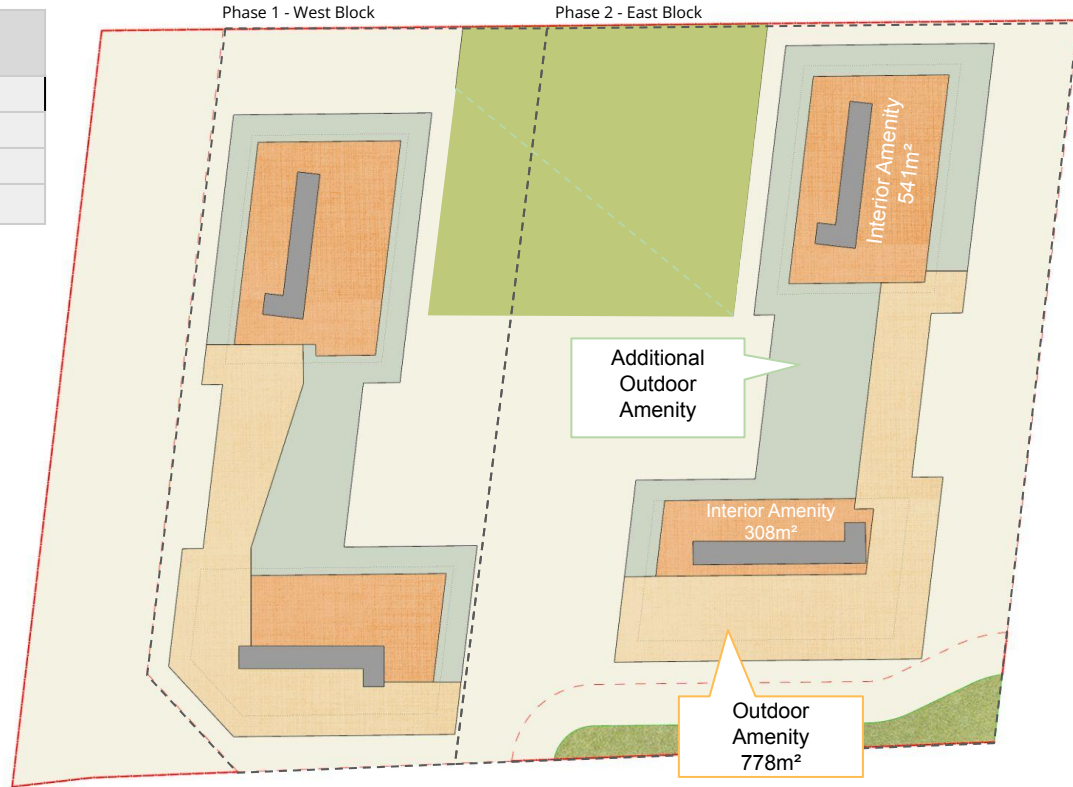
Criteria 3.2. Communal Outdoor Amenity Areas

Phase 2 - East Block

PHASE 2	MIN. REQUIRED	Proposed
Podium roof - level 7	1,907 m ²	2,798 m ²
Level 7 Indoor Amenity	953 m ²	849 m ²
Level 7 Outdoor Amenity	953 m ²	778 m ²
Level 7 Additional Outdoor Amenity		1,171 m ²



- Indoor Amenity
- Outdoor Amenity
- Parkland
- Additional Outdoor Amenity

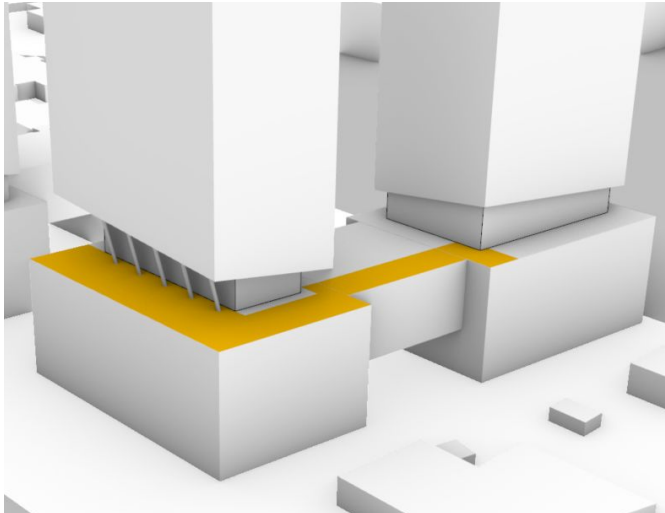


Criteria 3.2. Communal Outdoor Amenity Areas

Phase 2 - East Block

Sun Coverage:

- Shadows from proposed development allows for full sun on the podium amenity, for at least 50% on 21st June and 21st December and 42% sun coverage on 21 Sept.



21-Jun	
TIME	
7:07	
7:20	
8:20	
9:20	
10:20	
11:20	
12:20	
13:20	
14:20	
15:20	
16:20	
17:20	
18:20	
19:20	
19:33	
AVG	50

21-Sep	
TIME	
8:35	91.253759
9:12	91.253759
10:12	73.194119
11:12	62.029965
12:12	54.895623
13:12	48.000011
14:12	17.552181
15:12	10.05972
16:12	22.895548
17:12	17.820845
17:48	16.596972
AVG	42

21-Dec	
TIME	
9:19	
10:17	
11:17	
12:17	
13:17	
14:17	
15:17	
AVG	53

% sun coverage

% sun coverage

% sun coverage

Criteria 3.3. Public Realm Parkland

		Proposed Development Area (Net Site Area)	Parkland Coverage
Parkland	1,131 m ²	10,342 m ²	10.9%
Additional Parkland	619 m ²		6%
Total	1,780 m ²		17%

21-Sep	
TIME	CLEAR
8:35	
9:12	
10:12	
11:12	
12:12	
13:12	
14:12	
15:12	
16:12	
17:12	
17:48	
AVG	53 % sun coverage

- The parkland represent 10.9% of the net site area
- This area complies with sun coverage of 50% required



--- Net Site Area
--- Site Area