

1. This shadow study consists of this written report with attached Shadow Impact Study drawings dated **January 2021**.
2. Site latitude and longitude used for this study are as follows:
  - i. **Latitude:** 43° 32' 27" N (43.540726° N)
  - ii. **Longitude:** 79° 39' 24" W (79.656610° W)
3. **Time Zone:** Eastern
4. **Standard Time:** UT – 5 hours -applies on December 21st  
**Daylight Time:** UT – 4 hours -applies on June 21st and September 21st
5. **Test times**  
Please refer to Tables 1 – 3 attached. (Tables adapted from Mississauga's Urban Design Terms of Reference – Standards for Shadow Studies (June 2014))
6. **Site Orientation:**  
The astronomic bearing of the site's boundaries is shown on a plan of survey dated August 16, 2018 by Tarasick McMillan Kubicki Limited. This shadow analysis is based on this reference bearing.
7. The background 2D mapping was obtained using google earth. The architect, has provided the 3D model and architectural plans for the proposal dated **March 08, 2021**.
8. This shadow analysis is based on an assumed flat ground plane at elevation 108.293m. Building heights relate to this datum.
9. The shadow test times for each study date have been compiled onto multiple drawing sheets to facilitate the testing for compliance with the shadow criteria.
10. **Shadow Criteria:**
  - i. **Criterion 1 - Residential private amenity spaces – Jun 21 and Sep 21**  
Shadow impacts from proposed developments should not exceed one hour in duration on areas such as private 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 in the "No Impact Zone" i.e. within 7.5 m of an exterior wall of a dwelling that abuts private amenity space.
  - ii. **Criterion 2 - Communal Places where children play – Jun 21, Sep 21 and Dec 21**  
Shadows from proposed developments should allow for full sun on the following places at least half the time, or 50% sun coverage all the time, on each given date: school yards, tot-lots, play areas and park features such as sand boxes, wading pools, etc., and outdoor amenity areas used by seniors and those associated with commercial and employment areas. This criterion is met if the "sun access factor" is at least 50% on each of the test dates. This criterion

applies to public areas as well as those common outdoor amenity areas that are part of a proposed development.

- iii. **Criterion 3** - Public realm including sidewalks, open spaces and plazas - **Sep 21**
    - a. Sidewalks on low and medium-density residential streets - No incremental shade at 9:12, 10:12, 11:12, 15:12, 16:12 and 17:12 hours
    - b. Sidewalks on mixed-use, commercial, employment and high-density residential streets - No incremental shade at 12:12, 13:12, and 14:12, and either 9:12, 10:12, and 11:12 or 15:12, 16:12 and 17:12 hours
    - c. Public open spaces, parks and plazas - Sun Access Factor 50% minimum
  - iv. **Criterion 4** - Turf and flower gardens in public parks - **Sep 21**  
Full sun is required at 7 test times.
  - v. **Criterion 5** - Building faces to allow for the possibility of using solar energy – **Sep 21** This criterion is met if there is shadow impact for no more than two consecutive hourly test times in the “No Impact Zone” i.e. within 3m of the front, rear or exterior side walls of adjacent low-rise residential buildings.
11. **Review of Shadow Drawings vs. Shadow Criteria**
- i. **Criterion 1** – Based on the preliminary shadow analysis completed, there is no or minimal impact by the proposal shadows to residential private amenity spaces on June 21 and Sept 21.
  - ii. **Criterion 2** – There appears to be no public communal outdoor amenity areas, including the school yards or the parks north of the development, within the proposed development’s shadow
  - iii. **Criterion 3a** – The proposed development allows for full sunlight on the nearby low and medium density residential streets.
  - iv. **Criterion 3b** – Not Applicable  
**Criterion 3c** – We have identified no public open spaces or plazas within the proposed building shadow zone.
  - v. **Criterion 4** – We have identified no turf or flower gardens impacted in the shadow zone.
  - vi. **Criterion 5** – Based on the preliminary shadow analysis completed, shadows of proposed buildings appear to have no impact the exterior side walls of adjacent low-rise residential buildings.
12. **Description of Locations Not Meeting Shadow Criterion**
- i. **Criterion 1** – None
  - ii. **Criterion 2** – None
  - iii. **Criteria 3a to 3c** – None
  - iv. **Criterion 4** – None
  - v. **Criterion 5** – None
13. **In summary, the proposed development meets most of the criteria in place by the City of Mississauga’s Standards for Shadow Studies as described herein.**

Shadow Direction and Length			
Date: June 21	Azimuth (deg)	SLF (Ratio Length/Height)	Comments
Local Time (EST)			
5:37	235.73		Rise
7:07	250.48	4.1230	Rise + 1.5 hr.
7:20	252.58	3.5045	SN - 6hr.
8:20	262.02	2.0048	SN - 5hr.
9:20	272.04	1.3106	SN - 4hr.
10:20	283.79	0.8976	SN - 3hr.
11:20	299.52	0.6203	SN - 2hr.
12:20	323.67	0.4375	SN - 1hr.
13:20	0.00	0.3670	Solar Noon (SN)
14:20	36.32	0.4375	SN + 1hr.
15:20	60.47	0.6203	SN + 2hr.
16:20	76.21	0.8975	SN + 3hr.
17:20	87.96	1.3105	SN + 4hr.
18:20	97.98	2.0047	SN + 5hr.
19:20	107.42	3.5042	SN + 6hr.
19:33	109.41	4.0852	Set – 1.5 hr.
21:03	124.27		Set

Table 1 - Mississauga Sun Angle Data (June 21)

Shadow Direction and Length			
Date: September 21	Azimuth (deg)	SLF (Ratio Length/Height)	Comments
Local Time (EST)			
7:05	268.27		Rise
8:35	284.22	3.6329	Rise + 1.5 hr.
9:12	291.23	2.5132	SN - 4hr.
10:12	304.14	1.6445	SN - 3hr.
11:12	319.68	1.2181	SN - 2hr.
12:12	338.54	1.0011	SN - 1hr.
13:12	0.00	0.9329	Solar Noon (SN)
14:12	21.45	1.0022	SN + 1hr.
15:12	40.28	1.2205	SN + 2hr.
16:12	55.79	1.6495	SN + 3hr.
17:12	68.68	2.5255	SN + 4hr.
17:48	75.63	3.6493	SN – 1.5hr.
19:18	91.46		Set

Table 2 - Mississauga Sun Angle Table (Sept.21)

Shadow Direction and Length			
Date: December 21	Azimuth (deg)	SLF (Ratio Length/Height)	Comments
Local Time (EST)			
7:49	<b>302.37</b>		<b>Rise</b>
9:19	<b>319.05</b>	<b>4.8874</b>	<b>Rise + 1.5 hr.</b>
10:17	<b>331.25</b>	<b>3.1643</b>	<b>SN - 2hr.</b>
11:17	<b>345.21</b>	<b>2.5293</b>	<b>SN - 1hr.</b>
12:17	<b>0.00</b>	<b>2.3589</b>	<b>Solar Noon (SN)</b>
13:17	<b>14.79</b>	<b>2.5293</b>	<b>SN + 1hr.</b>
14:17	<b>28.75</b>	<b>3.1644</b>	<b>SN + 2hr.</b>
15:15	<b>41.06</b>	<b>4.9172</b>	<b>SN – 1.5hr.</b>
16:45	<b>57.63</b>		<b>Set</b>

Table 3 - Mississauga Sun Angle Data (Dec. 21)