

Shadow Impact Study:

4100 PONYTRAIL DRIVE

Proposed Residential Development

City of Mississauga

Prepared for: Lormel Homes

Prepared by: Turner Fleischer Architects Inc.

June 22nd, 2015

1. This shadow study consists of this written report together with attached Shadow Impact Study drawings dated **June 22nd, 2015**.
2. Site latitude and longitude used for this study are based on the latitude and longitude of the Mississauga Civic Centre as follows:

Latitude: 43° 38' 04" N (43.6343° N)

Longitude: 79° 35' 45" W (79.5945° 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 and dates are shown in Table 1 attached.
6. **Site Orientation:** Southeast limit of site N 53° 26' 56" E (astronomic); Southwest limit of site N 46° 30' 04" W (astronomic);

The astronomic bearing of the site's southeast and southwest boundary is shown on a plan of survey dated January 6, 2012, by HUNT Surveys Inc. This shadow analysis is based on this reference bearing.

7. The background 2D mapping was obtained from The City of Mississauga's web site. The architect, Turner Fleischer Architects Inc., provided the 3D model and architectural plans for the proposal dated June 17th, 2015.
8. This shadow analysis is based on an assumed flat ground plane at elevation 135 m. Building heights relate to this datum. The datum is the ground floor elevation of the proposed buildings and is representative of existing ground level in the area.
9. The shadow test times for each study date have been compiled onto single drawing sheets to facilitate the testing for compliance with the shadow criteria.

10. **Shadow Criteria:**

Criteria 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.

Criteria 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.

Criteria 3 - Public realm including sidewalks, open spaces and plazas - Sep 21

3a) 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

3b) 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

3c) Public open spaces, parks and plazas - Sun Access Factor 50% minimum

Criteria 4 - Turf and flower gardens in public parks - Sep 21

Full sun is required at 7 test times.

Criteria 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 3 m of the front, rear or exterior side walls of adjacent low-rise residential buildings.

11. Review of Shadow Drawings vs. *Shadow Criteria*

Criteria 1 – There are no residential private amenity spaces impacted by proposal shadows for more than two consecutive hourly times on Jun 21 and Sep 21.

Criteria 2 – There are no communal outdoor amenity areas within the proposed shadow zone.

We have identified no outdoor amenity areas used by seniors or any associated with commercial or employment areas within the shadow zone of proposal.

Criteria 3a – A portion of sidewalk on north side of Ponytrail Dr is shaded on 17:12 , no increment from 9:12~16:12, A portion of Sidewalk on south side of Ruthburn Rd and Ponytrail Dr is shaded at time: 9:12~17:12.

Criteria 3b – No sidewalks on mixed-use, commercial, employment and high-density residential streets impacted by proposal shadows.

Criteria 3c – Shaver Trail is at the southeast side of site. The shadows by proposal do not reach the trail from 8:35 to 16:12 (see Dwg. SS-2).

We have calculated its Sun Access Factor as follows: Area of park = 12,137 sm

Area in sun:

17:12 pm = 12,010 sm

17:48 pm = 10,746 sm

Total = 22,756 sm

Average sun over the 11 test times = $(22,756 + (9 \times 12,137)) / 11 = 11,999$ sm percent
average sun over total park area = $11,999 / 12,137 = 98.9\%$

Therefore, the Sun Access Factor = 98.9% on Sep 21.

We have identified no public open spaces or plazas within the proposed building shadow zone.

Criteria 4 – shadows by proposal don't reach Shaver Trail from 8:35 to 16:12., 9 test times

Criteria 5 – Shadows of proposed buildings do not impact the defined “No Impact Zone” for more than 2 consecutive hourly test times on Sep 21.

12. Description of Locations Not Meeting the Shadow Criteria:

Criteria 1 – none;

Criteria 2 - none

Criteria 3

a) – Shadow increment by proposal

b) none

c) none

Criteria 4 - none

Criteria 5 - none

13. In summary, this proposal generally meets the Standards for Shadow Studies for the City of Mississauga as described herein.

Table 1 - Mississauga Sun Angle Data

Shadow Direction and Length		
Date	Az	SLF
21-Jun	(deg)	ratio length/height
Local Time EDT		
5:37	235.73	
7:07	250.48	4.1230
7:20	252.58	3.5045
8:20	262.02	2.0048
9:20	272.04	1.3106
10:20	283.79	0.8976
11:20	299.52	0.6203
12:20	323.67	0.4375
13:20	0.00	0.3670
14:20	36.32	0.4375
15:20	60.47	0.6203
16:20	76.21	0.8975
17:20	87.96	1.3105
18:20	97.98	2.0047
19:20	107.42	3.5042
19:33	109.41	4.0852
21:03	124.27	
Date	Az	SLF
21-Sep	(deg)	
Local Time EDT		
7:05	268.27	
8:35	284.22	3.6329
9:12	291.23	2.5132
10:12	304.14	1.6445
11:12	319.68	1.2181
12:12	338.54	1.0011
13:12	0.00	0.9329
14:12	21.45	1.0022
15:12	40.28	1.2205
16:12	55.79	1.6495
17:12	68.68	2.5255
17:48	75.63	3.6493
19:18	91.46	
Date	Az	SLF
21-Dec	(deg)	
Local Time EST		
7:49	302.37	
9:19	319.05	4.8874
10:17	331.25	3.1643
11:17	345.21	2.5293
12:17	0.00	2.3589
13:17	14.79	2.5293
14:17	28.75	3.1644
15:15	41.06	4.9172
16:45	57.63	