



354 King Street West, Hamilton – Champlain Development Corp.

Shadow Impact Study – Downtown Hamilton
Official Plan and Zoning By-law Amendment
Application

2019-11-28

Attention: Darko Vranich
Champlain Development Corporation
366 King Street West
Hamilton, Ontario L8P 1B3

Date: November 28, 2019

Regarding: 18025, 354 King St West - Shadow Impact Study

Dear Darko Vranich of Champlain Development Corporation,

1. INTRODUCTION

This report has been prepared by SRM Architects Inc. in conjunction with the attached drawings to complete the Shadow Impact Study for the proposed development at 354 King Street West in Hamilton in order to satisfy the requirements of the municipality for Official Plan and Zoning By-law Amendment. The following report is a summary of our methodology and finding through the study.

2. METHODOLOGY FOR ACQUIRING ACCURATE SHADOW DATA:

Site latitude and longitude was established using Revit software which can accurately locate the project based on the address. This is the same as the latitude of N43 degrees and longitude of W79 degrees established within the Terms of Reference. The True north was determined through the use of a survey. The base plan used was a 2018 satellite image sourced from Google Earth. Surveyed and proposed Geodetic Elevation data for the project has also been utilized in completing the solar study. Please note however that the geodetic elevations are only represented for the extents of the proposed development and the peripheral site and massing exist on only 1 plane in relation to average grade around the site. Topography data for the entire lands displayed is not available in manner that supports an efficient production of the study.

3. STUDY RESULTS

Between the hours of 10:00AM and 4:00PM on March 21st and September 21st, the shadow study indicates that the proposed development allows for 6 hours of sun coverage on nearby public and private amenity spaces including the outdoor amenity space at 400 King Street West and 75 Queen Street North. Additionally, the patio space on the proposed development's site receives 5 hours of full sun coverage from 10:00AM to 3:00PM to as measured from March 21st to September 21st.

However, between 10:00AM and 4:00PM on March 21st and September 21st, the proposed development fails to meet the minimum 3 hours of full sun coverage as the proposed development casts shadows on public sidewalks north of the site as shown in the following Table 3(a):

Table 3(a):

Time	Street	~Length of Sidewalk within Proposed Development Shadow	Time	Street	~Length of Sidewalk within Proposed Development Shadow
March 21 st 10:51AM	Ray St N & Market St Intersection	190 metres	Sept 21 st 10:36AM	Ray St N & Market St Intersection	208 metres
March 21 st 11:51AM	Market St	86 metres	Sept 21 st 11:36AM	Market St	84 metres
March 21 st 12:51PM	Market St	27 metres	Sept 21 st 12:36 PM	Market St	26 metres
March 21 st 1:27PM	Market St	23 metres	Sept 21 st 1:13PM	Market St	24 metres
March 21 st 1:51PM	Market St	18 metres	Sept 21 st 1:36PM	Market St	31 metres
March 21 st 2:51PM	Queen St N	16 metres	Sept 21 st 2:36PM	Queen St N	32 metres
March 21 st 3:51PM	Queen St N & Market St Intersection, Napier St	115 metres	Sept 21 st 3:36PM	Queen St N & Market St Intersection	121 metres

The majority of shadows are shown to be cast onto the sidewalks on Market St. However, with the 8 proposed multiple dwellings located along Market St on the northern-most edge of the site, avoiding casting any shadows onto Market St sidewalks would be difficult to achieve due to their northern exposure. While the proposed development casts shadows onto the sidewalks at the Ray St N and Market St intersection (March 21st 10:51AM, Sept 21st, 10:36AM) and the Queen St N and Market St intersection (March 21st 3:51PM, Sept 21st 3:36PM), the proposed 25-storey dwelling avoids casting even more adverse shadows by being situated along the southern edge of the site (1.96 – 2.00 metres from the King St W street line), in between Ray St N and Queen St N.

The proposed development allows for at least 50% sun coverage on all public plazas, parks and open spaces, school yards, and playgrounds during all test times except for 6:03PM (1.5 hours before sunset) on March 21st where McLaren Park receives only 43% sun coverage. However, existing shadows allow for just 54% sun coverage of McLaren Park during this test time. The new net shadows cast from the proposed development add just 11% to the shadow coverage of McLaren Park thereby causing it to exceed the shadow impact criteria by 7%. It should be noted that the net shadows cast from the proposed development cover the northern portion of McLaren Park where there is already a significant amount of existing tree cover.

During all test times the proposed development avoids casting any shadow effects on all key downtown civic gathering spaces listed in the Terms of Reference as well as any future LRT stop locations along King St W. In addition, during the test times with the most potential for adverse shadow impacts where the sun is lowest (i.e. March 21st 5:51 PM, 6:03 PM, September 21st 5:36PM, 5:49PM) the majority of the proposed development's shadows overlap with the existing shadows cast by larger buildings east of the site.

4. SUMMARY + MITIGATION MEASURES:

The proposed development incorporates 3 masses at varying heights dispersed over the 0.7-hectare site. The largest of the proposed buildings being 25 storeys in height and the uppermost floor being +/- 77.2 meters above average grade includes a step-back at the 16th floor reducing the width of the northern and southern building facades. The orientation of this tower and step-back at Level 16 mitigate the shadow effect to the north of the site on Market Street and in turn the largest portions of the shadows cast fall to the east of the site in the downtown core where existing tall buildings currently shroud the majority of the shadow path of the proposed development. The proposed 2 storey massing along Market street to the north has minimal impact on the periphery of the site and cast shadow typical of a 2-storey dwelling with a northern facing exposure. Height has been limited on the proposed 2 storey mass to adhere to the minimum height requirements set out in the zoning by-law for this development and a flat roof has been utilized on this massing which reduces the shadowing caused by taller pitched or sloped roof systems. Located at the Southeast corner of the site the 3rd mass proposed is a 12 storey Hotel Building with maximum height of +/- 41.8 meters to the top of the highest parapet. Any shadow impact during morning hours is intercepted by the adjacent proposed 25 storey Tower to the west. Shadow impacts effecting peripheral areas outside of the proposed development are typically received after solar noon and are overshadowed by the adjacent proposed 25 storey tower. In summary the proposed development consists of a cluster of masses that step down from a more slender central tower to lower height elevations at the East, West and Northern property boundaries minimizing the extent of shadow impact on the surrounding public thoroughfares and adjacent lands.

Please don't hesitate to contact me with any inquiries regarding this study.

Kindest Regards,



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