

SHADOW STUDY REPORT



PROPOSED 6 STOREY APARTMENT BUILDING

277-279 HAZEL STREET

WATERLOO, ON

PREPARED BY:

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Proposed Residential Apartment Development

277-279 HAZEL ST. WATERLOO, ON

1.0 INTRODUCTION

SHADOW STUDY OBJECTIVITE

The Sun/Shadow Analysis is a technical document that provides graphic communication of the shadows cast by a proposed development on the site and surrounding context during specified test dates. The objective of the Sun/Shadow Analysis is to ensure adequate sun is maintained for the continued comfort and use of outdoor spaces, particularly public spaces including parks and schoolyards. New development should not unduly impact adjacent properties through shadowing, as such the Sun/Shadow Analysis will be used to assess proposed massing and guide design revisions that optimize sunlight outcomes.

Waterloo Terms of Reference

The proposed parcel is a combination of 277 and 279 Hazel street with a total land area of 1050.06 square meters. The site is located on a low-density residential street with surrounding single storey single family dwelling. Several re-developments of similar scale have occurred within proximity of the site including other 6 story developments in recent years. The combined site will seek to development a 40 unit residential 6 storey building with surface parking at the rear of the site. With several 6 storey buildings, the site current experiences shadows throughout the seasons and year. Figure 1 shows buildings directly behind our proposed development. The surrounding area has been redevelopment into high density residential with encouragement for generally 6 storey scale massing where feasible – Figure 2 & 3



Figure 1 – Building behind proposed development



Figure 2 – Neighborhood context at Hazel St & Hickory St W.



Figure 3 - Neighborhood context at Balsam Ave (row of development buildings behind subject site)

2.0 Methodology

The city of Waterloo regulate the property development with the requirement for proposed developments of 6 stories or higher.

The shadow study shall evaluate the impacted caused for the proposed development. Specifically the study is addressing the issue of a new building height, massing configuration and location on the site versus the effect of the shadows created on neighboring properties and within the subject urban context.

The shadow study provides shadows diagrams for 3 seasons and variation times of the day as sample of temporal sun movement and angle. The examples are representative of various shadow patterns cast over the course of the day as the sun rotates and determines the extend of shading periods.

Due to the Sun changes its angle of arc the study further analyses the typical shadow patterns which reflect the solar solstice periods of the course of the year to represent and display the highest and low points of the sun for the duration of the year.

The results of a computer generated simulation assimilate data variables as to building height, terrain, distance to objects and models shadow lengths created by solar angle and solar rotation over the entire course of the day from dusk to dawn.

Location Factors

In Appendix 'A' the shadow diagrams within the section illustrate the maximum shadows to be created at a specified time and date. The analysis was conducted based upon a geodetic location of LATITUDE: N 37.748° 43' 28" and LONGITUDE: W 79.979° 00' 31"

Building Height Proposed

The proposed building displays the analysis with a height of approx. 19.6 meters above geodetic ground level for the finished ground floor level. The study considers for general terrain of the site and surrounding lands relative to the geodetic ground level as this will change the shadow correlation including the ground floor height and relative height of adjacent existing buildings. The current building is a simple boxed mass with the building pushed towards Hazel street to activate the streetscape and keep in line with the city's desired redevelopment goals.

Pre-existing Conditions verses Post Development

The site is generally under intense shadow created by recently developed 6 story building along the rear of the site. This re-development extends from Hickory Street to Balsam Ave. All properties along Hazel Street are under the same shadow impacted as the current site and adjacent buildings are single storey single family detached dwellings. With a neighbourhood zoning change, over the years the redevelopment to high density has been introduced and evolved the surrounding context into a RM1 residential medium density zone. Although the new development cast shadows on adjacent properties, the impact of a shadow created does not change the presence of a shadow throughout the course of the day and year.

3.0 Shadow Impact

The shadows cast from the proposed development are largest during the winter season. The proposed shadows continue the overall depth of shadows created by other similar buildings within close proximity of the site including the rear adjacent properties. At this proposal locate itself close the Hazel street, impact of shadows of adjacent current single storey buildings are reduced during the fall and summer seasons. Due to the existing shadow lengths created in various seasons, the development will receive very little if any shadow impact at the time of the day and minor during the Winter.



AMRITPAL S. BANSAL, OAA AANB

KHALSA DESIGN INC.

PRESIDENT

APPENDIX A

EQUINOX

MARCH 21, 2024 – 10am



MARCH 21, 2024 – 12pm



Proposed Residential Apartment Development

277-279 HAZEL ST. WATERLOO, ON

EQUINOX

MARCH 21, 2024 – 6pm



Proposed Residential Apartment Development

277-279 HAZEL ST. WATERLOO, ON

SUMMER

JUNE 21, 2024 – 10am



JUNE 21, 2024 – 12pm



Proposed Residential Apartment Development

277-279 HAZEL ST. WATERLOO, ON

SUMMER

JUNE 21, 2024 – 2pm



JUNE 21, 2024 – 4pm



Proposed Residential Apartment Development

277-279 HAZEL ST. WATERLOO, ON

WINTER

DECEMBER 21, 2024 – 10am



DECEMBER 21, 2024 – 12pm



Proposed Residential Apartment Development

277-279 HAZEL ST. WATERLOO, ON

WINTER

DECEMBER 21, 2024 – 2pm



DECEMBER 21, 2024 – 4pm



Proposed Residential Apartment Development

277-279 HAZEL ST. WATERLOO, ON

WINTER

DECEMBER 21, 2024 – 6pm



Proposed Residential Apartment Development

277-279 HAZEL ST. WATERLOO, ON