



INNOVATIVE PLANNING SOLUTIONS

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City of Barrie
70 Collier Street
Barrie, ON L4M 4T5

February 19, 2020

Attention: Carlissa McLaren, MCIP, RPP
Senior Planner, Planning & Building Services

Re: Shadow/Shading Impact Study – Revised February 2020
481 Yonge Street, Barrie

1.0 INTRODUCTION & BACKGROUND

Innovative Planning Solutions has been retained by 481 Yonge Developments Inc. to complete a Shadow/Shading Impact Study relative to the proposed development on the subject lands, known municipally as 481 Yonge Street in the City of Barrie. The site has an area of approximately 0.57 hectares with frontage on both Yonge (71.29 metres) and Macmillan (78.09 metres). The site is located within the City of Barrie's Built-up Area, in addition to being located along a Primary Intensification Corridor as identified on Schedule I of the Official Plan. Yonge Street is identified as an Arterial Road and has a right-of-way width of 34 metres. The topography of the site slopes moderately from the north to the south, as well as from the west to east to the degree of approximately 3 metres. The subject property is currently vacant and zoned as RM2 in the City of Barrie Zoning By-law. A Zoning By-law Amendment (ZBA) application is being proposed on the subject lands to permit the conceptual development of one (1) four-storey L-shaped apartment building fronting Yonge Street. The concept plan has been included in *Appendix 1*. The proposed building is L-shaped and located in the western corner of the subject lands. The majority of the structure fronts Yonge Street, with a portion also fronting Macmillan Crescent. The main entrance of the structure is located on the corner of Yonge Street and Macmillan Crescent with pedestrian connections to the municipal sidewalks. Vehicular access to the site is located to the north of the subject site off Macmillan Crescent. The access connects to a parking area to the rear of the site, with outdoor parking and an entrance to the underground parking garage. A 3.0 metre road widening is provided along Yonge Street. A rear yard setback of 23.06 m has been provided backing onto the rear

yards of the residences of Dixon Court. Side yard setbacks of 4.5 metres and 3.0 metres are provided.

Conceptual renderings of the proposed structure are included in *Figure 1*. Through correspondence with City of Barrie Planning Department, a Shadow Impact Study was identified as one of the components for a complete ZBA application. This study should be read in conjunction with the Planning Justification Report submitted in support of the proposed ZBA, submitted under separate cover.



View from Yonge & Macmillan



Aerial Render

LEGEND

Figure 1.
CONCEPTUAL RENDERS

Source: Naylor Architect Inc.

Drawn By: AE

File: 18-816



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2.0 METHODOLOGY

This study follows the guidelines outlined in the City of Barrie Terms of Reference dated October 2018 for Shadow Studies. The study uses SketchUp 3D Modelling software. Mapping was taken from the 'Discover Barrie' online mapping service tool. The base image displays the subject site, adjacent properties and existing structures. The model of the proposed structure was digitally inserted into SketchUp 3D and geo-located for accuracy.

A base height of 12 metres was used for the four-storey structure. A height of 15 metres was used for the raised centre of the structure, as can be seen in the conceptual renderings. In addition, elevations are provided in the *Appendix*.

Shadows were analyzed on six calendar days (March 8th, April 21st, June 21st, September 21st, November 1st and December 21st), representing each season and including daylight savings. Shadows are shown between the hours of 7:00am and 7:00pm, varying on each day.

3.0 PRE-DEVELOPMENT SHADOWS

Pre-development shadow impact is virtually non-existent as the subject lands are vacant of any permanent structures. The site is lightly vegetated with mature trees to the west of the site casting minimal shadow. It should be noted that under the current RM2 zone, a walk-up apartment of four storeys (up to a maximum of 20 m) is permitted under the Zoning By-law, as per Section 5.3.2. With a rear yard setback of 7.0 metres permitted, the potential shadowing impact of what is permitted by right would be greater than what is proposed (23.06 m.).

4.0 SHADOW IMPACT STUDY ANALYSIS

The following Section provides an analysis of the shadow impacts based on the results of the SketchUp Modelling. Results from the modeling are presented under *Appendix 2* showing the proposed post-development shadows. A summary of the Shadow Study is presented below.

- **Spring (April 21st):** During the morning hours, shadows encroach onto sections of Yonge Street and Macmillan Crescent, sidewalks bordering the southern corner of the site and properties to the south-west. During the mid-day hours, minimal shadowing encroaches onto the sidewalk along Macmillan Crescent and the west border of the site, with no impact on surrounding properties. The afternoon hours reveal no shadow impact on the surrounding properties. During the evening hours, shadowing is primarily contained internal to the site, however minor shadowing is cast north and east onto the adjacent properties with slight impact.

- **Summer (June 21st):** Shadows are cast to the south and south-west during the morning hours; however, this is alleviated after 9:00am. During the late morning, mid-day and afternoon hours, no impact is shown on surrounding properties and the shadowing is internal to the site. Slight shadowing to the east is observed at 5:00pm, the majority of which is internal to the site. A small shadow is cast in the evening hours, over the north boundary of the site and the parking area of the commercial site adjacent east. At 7:00pm in the evening, shadowing increases to the east over the commercial lands, however, with minimal cast over the adjacent residential properties north. The summer months experience minimal shadowing on surrounding properties.
- **Fall (September 21st):** During the morning hours, shadowing encroaches across the intersection of Yonge Street and Macmillan Crescent, casting shadows to the south-west. During the late-morning to afternoon hours (10:00am-3:00pm), shadowing is limited to the sidewalk along Macmillan Crescent and internal to the site. During the late afternoon hours after 4:00pm, shadowing is contained primarily within the site, with minor encroachment in the rear yards of properties along Dixon Court. As the day progresses into the evening hours (after 5:00pm), shadows creep north and north-east with shadowing on the surrounding properties to the north-east, across the properties on Dixon Court. The shadowing is considered minor during the fall months on surrounding properties, with the greatest impact in the evening hours.
- **Winter (December 21st):** During the early morning hours, shadowing encroaches onto residential properties along Yonge Street located to the west. As the morning progresses the shadowing recedes, and by 1:00pm shadowing on the properties to the west is eliminated. During the afternoon and evening hours, shadowing is observed internal to the site, however, minor shadowing encroaches onto surrounding properties to the north-west. After 2:00pm, the shadows appear along the west border of the site and shift north over the properties along Dixon Court and Macmillan Crescent by 3:00pm. The winter months are when the sun is lowest in the sky, thus causing the greatest amount of shadowing in the morning and late afternoon to evening hours. Typically, outdoor activity in the winter months are reduced, thus the shadowing is not as impactful as the summer months and not anticipated to negatively impact the use or enjoyment of the adjacent residential rear yards.
- **Daylight Savings (March 8th):** During the early morning hours, shadowing encroaches to the south-west along Yonge Street. By the late morning, after 10:00am, the

shadowing cast west is reduced across the residential properties along Macmillan Crescent. By mid-day at 12:00pm, the shadows are eliminated to the west and are contained within the property and along the west border of the site along Macmillan Crescent. No shadows are cast through the early afternoon until approximately 4:00pm, when minor shadows encroach onto the residential backyards of the properties along Dixon Court to the north. During the evening hours, shadows are cast north-east onto the residential properties and encroaches onto the commercial property to the east. The Shadow Study reveals that the greatest impact to surrounding residential properties is in the early morning and late evening hours. Given the time of year, the shadow impact would be considered minor.

- **Daylight Savings (November 1st):** During the early morning hours, shadows are cast west across the residential properties along Yonge Street and Macmillan Crescent. By 11:00am, the shadowing is greatly reduced to Macmillan Crescent and eliminated from surrounding properties by 12:00pm. Through the mid-day hours, no shadowing occurs, with minor shadowing appearing to the north around 2:00pm. From 3:00pm through the late afternoon hours, shadowing begins to occur onto the residential properties to the north along Dixon Court. The evening hours after 4:00pm, reveal shadowing across the residential properties on Dixon Court and into the back yards of the properties along Macmillan Crescent. Impact onto surrounding residential properties is minimal throughout the day during the winter months, with a greater impact in the early morning and late afternoon to evening hours.

The Shadow Impact Study is included as *Appendix 2*.

5.0 CONCLUSIONS & RECOMMENDATIONS

The modelled shadows cast by the proposed development have limited and temporal impact on abutting residential properties during short periods of the day, slight shading to the pedestrian realm along Yonge Street and Macmillan Crescent for short periods of time and minimal impact on the private amenity area proposed on the subject lands.

Minimal shadowing encroaches onto adjacent residential properties in the summer months which are generally when residents spend the most time outdoors, thereby having minimal impact on the use or enjoyment of the property during the warmest time of year. Shadowing impact is most pronounced in the winter months during the evening and afternoon to evening hours, a time in which use of outdoor amenity areas is limited.

In addition, an analysis of Section 6.6 Tall Buildings and Height Control of the Official Plan has been provided in the Planning Justification Report, under separate cover. The policies contained within this Section are applicable to any building greater than three storeys in height, and as such apply to the proposed development. The Planning Justification Report provides an analysis of the relevant policies of Section 6.6.

Based on the analysis presented throughout this study, it is my professional opinion that the proposed residential development conforms to the City of Barrie's Official Plan, is appropriately situated along a Primary Intensification Corridor, and is positioned on the subject lands in a manner that minimizes impacts from shadowing to the extent possible. The proposed Zoning Bylaw Amendment does not propose any additional height beyond what is permitted in the MU2 zone which is intended to apply to lands along identified intensification corridors, including the subject lands. Nor are any special provisions proposed which would otherwise create additional shadow impacts on adjacent lands. As a result, the proposed structure does not require any additional setbacks, stepping provisions, or other such design measures to reduce shadow impacts. Furthermore, it is my opinion that the proposed development would ultimately result in less shadow impact on adjacent properties than what is currently permitted under the RM2 zone, including a 20 m. building height permitted with a setback of 7.0 m. from the rear lot line, whereas the proposal seeks to permit a 16.14 m. building height with a setback of 23.06 m. from the rear lot line.

Respectfully submitted,

Innovative Planning Solutions



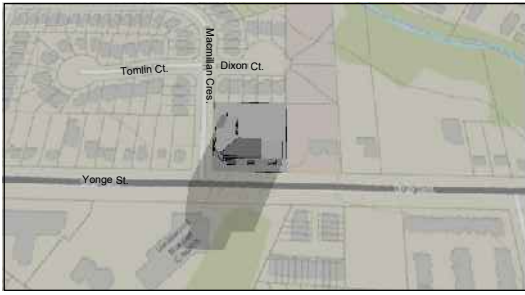
Darren Vella, MCIP, RPP
President & Director of Planning



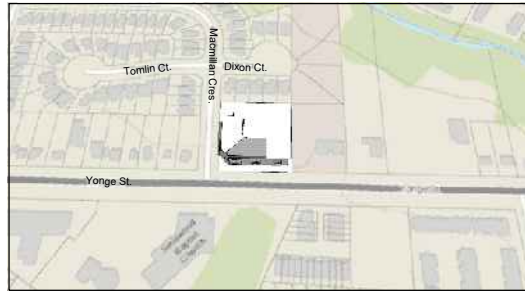
James Hunter, BURPI.
Senior Planner

APPENDIX 1:
CONCEPTUAL SITE PLAN

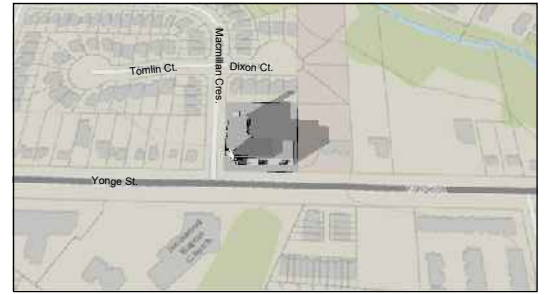
APPENDIX 2:
SHADOW IMPACT STUDY



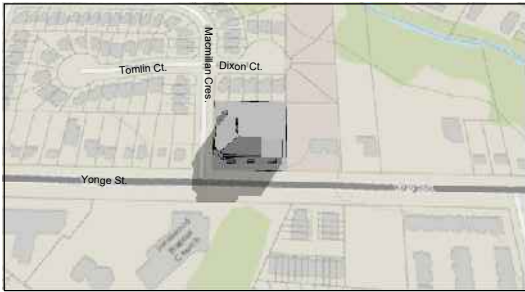
7:00am, June 21
Shadow encroaching south onto Inniswood Baptist Church along Yonge Street.



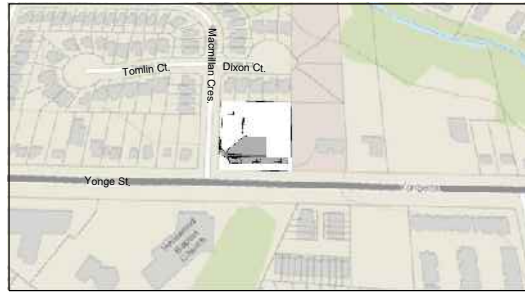
1:00pm, June 21
No shadow impact on surrounding properties.



7:00pm, June 21
Shadow impact northeast onto Dixon Ct., and adjacent property along Yonge Street.



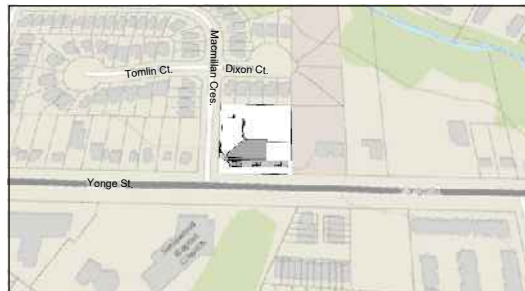
8:00am, June 21
Shadow encroaching southwest onto Yonge St., no impact on surrounding properties.



2:00pm, June 21
No shadow impact on surrounding properties.



9:00am, June 21
Shadow encroaching southwest onto Yonge St., no impact on surrounding properties.



3:00pm, June 21
No shadow impact on surrounding properties.



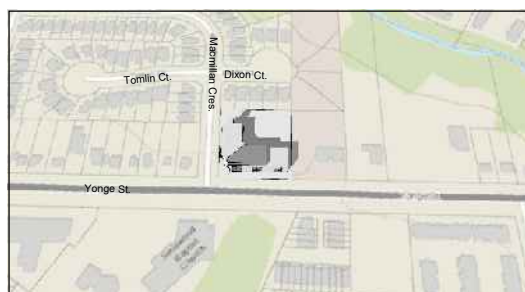
10:00am, June 21
Shadow encroaching west onto Macmillan Cres., and Yonge St., no impact on surrounding properties.



4:00pm, June 21
No shadow impact on surrounding properties.



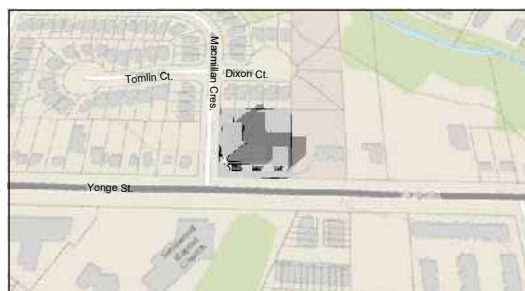
11:00am, June 21
Shadow encroaching west onto Macmillan Cres., no impact on surrounding properties.



5:00pm, June 21
Minor shadow impact east on adjacent property along Yonge Street.



12:00pm, June 21
Shadow encroaching west onto Macmillan Cres., no impact on surrounding properties.





6:00pm, June 21
Minor Shadow impact east on adjacent property along Yonge Street.

Shadow Study June 21

481 Yonge St,
City of Barrie, ON

LEGEND

-  Proposed 4 storey building
-  Existing buildings less than 4 storeys

Note: This drawing is for discussion purposes only.
Time zone UTC -04:00

Date: February 18, 2020

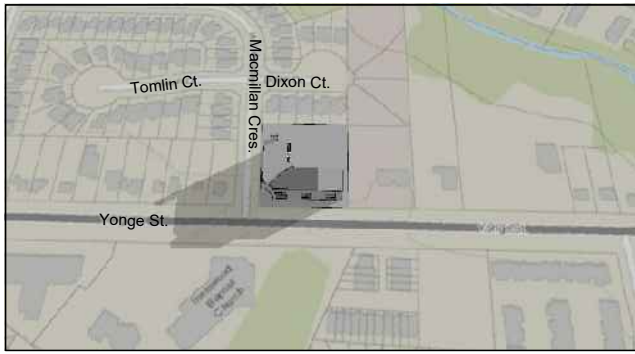
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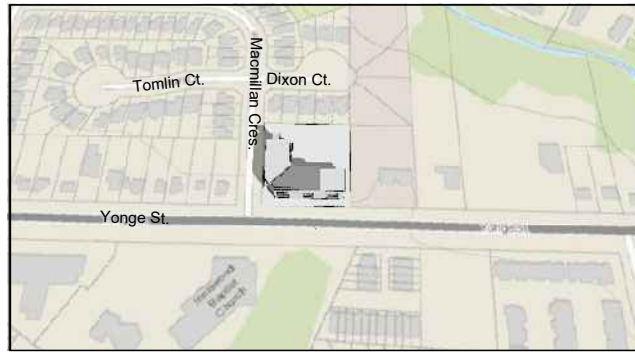


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9:00am, March 8
Shadow encroaching southwest onto residential properties along Yonge Street and Inniswood Baptist Church.



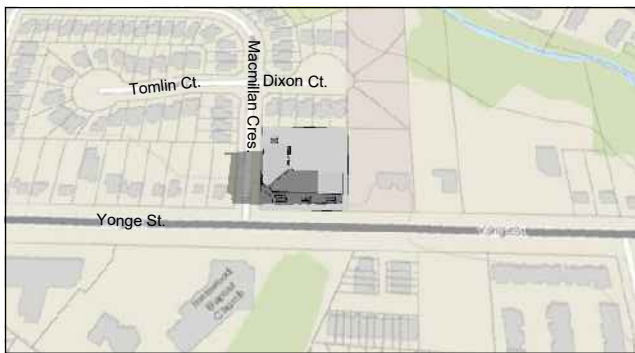
2:00pm, March 8
Shadow encroaching west onto Macmillian Cres., no impact on surrounding properties.



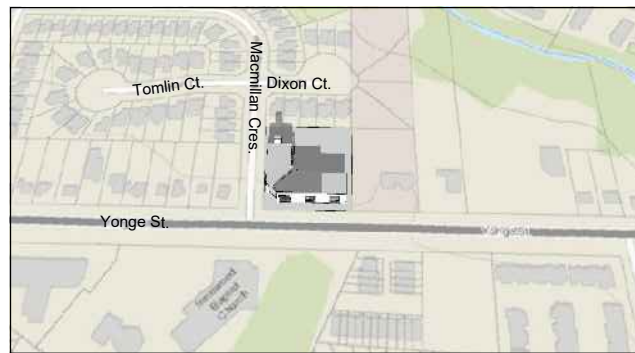
10:00am, March 8
Shadow encroaching west onto residential property along Yonge Street.



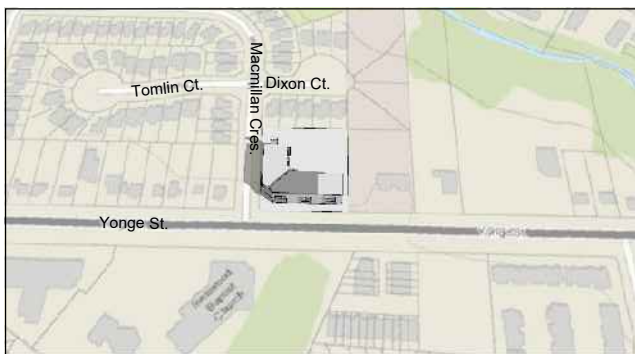
3:00pm, March 8
Minor shadow encroaching west onto residential property along Dixon Ct.



11:00am, March 8
Minor shadow encroaching west onto residential property along Yonge Street.



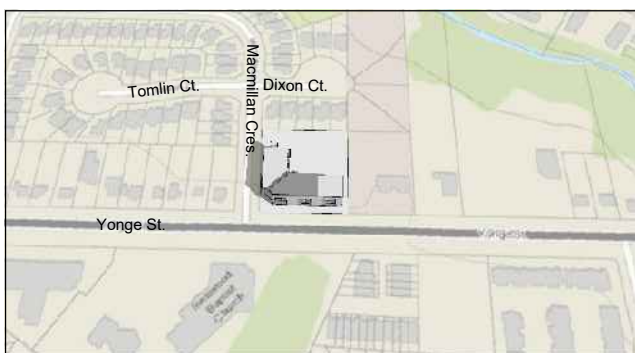
4:00pm, March 8
Shadow encroaching north onto residential property along Dixon Ct.



12:00am, March 8
Shadow encroaching west onto Macmillian Cres., no impact on surrounding properties.



5:00pm, March 8
Shadow encroaching north onto residential properties along Dixon Ct.



1:00pm, March 8
Shadow encroaching west onto Macmillian Cres., no impact on surrounding properties.





6:00pm, March 8
Shadow encroaching northeast onto residential properties along Dixon Ct. and Yonge St.

Shadow Study March 8 (Daylight Savings)

481 Yonge St,
City of Barrie, ON

LEGEND

-  Proposed 4 storey building
-  Existing buildings less than 4 storeys

Note: This drawing is for discussion purposes only.
Time zone UTC -04:00

Date: February 18, 2020

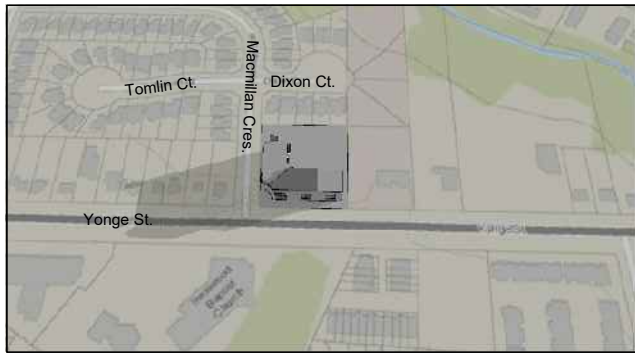
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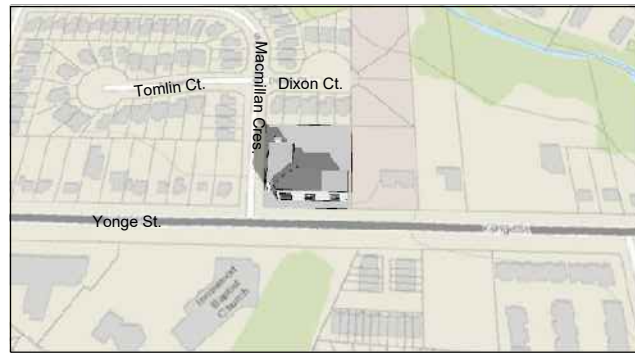


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8:00am, November 1
Shadow encroaching southwest onto residential properties along Yonge Street.



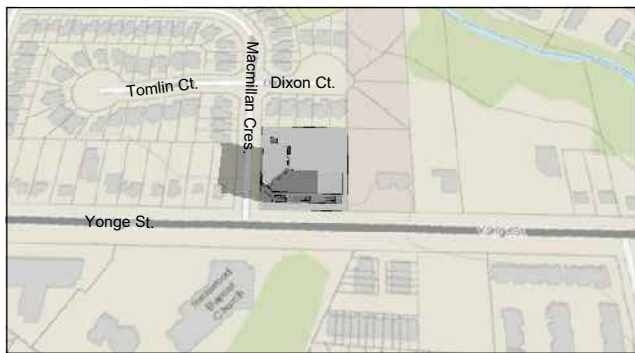
1:00pm, November 1
Shadow encroaching northwest onto Macmillian Cres., no impact on surrounding properties.



9:00am, November 1
Shadow encroaching west onto residential properties along Yonge Street.



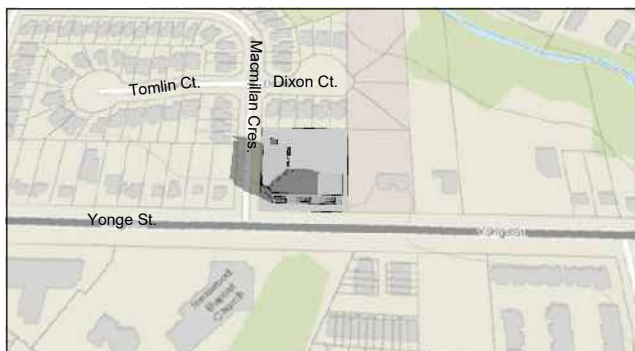
2:00pm, November 1
Shadow encroaching north onto residential property along Dixon Ct.



10:00am, November 1
Shadow encroaching west onto residential property along Yonge Street.



3:00pm, November 1
Shadow encroaching north onto residential properties along Dixon Ct.



11:00am, November 1
Shadow encroaching west onto Macmillian Cres., no impact on surrounding properties.



4:00pm, November 1
Shadow encroaching north onto residential properties along Dixon Ct.





12:00pm, November 1
Shadow encroaching west onto Macmillian Cres., no impact on surrounding properties.

Shadow Study November 1 (Daylight Savings)

481 Yonge St,
City of Barrie, ON

LEGEND

-  Proposed 4 storey building
-  Existing buildings less than 4 storeys

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Time zone UTC -05:00

Date: February 18, 2020

Drawn By: AS

File: 18-816

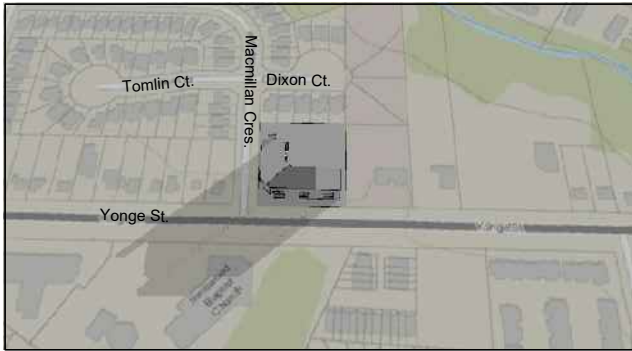


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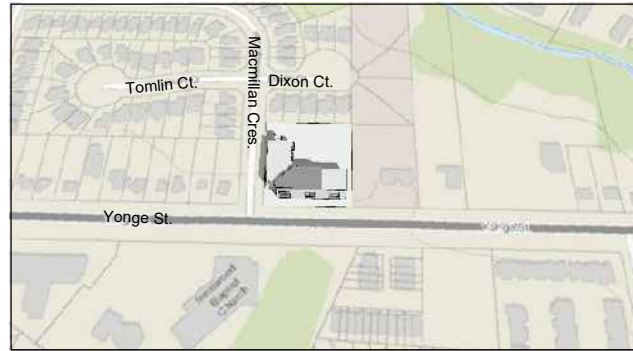
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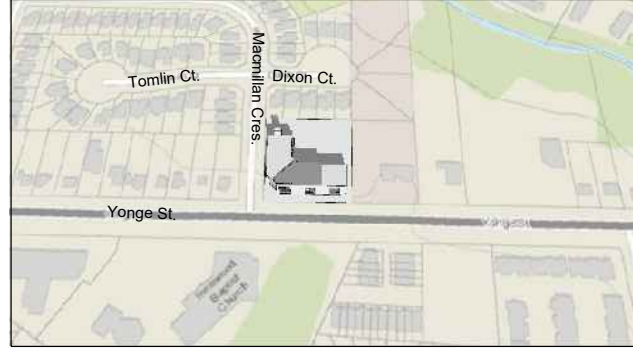
8:00am, September 21
Shadow encroaching south onto Inniswood Baptist Church and properties along Yonge Street.



2:00pm, September 21
No shadow impact on surrounding properties



9:00am, September 21
Shadow encroaching southwest onto adjacent residential properties along Yonge Street.



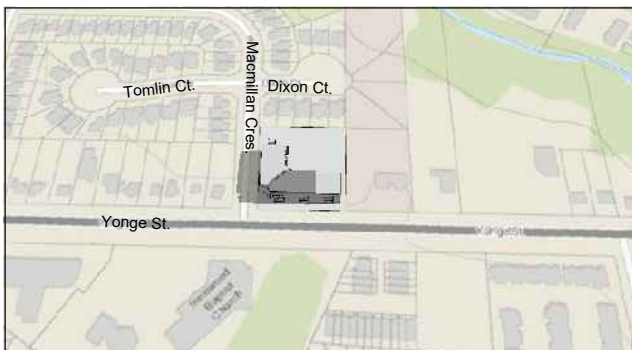
3:00pm, September 21
Minor shadow encroaching north onto adjacent residential property along Dixon Ct.



10:00am, September 21
Shadow encroaching west onto Macmillian Cres., no impact on surrounding properties.



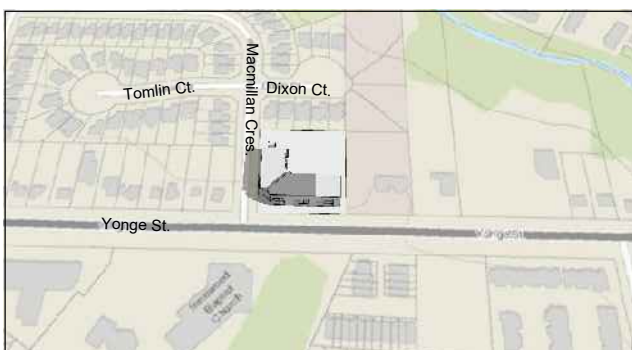
4:00pm, September 21
Shadow encroaching north onto adjacent residential properties along Dixon Ct.



11:00am, September 21
Shadow encroaching west onto Macmillian Cres., no impact on surrounding properties.



5:00pm, September 21
Shadow encroaching north onto adjacent residential properties along Dixon Ct. and Yonge St.



12:00pm, September 21
Shadow encroaching west onto Macmillian Cres., no impact on surrounding properties.



6:00pm, September 21
Shadow encroaching north onto adjacent residential properties along Dixon Ct. and Yonge St.





1:00pm, September 21
Shadow encroaching west onto Macmillian Cres., no impact on surrounding properties.

Shadow Study September 21

481 Yonge St,
City of Barrie, ON

LEGEND

-  Proposed 4 storey building
-  Existing buildings less than 4 storeys

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Time zone UTC -04:00

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9:00am, December 21
Shadow encroaching west onto residential properties along Yonge Street.



1:00pm, December 21
Minor shadow encroaching northwest onto residential properties along Macmillan Cres.



10:00am, December 21
Shadow encroaching west onto residential properties along Yonge Street. Minor shadow encroaching onto residential property along Macmillan Cres.



2:00pm, December 21
Shadow encroaching northwest onto residential properties along Dixon Ct.



11:00am, December 21
Shadow encroaching west onto residential property along Yonge Street and Macmillan Cres.



3:00pm, December 21
Shadow encroaching north onto residential properties along Dixon Ct.





12:00am, December 21
Shadow encroaching west onto residential properties along Yonge Street and Macmillan Cres.

Shadow Study December 21

481 Yonge St,
City of Barrie, ON

LEGEND

-  Proposed 4 storey building
-  Existing buildings less than 4 storeys

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Time zone UTC -05:00

Date: February 18, 2020

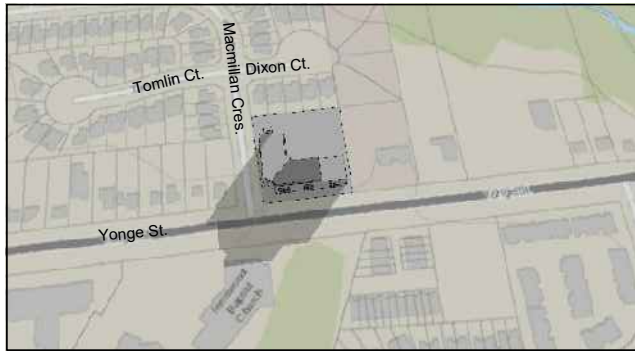
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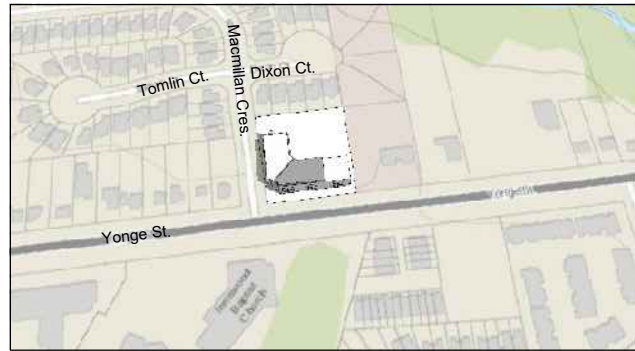


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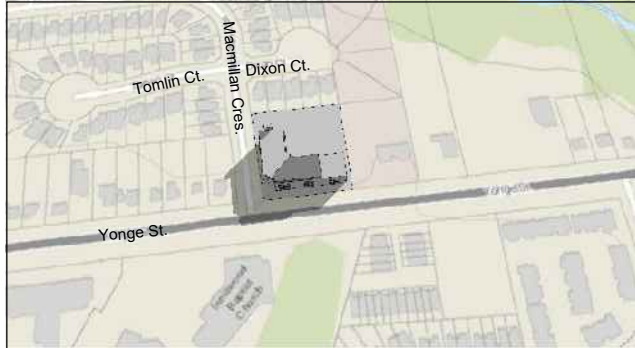
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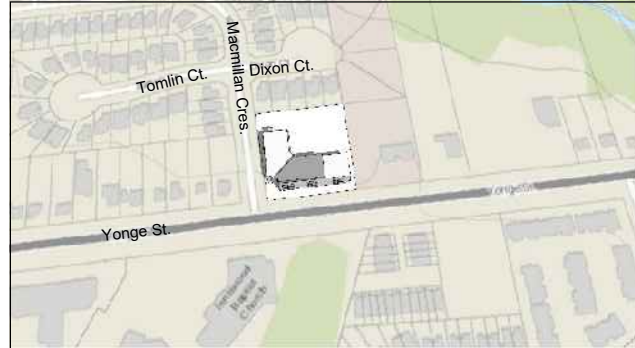
8:00am, Apr. 21
Shadow encroaching southwest onto residential property and Inniswood Baptist Church along Yonge Street.



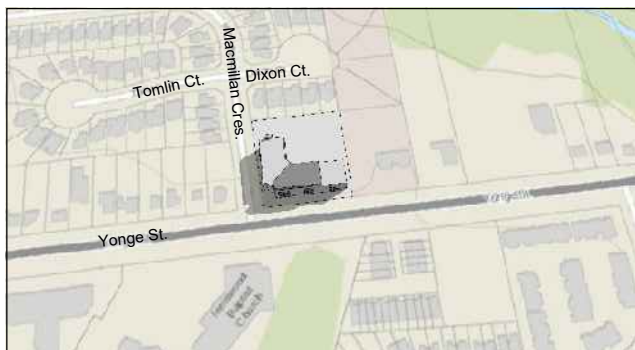
1:00pm, Apr. 21
No shadow impact on surrounding properties.



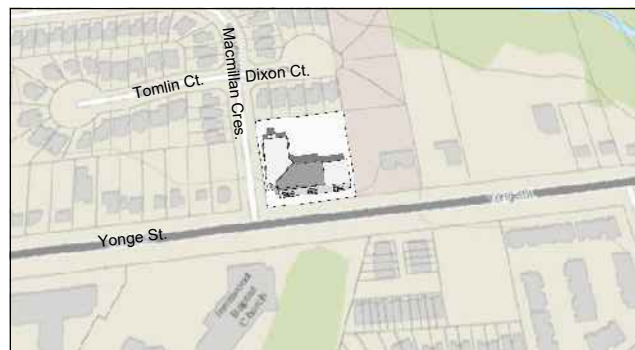
9:00am, Apr. 21
Minor shadow encroaching southwest onto residential property along Yonge Street.



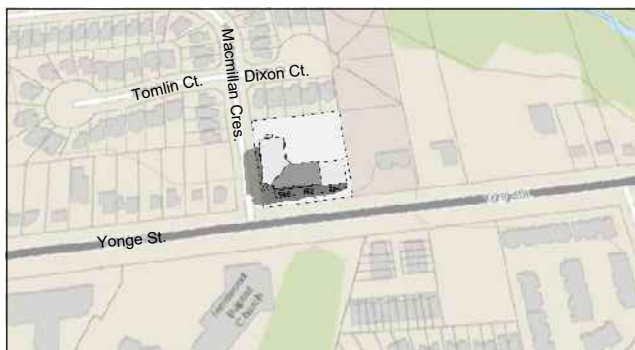
2:00pm, Apr. 21
No shadow impact on surrounding properties.



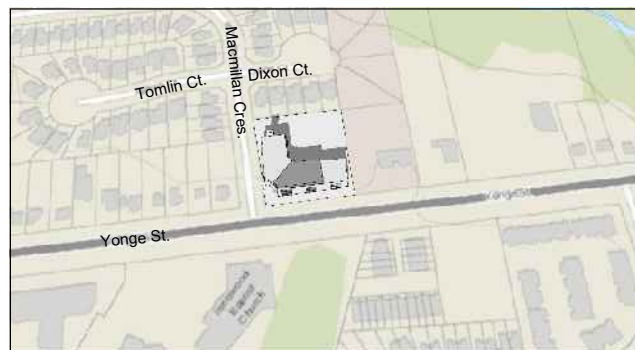
10:00am, Apr. 21
Shadow encroaching west onto Macmillian Cres., no impact on surrounding properties.



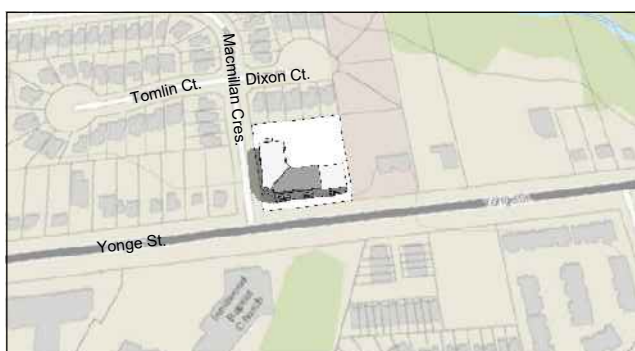
3:00pm, Apr. 21
No shadow impact on surrounding properties.



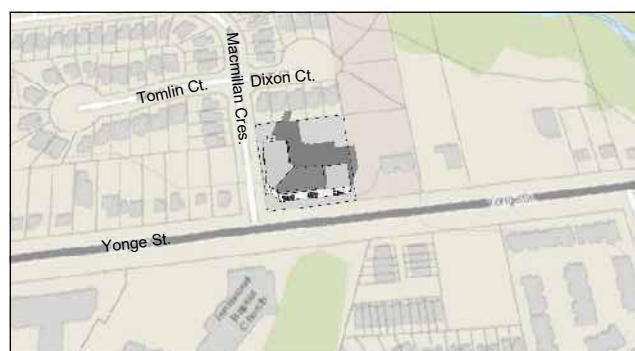
11:00am, Apr. 21
Shadow encroaching west onto Macmillian Cres., no impact on surrounding properties.



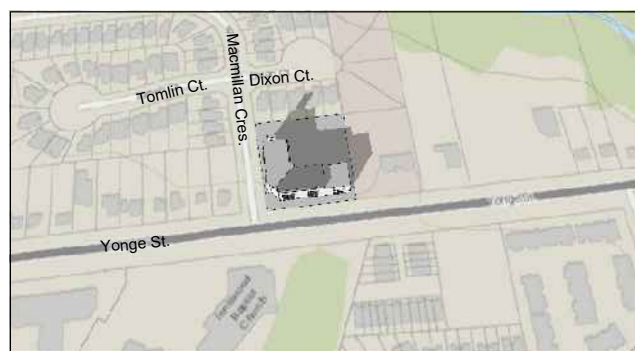
4:00pm, Apr. 21
No shadow impact on surrounding properties.



12:00pm, Apr. 21
Shadow encroaching west onto Macmillian Cres., no impact on surrounding properties.



5:00pm, Apr. 21
Minor shadow encroaching east onto residential property along Yonge Street.





6:00pm, Apr. 21
Shadow encroaching northeast onto residential properties along Dixon Ct. and Yonge Street.

Shadow Study April 21

481 Yonge St,
City of Barrie, ON

LEGEND

-  Proposed 4 storey building
-  Existing buildings less than 4 storeys

Note: This drawing is for discussion purposes only.
Time zone UTC -04:00

Date: February 18, 2020

Drawn By: AS

File: 18-816



INNOVATIVE PLANNING SOLUTIONS
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APPENDIX 3:
ELEVATIONS



1 ANGULAR PLANES @ FRONT WEST ELEVATION
SCALE: 1:150

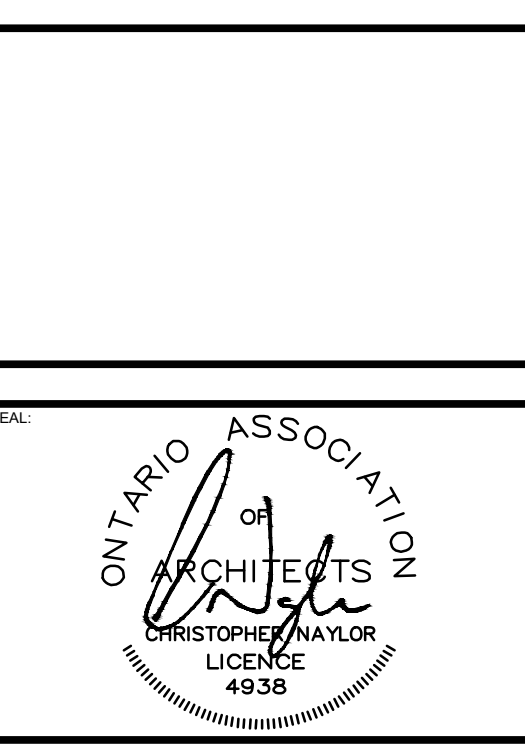


2 ANGULAR PLANES @ SIDE SOUTH ELEVATION
SCALE: 1:150

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2. DO NOT SCALE DRAWINGS.
3. CONTRACTOR TO VERIFY JOB SITE AND DRAWING DIMENSIONS AND CONDITIONS. REPORT ANY AND ALL DISCREPANCIES TO THE ARCHITECT PRIOR TO CONSTRUCTION.
4. ALL WORK MUST CONFORM TO THE LATEST LOCAL BUILDING CODE, LOCAL BY-LAWS AND NFPA 96.
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REVISION NO.	DATE	DESCRIPTION

ISSUED TO	DATE	DESCRIPTION
CITY	OCT 17/16	FOR REVIEW



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PROJECT:
PROPOSED APARTMENT BUILDING
481 YONGE STREET
BARRIE, ONTARIO

DRAWN: **V.G.** DATE: **AUG, 2019**
CHECKED BY: **C.N.**
SCALE: **AS NOTED** PROJECT NO.: **19100**
SHEET TITLE: **ANGULAR PLANES**

REVISION NO. SHEET NO.: **A3.3**