



WMI & Associates Limited
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April 12, 2022

Via: Email

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

**Attention: Justin MacDonald, C.E.T.
Senior Transportation Technologist- Transportation Planning**

**Re: 219 Bayfield Street
Traffic Impact Brief
City File D28-055-2020
WMI File No.: 21-678**

Dear Justin,

WMI & Associates Limited has been retained by Hillcorp Investment and Development Inc. to prepare a Traffic Impact Brief in support of zoning by-law amendment and site plan applications for the proposed real estate office located at 219 Bayfield St. in the City of Barrie.

The assessment presented herein is based on City of Barrie transportation related design guidelines, the Institute of Transportation Engineers (ITE) Trip Generation Manual, and good engineering practice.

Background

The subject site is located at the south-east corner of Grove Street East and Bayfield Street, and comprises the current 219 Bayfield Street property as well as the former 223 Bayfield Street property. The site is within a full developed area within the City, and is bound by existing commercial and residential development to the north, south, east and west.

The existing building on the site was formerly a residential dwelling, and is proposed to be converted to a real estate office. The gross floor area of the building is 292m² (3140ft²), and the vehicular access driveway is currently onto Bayfield Street, adjacent to the south property line.

To accommodate the change of use, it is proposed to construct a new parking lot comprising 7 spaces, a new pedestrian access, and to relocate the vehicular access to Grove Street East.

The Site Plan prepared by Innovative Planning Solutions (dated November 25, 2021) from which this Traffic Impact Brief is based, is appended to this Brief for reference.

Study Area/ Context

The site is adjacent to the signalized intersection of Bayfield Street and Grove Street East. The section of Bayfield Street in the vicinity of the subject site is a fully urbanized arterial road with a 50km/hr posted speed limit, consisting of 4 lanes along with dedicated left turn lanes at the subject intersection. It also includes sidewalks on both sides of the road, and a transit stop immediately in front of the site. It is a primary travel route to access Highway 400 and major shopping areas to the north, and the waterfront/ downtown core to the south. The properties on Bayfield Street in the immediate area consists of residential single family dwellings and low rise multi-unit residential dwellings, and as well as other small commercial / office establishments that have been re-purposed from their former residential uses. Most of these properties have individual driveway access directly onto Bayfield Street.

Grove Street East is a minor collector as is identified in the City of Barrie's Transportation Master Plan (2019) document, has a posted speed limit of 50km/hr, and contains a single sidewalk along the north side of the road. It generally comprises 2 lanes but widens to accommodate a 3rd left turn lane along the frontage of the subject site, up to the Bayfield Street intersection. This area of Grove Street East serves as an access route to Bayfield Street for the many low-rise single and low-rise multi-unit residential properties in the area.

Due to the small scale nature of the proposed development plan and its context within a fully urbanized area of the City, the study area is limited to the proposed site access driveway onto Grove Street East and the adjacent Bayfield Street & Grove Street East intersection.

Refer to the Site Location & Study Area Configuration Plan (Figure 1) appended to this Brief.

Site Access & Circulation

It is proposed to relocate the site entrance onto Grove Street East from Bayfield Street, and provide an onsite parking lot that will accommodate 7 parking spaces, including 1 barrier free parking space. Pedestrian accesses will be provided both from Bayfield Street via a sidewalk in front of the main entrance, and via Grove Street East via a sidewalk connection to north.

Parking space and aisle dimensions are all in accordance with City standard criteria. The site access driveway is proposed to be a full-movement entrance, and the driveway will be of sufficient width to accommodate two-way traffic both into and out of the site parking lot.

The driveway is situated adjacent to the east property line in order to minimize any queuing / weaving conflicts with left turning traffic in the left turn lane that is adjacent to the site entrance on Grove Street East. The provided corner clearance is approximately 25m, which is less than the typical 55m that is required for a collector road as per the TAC Geometric Design Guide for Canadian Roads (June 2017), table 8.8.2., however the corner clearance to the Bayfield St. intersection is maximized to the greatest extent possible, within the available property boundaries. It is further noted that the proposed site entrance's proximity to the intersection is comparable to other non-conforming residential and converted-commercial properties in the area, since this is an older area of the City containing small-size properties to which corner clearance and access restrictions were previously not required.

Overall it is believed that relocating the driveway access to Grove Street East from Bayfield Street is preferred from an operational & safety perspective as it will eliminate turning movement and queuing conflicts that might otherwise be experienced with an access onto the higher-volume arterial road (Bayfield Street).

Sight Line Review

The TAC Geometric Design Guide for Canadian Roads (June 2017) outlines specific sight distance criteria to ensure safe vehicular movement to and from site accesses and intersecting roadways and to ensure that through traffic on the adjacent roadway will have adequate time and space for manoeuvrability and braking.

From a review of existing site conditions and sight-lines from the vantage point of the proposed driveway located on Grove Street East, visibility is noted to generally be adequate, since there are no notable obstructions. The road alignment is also relatively straight and unencumbered by any adverse vertical profile geometry from the proposed site access location up to and including an estimated 300m meters away in either direction, looking both east and west on Grove Street.

The critical movement for which adequate sight lines should be maintained is for left turning movements out of the site during a green-light phase for westbound traffic on Grove Street East.

From table 9.9.4 of the TAC Geometric Design Guide for Canadian Roads, the intersection site distance for passenger cars is 130m for a design speed of 60km/hr. Since the actual sight distances in both the west and east directions exceeds the TAC sight distance criteria, the sight lines are considered to be adequate.

Supporting sight distance information is appended to this Brief for reference.

Trip Generation Analysis

Trip generation rates were estimated using data from the Institute of Transportation Engineers' (ITE) Trip Generation Manual, 10th Edition. The 'Small Office Building' dataset (ITE code 712) was utilized to determine a viable trip generation rate for the proposed real estate office.

The data for the 'Weekday Peak hour of Adjacent Street Traffic, One Hour Between 7am and 9am' time period, and the 'Weekday Peak hour of Adjacent Street Traffic, One Hour Between 4pm and 6pm' time period were utilized since these data sets typically best represent the peak travel periods in residential / commercial areas such as this. The trips generated from the 4pm to 6pm peak period result in a greater number of total trips as compared to those from the 7am to 9am period, therefore the results from the 4pm to 6pm peak period are utilized throughout this report.

Using the average rate from the 'Weekday Peak hour of Adjacent Street Traffic, One Hour Between 4pm and 6pm' report, eight (8) total vehicular trips (entering and exiting) are expected to be generated by this development. From this, 32% (3 trips) are entering the site, and 68% (5 trips) are exiting the site. Refer to the Trip Generation Spreadsheet appended to this Brief for calculation details.

Trip Distribution & Volume Impacts

From the review of the local road network and likely travel destinations such as residential areas and shopping centres relative to the location of other nearby arterials and Highway 400, it is estimated that the majority of trips from this development will turn left onto Grove Street East to access Bayfield Street.

From information provided from the City of Barrie's Open Data portal, traffic counts from 2017 were obtained for the Bayfield Street and Grove Street intersection. From this data, the average daily traffic (ADT) volume on the Grove Street East leg is approximately 6700 vehicles/ day, and peak hourly volumes are approximately 3700 vehicles/ hour. The ADT for the north leg of Bayfield Street at the Grove Street intersection is 24300 vehicles/ day, and the peak hourly volume is 13500 vehicles/ hour. When conservatively assuming that all of the development-generated trips (8 trips) will utilize the Bayfield Street / Grove Street intersection, the expected increase in traffic is approximately 0.2% on Grove street east ($8 / 3700$) and 0.06% on Bayfield Street ($8 / 13500$).

While the existing traffic count data is generic and does not indicate directional distributions, it can be seen that the expected increase in peak hourly trips (0.2% & 0.06%) on Grove Street East and Bayfield Street respectively, is negligible. It is therefore expected that the existing intersection can accommodate the expected increase in traffic from the subject site, without the need for improvements to existing municipal transportation systems.

Supporting ADT information from the City's Open Data portal are appended to this Brief for reference.

Traffic Impact Summary

This Traffic Impact Brief demonstrates that the proposed 219 Bayfield Street development can be accommodated within the local community without adverse impacts on existing transportation systems, or the need for retrofits. In particular, internal site circulation and the new site entrance onto Grove Street East is noted to be an improvement over existing conditions and generally adequate based on City of Barrie Standards. Also, the estimated peak hourly trips onto both Grove Street East and Bayfield Street are relatively insignificant in terms of traffic volume, and should be easily accommodated by existing roads.

Should you have any questions or require additional information, please contact the undersigned.

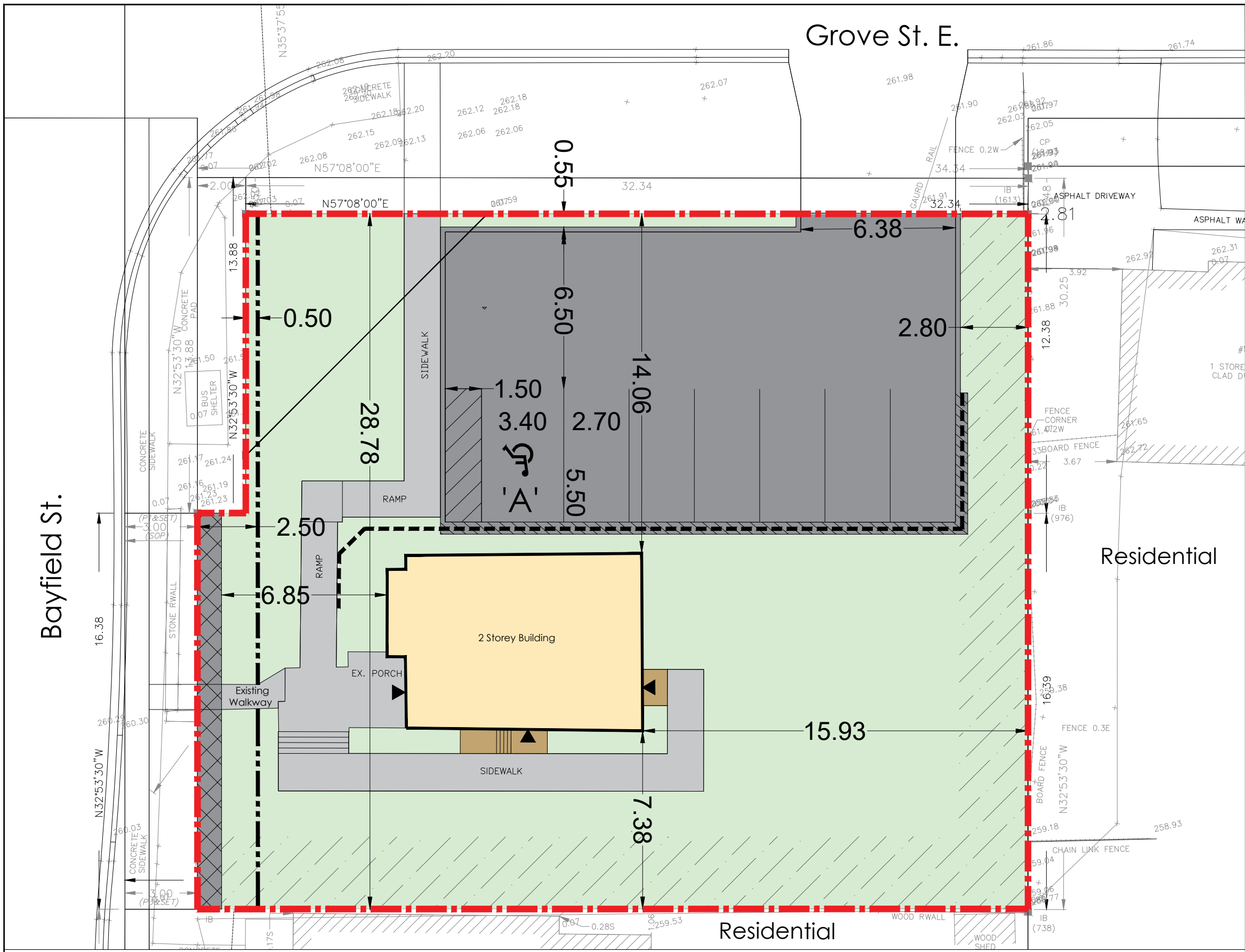
Yours truly,

WMI & Associates Limited



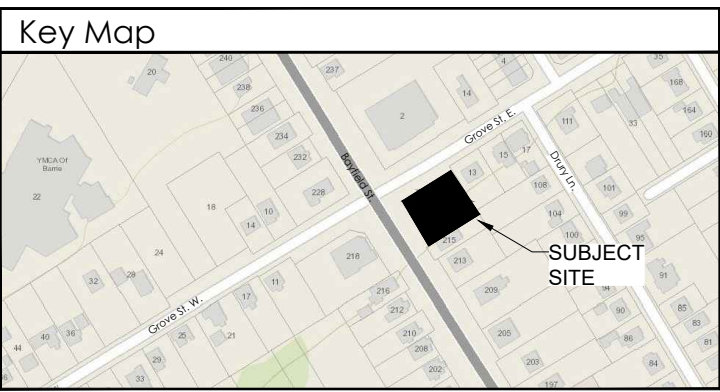
Jonathan Reimer, P. Eng.





219 BAYFIELD STREET, BARRIE

No.	Date	Description	By
5	October 28, 2021	Add proposed patio;	A.S.
6	Nov. 25, 2021	Revise parking lot location;	A.S.
7	Feb. 24, 2022	Revise parking lot configuration; Update zoning matrix;	A.S.
8	Mar. 15, 2022	Remove patio;	A.S.



LEGEND

Subject Site Area: 962.7m²

Existing 2 Storey Dwelling G.F.A.: 146.1m²

1.0m Road Widening Area: 16.3m²

Landscaping Buffer

Existing Porch

Entrance / Exit

Transportation Master Plan ultimate 34.0m ROW widening

Retaining Wall

TRANSITION CENTRE COMMERCIAL (C2)		
Provisions	Required	Provided
Lot Area (min.)	--	946.4m²
Lot Frontage (min.)	--	28.78m
Front Yard (min.)	--	6.85m
Side Yard (min.) ⁽³⁾	1.8m	7.38m
Side Yard Adjoining Residential Zone (min.)	6.0m	7.38m
Side Yard Adjoining Street (min.)	3.0m	14.06m
Rear Yard Setback (min.)	--	15.93m
Rear Yard Setback Adjoining Residential Zone (min.)	7.0m	15.93m
Lot Coverage (max.)	--	8%
Gross Floor Area (max. % of lot area)	400%	16%
Building Height (max.)	15.0m	<15.0m
Required Parking: Office	7 spaces (1 space / 30.0m² of GFA - tandem not permitted)	7 spaces incl. 1 Type 'A' B.F. space
Parking Aisle (min.)	6.4m	6.5m
Landscaped Buffer Areas: Adjacent to Residential Zones (4.8.2.1)	3.0m	2.8m (rear yard) 3.0m (side yard)

Source: City of Barrie Comprehensive Zoning By-Law 2009 - 141

0

5

10m

Date: Nov. 6, 2020

File: 20-981

Drawn By: A.S.

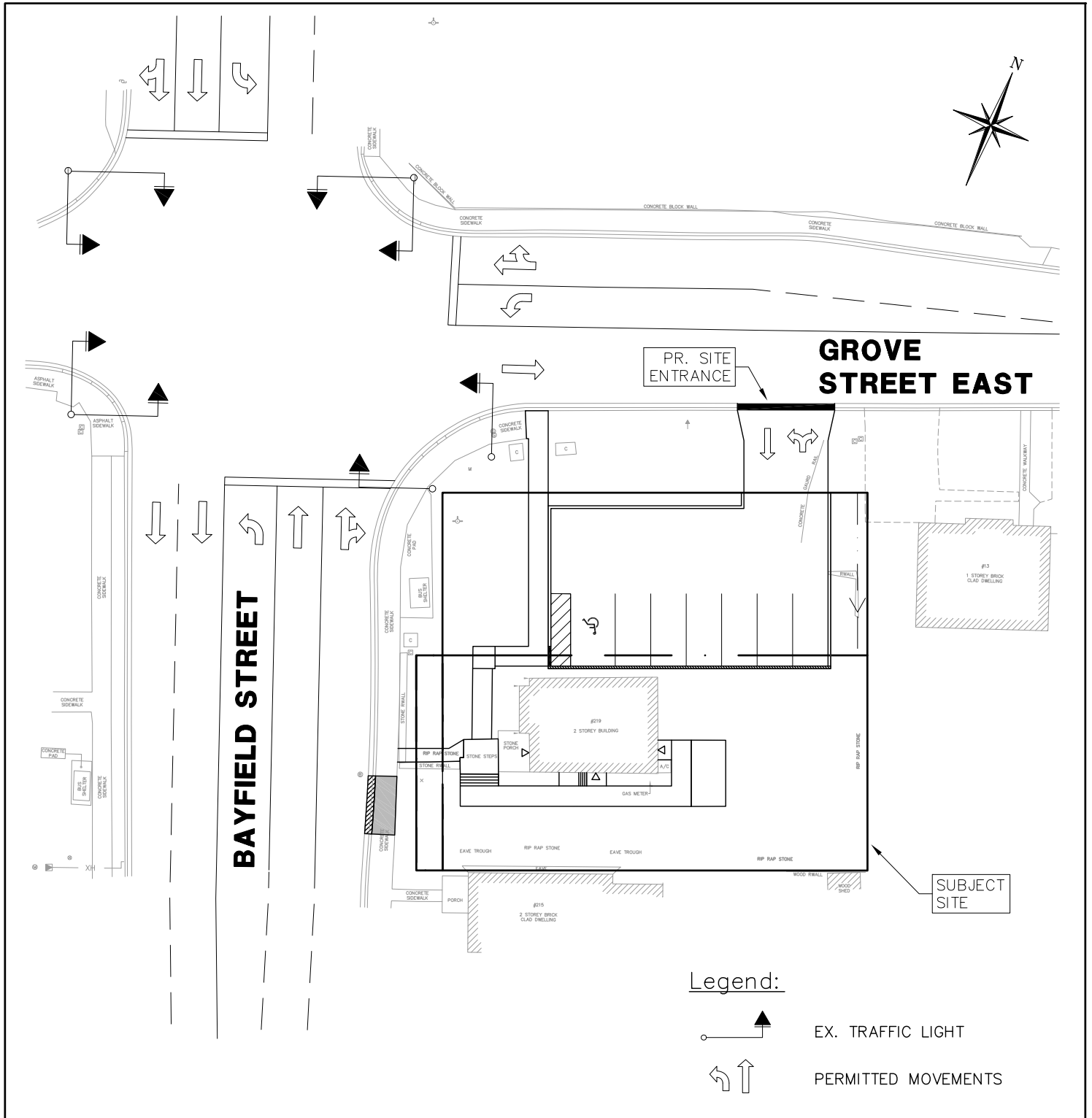
Checked By: K.G.

INNOVATIVE PLANNING SOLUTIONS

PLANNERS • PROJECT MANAGERS • LAND DEVELOPERS

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Drawing Title

SITE LOCATION & STUDY AREA
CONFIGURATION PLAN

Project Title

219 BAYFIELD STREET



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Drawn By

CJ

Checked By

JR

Figure No.

Scale

N.T.S.

Project No.

21-664

FIG1



TOWNSHIP OF ORO-MEDONTE

SUBJECT SITE/
AREA OF
INTEREST



Classification Types

- Arterial
- Major Collector
- Minor Collector
- Parkway
- Provincial Highway

Transportation Facilities

- GO Station
- Barrie Bus Terminal
- BCRY Railway
- GO Transit Railway

Natural Features

- Park / Open Space
- Water

Other Features

- Secondary Plan Areas

Data Sources: City of Barrie
Date Updated: February 15, 2019
Project: 171-08853-00
Map Created By: WSP Thornhill

0 500 1,000 2,000 3,000 4,000 Meters

Figure 3-8
Existing Roadway Classifications
City of Barrie Transportation Master Plan



Table 9.9.4: Design Intersection Sight Distance – Case B1, Left Turn From Stop

Design Speed (km/h)	Stopping Sight Distance (m)	Intersection Sight Distance for Passenger Cars	
		Calculated (m)	Design (m)
20	20	41.7	45
30	35	62.6	65
40	50	83.4	85
50	65	104.3	105
60	85	125.1	130
70	105	146.0	150
80	130	166.8	170
90	160	187.7	190
100	185	208.5	210
110	220	229.4	230
120	250	250.2	255
130	285	271.1	275

Note: Intersection sight distance shown is for a stopped passenger car to turn left onto a two-lane highway with no median and grades 3% or less. For other conditions, the time gap should be adjusted and the sight distance recalculated.

Sight distance design for left turns at divided-highway intersections should consider multiple design vehicles and median width. If the design vehicle used to determine sight distance for a divided-highway intersection is larger than a passenger car, then sight distance for left turns will need to be checked for that selected design vehicle and for smaller design vehicles as well. If the divided-highway median is wide enough to store the design vehicle with a clearance to the through lanes of approximately 1 m at both ends of the vehicle, no separate analysis for the departure sight triangle for left turns is needed on the minor-road approach for the near roadway to the left. In most cases, the departure sight triangle for right turns (case B2) will provide sufficient sight distance for a passenger car to cross the near roadway to reach the median. Possible exceptions are addressed in the discussion of case B3.



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TRIP GENERATION SPREADSHEET

VEHICLE TRIP ENDS VS. 1000SQ.FT. OF GROSS FLOOR AREA

ON A WEEKDAY, PEAK HOUR OF ADJACENT STREET TRAFFIC, ONE HOUR BETWEEN 7AM AND 9AM

Date: 26-Jan-22

Project No.: 21-664

Project: 219 Bayfield Street

Prepared By: CJ

References: Institute of Transportation Engineers (ITE) Trip Generation Manual, 10th edition

Development	ITE Code & Land Use	Independent Variable	Total Trips*- From average rate of trip generation		
			Total Trips:	Entering (83%)	Exiting (18%)
219 Bayfield St. Real Estate Office	712: Small Office Building	3.1 1000sq.ft.	6	5	1

Notes:

This analysis is based on the Concept Plan for the office space at 219 Bayfield Street by Innovative Planning Solutions dated Aug. 24, 2021.

*No fitted curve equation available. Range of rates is 0.78-4.12 per 1000sq.ft. of gross floor area, with average rate of trip generation at 1.92.

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TRIP GENERATION SPREADSHEET

VEHICLE TRIP ENDS VS. 1000SQ.FT. OF GROSS FLOOR AREA

ON A WEEKDAY, PEAK HOUR OF ADJACENT STREET TRAFFIC, ONE HOUR BETWEEN 4PM AND 6PM

Date: 26-Jan-22

Project No.: 21-664

Project: 219 Bayfield Street

Prepared By: CJ

References: Institute of Transportation Engineers (ITE) Trip Generation Manual, 10th edition

Development	ITE Code & Land Use	Independent Variable	Total Trips*- From average rate of trip generation		
			Total Trips:	Entering (32%)	Exiting (68%)
219 Bayfield St. Real Estate Office	712: Small Office Building	3.1 1000sq.ft.	8	3	5

Notes:

This analysis is based on the Concept Plan for the office space at 219 Bayfield Street by Innovative Planning Solutions dated Aug. 24, 2021.

*No fitted curve equation available. Range of rates is 0.56-5.50 per 1000sq.ft. of gross floor area, with average rate of trip generation at 2.45.

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26-Jan-22
Proj. 21-664

Traffic count data uploaded from the City of Barrie Open Data portal

X	Y	OBJECTID	LABEL	DAILYTOTVOL	DATE_YEAR	TYPE	PEAKHOUR	HEAVYVEHIC	AVGSPEEDKMPH	LOCATION	PEDESTRIANS
603825.8856	4916738.693	270	ADT-21020	21020	2017	TMC	11678			S Bayfield and Grove	42
603793.6325	4916787.716	268	ADT-24354	24354	2017	TMC	13530			N Bayfield and Grove	47
603832.0465	4916777.929	267	ADT-6662	6662	2017	TMC	3701			E Bayfield and Grove	69