Final Report

ENVIRONMENTAL AND ENGINEERING SUMMARY REPORT

12304 Heart Lake Road, Caledon

Prepared for Broccolini
by IBI Group
November 15, 2021

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1 Introduction

1.1 Background

IBI Group Canada (IBI) has been retained by Broccolini (the "Owner") to prepare an Environmental and Engineering Summary Report to support the Zoning Bylaw Amendment (ZBA) and Site Plan Application (SPA) processes for a proposed industrial development at 12304 Heart Lake Road, in the Town of Caledon (the "Town") and the Region of Peel (the "Region"). The purpose of this report is to integrate and summarize the environmental site investigations with the findings of the functional servicing and stormwater management report.

2 Study Area

2.1 Site Description

Located at 12304 Heart Lake Road in the Town of Caledon and Region of Peel, the overall subject site is approximately 37 ha in size, however, it should be noted that this report will only consider Phase 1 of the development, which consists of a 9.95 ha portion at the southwest of the site, bounded by Abbotside Way to the north, existing agricultural lands to the east, Highway 410 to the south, and an adjacent industrial development application to the west. A vicinity map and an aerial exhibit can be found as **Figure 1** and **Figure 2** respectively following the report.

2.2 Site Proposal

As previously noted, this report will only consider Phase 1 of the development, which includes a 48,610 m^2 building (Building 1) within a 9.95 ha portion at the southwest corner of the site. Construction will be slab on grade, with no underground levels. Sample architectural drawings can be found in **Appendix A** for reference.

It should also be noted that Abbotside Way will be extended in an easterly direction to Heart Lake Road and is to be conveyed to the Town through a Development Agreement.

2.3 Physiography and Landform

The site is located within the South Slope physiographic region, which is a drumlinized area at the south of the Oak Ridges Moraine. The site falls within the Etobicoke Creek watershed, which drains to Lake Ontario. There are no existing surface water features at the site, however there are two seasonal un-named tributaries starting immediately to the east and south of the site, which drain to the Etobicoke Creek and Heart Lake, respectively.

2.4 Topography

The overall site is currently comprised of agricultural land and slopes in a southwesterly direction with a change in elevation starting at ±274 m at Heart Lake Road and falling to ±266 m at the west property line. A copy of the topographic survey can be found in **Appendix A** for reference.

3 Phase I Environmental Site Assessment

A Phase I Environmental Site Assessment (ESA) was carried out by EXP Services Inc. (EXP) dated April 14, 2021 to identify areas of potential environmental concern (APECs) to the Site. The following APECs were identified:

- Two exterior diesel-containing aboveground storage tanks (ASTs);
- One historic oil-fire furnace and wood burning in the basement of one of the dwellings; and,
- One diesel-containing AST in the basement of one of the dwellings.

The identified APECs were determined to have a low relative degree of environmental risk, due to the observed good condition of the structures and no visible staining in these areas.

The relative degree of environmental risk at the site was found to be low and it was concluded that a Phase II ESA was not warranted, with the following recommendations:

- If unsuitable fill is encountered during site grading, it should be removed off site and testing should be carried out to assess disposal options.
- The existing (2) wells and (3) septic systems at the site should be decommissioned prior to redevelopment, once not in use, in accordance with applicable regulations; and
- A Designated Substances Survey should be conducted prior to any demolition activities and Regulated Building Materials should be managed in accordance with applicable regulations and guidelines.

4 Geotechnical Investigation

A geotechnical investigation was carried out by EXP, dated November 10, 2021 to determine subsurface conditions at the site. Drilling and sampling were carried out between March 16 and March 25, 2021 at a total of (30) borehole locations. The soil conditions at the site can be summarized as surficial topsoil over a discontinuous fill layer underlain by native deposits of clayey silt till, sandy silt till, and sand to silty sand. The soil conditions at the site are described as follows:

Topsoil

- Topsoil thickness ranged from 125 to 300 mm at borehole locations, however thicknesses of up to 600 mm should be anticipated due to ploughing.

Fill

- Fill was encountered at (7) of the boreholes, at depths of 1.4 to 2.1 m.
- Fill was found to constitute brown clayey silt to sand silt with trace gravel and minor stone fragments.
- Moisture content was found to range from 12 to 26 percent, with higher moisture content in the upper ranges likely due to recently melted snow.

Clayey Silt Till

- Clayey silt till was found to extend to the termination depths of 8.0 to 8.2 m at (11) of the boreholes.
- Clayey silt till was fully penetrated at 4.1 to 7.2 m depths at the remaining boreholes.
- Clayey silt till was found to be typically brown in colour becoming grey as depth increased.
- Moisture content was found to range from 7 to 18 percent.

Sandy Silt Till

- Sandy silt till was found to extend to the termination depths of 7.8 to 8.2 m in (15) of the boreholes.
- Sandy silt till was fully penetrated at 7.1 m depth at (1) borehole.
- Sandy silt till was found to be grey or brown in colour with moisture content ranging from 6 to 18 percent.

Sandy/Silty Sand

- A discontinuous sandy to silty sand deposit was found at (2) boreholes.
- Sandy/silty sand was found to extend to the termination depths of 7.8 to 8.1 m in these boreholes.
- Sandy/silty sand was found to be brown in colour with a moisture content ranging from 10 to 13 percent .

Groundwater was observed in (14) of the boreholes upon completion of drilling, at depths of 2.0 to 7.3 m below grade. Monitoring wells were installed in (5) of the boreholes with water levels between 1.3 to 2.7 m below grade observed after 15 to 22 days. It should be noted that groundwater elevations are subject to seasonal fluctuations.

The subsurface soil conditions at the site were found to be suitable for the proposed development, with the native soil able to support the proposed structures.

5 Hydrogeological Investigation

A Hydrogeological Investigation and Water Balance Assessment was completed by EXP, dated November 12, 2021 based on information gathered during the aforementioned geotechnical investigation and Phase I ESA to establish local hydrogeology, assess dewatering flow rates, assess groundwater quality, and develop site-specific water balance for pre-and post-development conditions. The conclusions of the investigation are summarized as follows:

Hydrogeological Setting

- The site is located within the South Slope physiographic region.
- Surficial geology can be described as clay to silt till, with approximately 65 m of overburden atop the Queenston Formation bedrock.
- Regional groundwater flows in an easterly/southeasterly direction toward a tributary of the Etobicoke Creek.
- Water Well Records indicate that (29) water wells exist within a 500 m radius of the site, some of which are expected to be active.
- There are no existing surface water features at the site.
- The site was found to be located outside of Well Head Protection Areas (WHPA) Zones Q1/Q2, outside of any Highly Vulnerable Aquifer (HVA) areas, outside of Significant Groundwater Recharge Areas (SGRA), and at least 10 km from any intake protection zone (IPZ).

Dewatering

- The construction dewatering rate was estimated to be 10,000 L/day for Building 1, using a safety factor of 2.0.
- The construction dewatering rate was estimated to be 640,000 L/day for Building 1, using a safety factor of 2.0 during a 15 mm precipitation event.
- As the buildings will not have basements, it is anticipated that long-term dewatering will not be required.

Groundwater Quality

- Levels of Total Manganese and Chloroform were found to exceed the Region's discharge limits for storm sewers.
- All analyzed parameters were found to meet the Region's discharge limits for sanitary and combined sewers.

Water Balance

- Under pre-development conditions, approximately 99.1% of the overall Site is pervious and available for infiltration.
- Under post-development conditions, the total pervious area is reduced to 17.6%.
- If no remedial measures are implemented to maintain infiltration post-development, is expected that the annual infiltration volume will be reduced from approximately 54,130 m^3/year to 9,629 m^3/year.
- It is recommended that mitigation measures be implemented to balance the infiltration rate deficit, such as the use of Low Impact Development (LID) facilities.

6 Functional Servicing Report

A Functional Servicing Report was prepared by IBI Group, dated November 15, 2021 to provide a municipal servicing strategy for sanitary discharge and water supply. Servicing opportunities and constraints and the capacity of the existing municipal infrastructure to support the development were evaluated. Results are summarized in the following sections.

6.1 Sanitary Drainage System

Per the Town's record information, local sanitary infrastructure consists of a 250 mm sanitary sewer within Abbotside Way which flows in a westerly direction and conveys flows to a 525 mm trunk sanitary sewer within Kennedy Road.

A 250 mm sanitary service and control MH were installed at the time Abbotside Way was constructed as part of the Livingston Estates residential subdivision. The existing service will easily convey the post-development peak sanitary flow of 11.5 L/s while operating at 34% of full flow capacity.

6.2 Water Supply System

Local existing water infrastructure consists of a 300 mm watermain within Abbotside Way, a local 400 mm watermain within Heart Lake Road, and both a 900 mm and a 1200 mm feedermain within Heart Lake Road.

Located within the lower end of Pressure District 7, the existing 300 mm watermain is predicted to have a static pressure of 565 kPa (82 psi) and is expected to have an appropriate fire response curve to adequately service the site from both domestic and fire demand perspectives.

Furthermore, the existing 300 mm watermain within Abbotside Way is proposed to be extended within the Abbotside Way extension and shall be connected to the existing 400 mm watermain within Heart Lake Road. This connection will serve to further improve fire flow response, create redundancy, and improve water quality.

7 Stormwater Management Report

A 900 mm storm service has been stubbed to the property line at the northwest limit of the subject site and is connected to an existing 1950 mm storm sewer within Abbotside Way, which conveys flows in a westerly direction to SWM Pond E4. The SWM Pond has been designed to accommodate storm flows from the subject site, provided outflow is limited to the 10-year release rate.

Storm flows from the subject site will be controlled and attenuated through rooftop storage and will be discharged to the existing 1950 mm storm sewer within Abbotside Way at the allowable release rate as identified in the Mayfield West Functional Servicing Report.

8 Grading

Under pre-development conditions, no external drainage enters the site and all drainage within the site is conveyed to the adjacent municipal rights-of-way. A 3.04 ha external area will drain to the subject site from the undeveloped lands to the northeast. Proposed grades will match current drainage patterns wherever feasible. Emergency overland flow route in excess of a 100-year storm event will continue to be directed to the municipal right-of-way matching pre-development conditions.

9 Erosion and Sediment Control

During construction, it is recommended that a sediment control fence be installed along the perimeter of the site as required during demolition activities. All existing and proposed catch basins within close proximity of the subject site shall be protected with a geotextile fabric. A mud mat shall be installed as required to minimize distribution of mud into the public realm, and a temporary sediment control pond per the TRCA Erosion and Sediment Control Guide for Urban Construction.

10 Conclusions and Recommendations

In summary, it can be concluded that the proposed development will not have significant impacts on the natural environment or the municipal infrastructure if the appropriate recommendations made within the various supporting studies are implemented.

Should you have any questions, please do not hesitate to contact the undersigned.

Respectfully Submitted,

IBI Group Canada Inc.

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Associate Manager - Land Engineering

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https://ibigroup.sharepoint.com/sites/projects1/135636/internal documents/6.0_technical/6.04_civil/03_tech-reports/phase 1/zba and spa/revision 1/env and eng summary/135636 - environmental and engineering summary (revision 1).docx

Figure 1 – Vicinity Map

True North

PROJECT NAME	INDUSTRIAL DEVELOPMENT - PHASE 1 12304 HEART LAKE ROAD CALEDON, ONTARIO
SCALE: N.T.S.	DATE: NOV 2021
PROJECT ENG: JJ	DRAWN BY: NDS
CHECKED BY: JJ	APPROVED BY:
PROJECT NO: 135636	
FIGURE NAME	KEY PLAN
FIGURE NO.	FIG-1
REVISION	

IBI GROUP
Unit 300 – 8133 Warden Avenue
Markham ON L6G 1B3 Canada
tel 905 763 2322 fax 905 763 9983
ibigroup.com

SCALE CHECK 1 in 10mm

File Location: J:\135636_12304Heart\7 0_Production\7.03_Design\04_CivilSheets\SPA\Phase 1\Figures\135636-SHT-FIG.dwg Last Saved: November 2, 2021, by Jasmine.Zhang Plotted: Thursday, November 4, 2021 10:44:25 AM by Nicolas Di Stefano

Figure 2 – Aerial Plan

True North

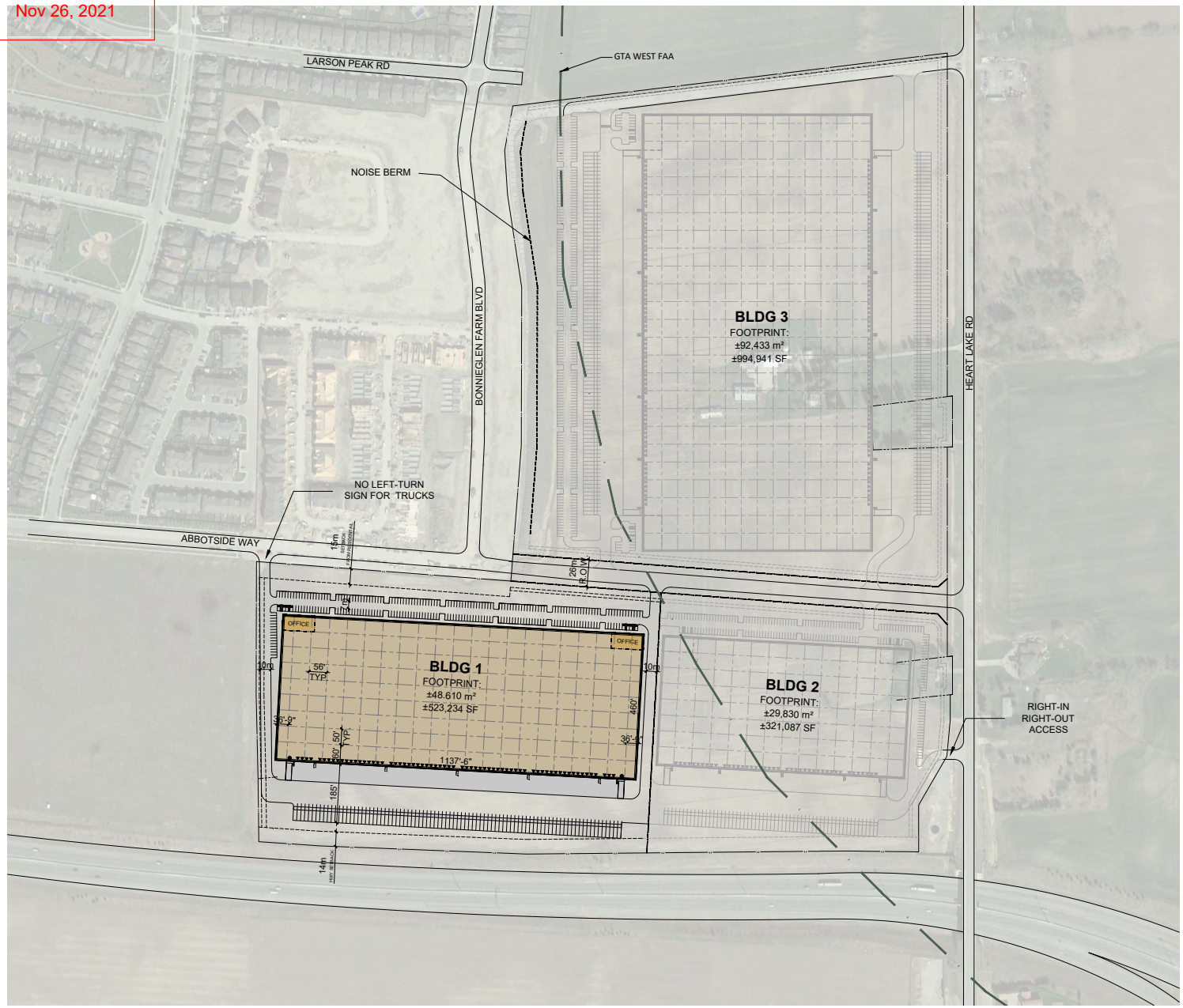
PROJECT NAME INDUSTRIAL DEVELOPMENT - PHASE 1 12304 HEART LAKE ROAD CALEDON , ONTARIO		IBI GROUP Unit 300 – 8133 Warden Avenue Markham ON L6G 1B3 Canada tel 905 763 2322 fax 905 763 9983 ibigroup.com	
SCALE: N.T.S.	DATE: NOV 2021	FIGURE NAME AERIAL PLAN	FIGURE NO. FIG-2
PROJECT ENG: JJ	DRAWN BY: NDS		REVISION
CHECKED BY: JJ	APPROVED BY:		
PROJECT NO: 135636			

File Location: J:\135636_12304Heart\7.0_Production\7.03_Design\04_CivilSheets\SPA\Phase 1\Figures\135636-SHT-FIG.dwg Last Saved: November 2, 2021, by Jasmine.Zhang Plotted: Thursday, November 4, 2021 10:45:56 AM by Nicolas Di Stefano

SCALE CHECK 10mm 1 in

Appendix A – Background Information

Sample Architectural Drawings (Ware Malcomb)
Topographic Survey (R-PE)

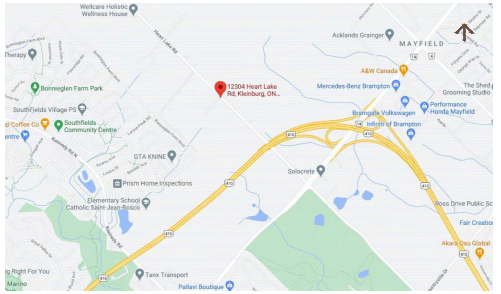


PROJECT DATA:			DEVELOPMENT STANDARDS:	
SITE AREA:			ZONING:	MP/MS
GROSS:	91.52 AC	37.04 HA		
	3,986,633 SF	370,370 m²	MAX. F.A.R.:	0.50
BUILDING AREA:			MAX. COVERAGE:	50%
BUILDING 1	523,234 SF	48,610 m²	MAX. HEIGHT:	12.2 m [6]
BUILDING 2	321,087 SF	29,830 m²		
BUILDING 3	994,941 SF	92,433 m²	BUILDING SETBACKS:	[4]
TOTAL:	1,839,262 SF	170,873 m²	FRONT:	9 m
FAR:			SIDE (INT):	3m, 6m [5]
GROSS:		0.46	SIDE (EXT):	7.5 m
NET:		0.46	REAR:	7.5 m
COVERAGE:				
GROSS:		46%	PARKING SETBACKS:	[1,4]
NET:		46%	FRONT:	6 m
BUILDING 1			SIDE:	3 m
▲ DOCK-HIGH DOORS		67	SIDE (EXT):	3 m
○ GRADE-LEVEL DOORS		2	REAR:	3 m
PARKING REQUIRED:			DRIVEWAY	1.5m
WAREHOUSE				
<7k m²	7,000 m²	78 STALLS	LANDSCAPE REQ.:	10%
7k-20k m²	13,000 m²	90 STALLS		
>20k m²	28,610 m²	170 STALLS	OFF-STREET PARKING:	
TOTAL		338 STALLS	STANDARD:	2.75X6.0
			DRIVE AISLE:	6 m
PARKING PROVIDED:		247 STALLS		
	@0.47/1000 SF	@0.51/100 m²	REQ. PARKING RATIO BY USE:	
REQ. ACCESSIBLE	*To be confimed by City*		WAREHOUSE:	[2]
TRAILER STALLS		86 STALLS	≤7,000 m²	1/90 m²
BUILDING 2			7k - 20k m²	1/145 m²
▲ DOCK-HIGH DOORS		43	>20,000 m²	1/168 m²
○ GRADE-LEVEL DOORS		2	OFFICE:	<15% [3]
PARKING REQUIRED:				
WAREHOUSE			NOTES:	
<7k m²	7,000 m²	78 STALLS	1 driveway setback - 1.5m from lot line	
7k-20k m²	13,000 m²	90 STALLS	2 If accessory office use and retail not floor areas are 15% or less of the total net floor area:	
>20k m²	9,830 m²	59 STALLS	Up to 7,000 m2 – 1 parking space per 90 m2 net floor area or portion thereof	
TOTAL		226 STALLS	7,000 to 20,000 m2 – 78 parking spaces, plus 1 parking space per 145 m2 of net floor area or portion thereof over 7000 m2	
PARKING PROVIDED:		186 STALLS	Over 20,000 m2 – 168 parking spaces, plus 1 parking space per 170 m2 of net floor area or portion thereof over 20,000 m2	
	@0.58/1000 SF	@0.62/100 m²	3 If associated office or retail net floor areas are more than 15% of the total net floor area:	
REQ. ACCESSIBLE	*To be confimed by City*		In addition to the standards contained above in, the applicable net floor areas exceeding 15% shall be subject to 1 parking space per 30 m2 of net floor area or portion thereof	
TRAILER STALLS		57 STALLS	4 14.0m from a provincial highway. 20m front yard abutting a residential zone. 15m exterior/interior side and rear yards abutting residential	
BUILDING 3			5 3m on one side, 6m on the other	
▲ DOCK-HIGH DOORS		146	6 18m in MP zone, 12.2m in MS zone	
○ GRADE-LEVEL DOORS		4		
PARKING REQUIRED:			NOTE: HEIGHT VARIANCE MAY BE REQUIRED DEPENDING ON ZONING	
WAREHOUSE				
<7k m²	7,000 m²	78 STALLS		
7k-20k m²	13,000 m²	90 STALLS		
>20k m²	67,811 m²	404 STALLS		
TOTAL		571 STALLS		
PARKING PROVIDED:		481 STALLS		
	@0.48/1000 SF	@0.52/100 m²		
REQ. ACCESSIBLE	*To be confimed by City*			
TRAILER STALLS		191 STALLS		

This conceptual design is based upon a preliminary review of entitlement requirements and on unverified and possibly incomplete site and/or building information, and is intended merely to assist in exploring how the project might be developed.

Stormwater Management Design:
ASSUMED UNDERGROUND SYSTEM

Boundary Source:
PDF ALTA SURVEY



1:1500
0 20m 40m 75m 150m

NORTH

scheme: 09

Conceptual Site Plan

12304 Heart Lake Road
Caledon, ON, Canada

BROCCOLINI

WARE MALCOMB

TOR21-0032-00
10.20.2021

SHEET
1

TOWN OF CALEDON
PLANNING
RECEIVED

Nov 26, 2021

SKETCH SHOWING ELEVATIONS FOR CONSULTANT'S USE

SCALE 1:1000

R-PE SURVEYING LTD., O.L.S.

METRIC

LEGEND

BXB	DENOTES BELL BOX
CB	DENOTES CATCH BASIN
CONC	DENOTES CONCRETE
FH	DENOTES FIRE HYDRANT
P.I.N.	DENOTES PROPERTY IDENTIFIER NUMBER
SIGN	DENOTES SIGN STANDARD
MH	DENOTES MANHOLE
MHSA	DENOTES MANHOLE SANITARY
MHST	DENOTES MANHOLE STORM
MHW	DENOTES MANHOLE WATER
INV.	DENOTES INVERT ELEVATION
WM	DENOTES WATER METER
WV	DENOTES WATER VALVE
-W-	DENOTES OVERHEAD WIRE
Ø	DENOTES DIAMETER
	DENOTES FENCE LINE
HYDRANT	DENOTES HYDRANT
	DENOTES CURB CUT
	DENOTES ANCHOR GUY WIRE

CAUTION

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NOTES

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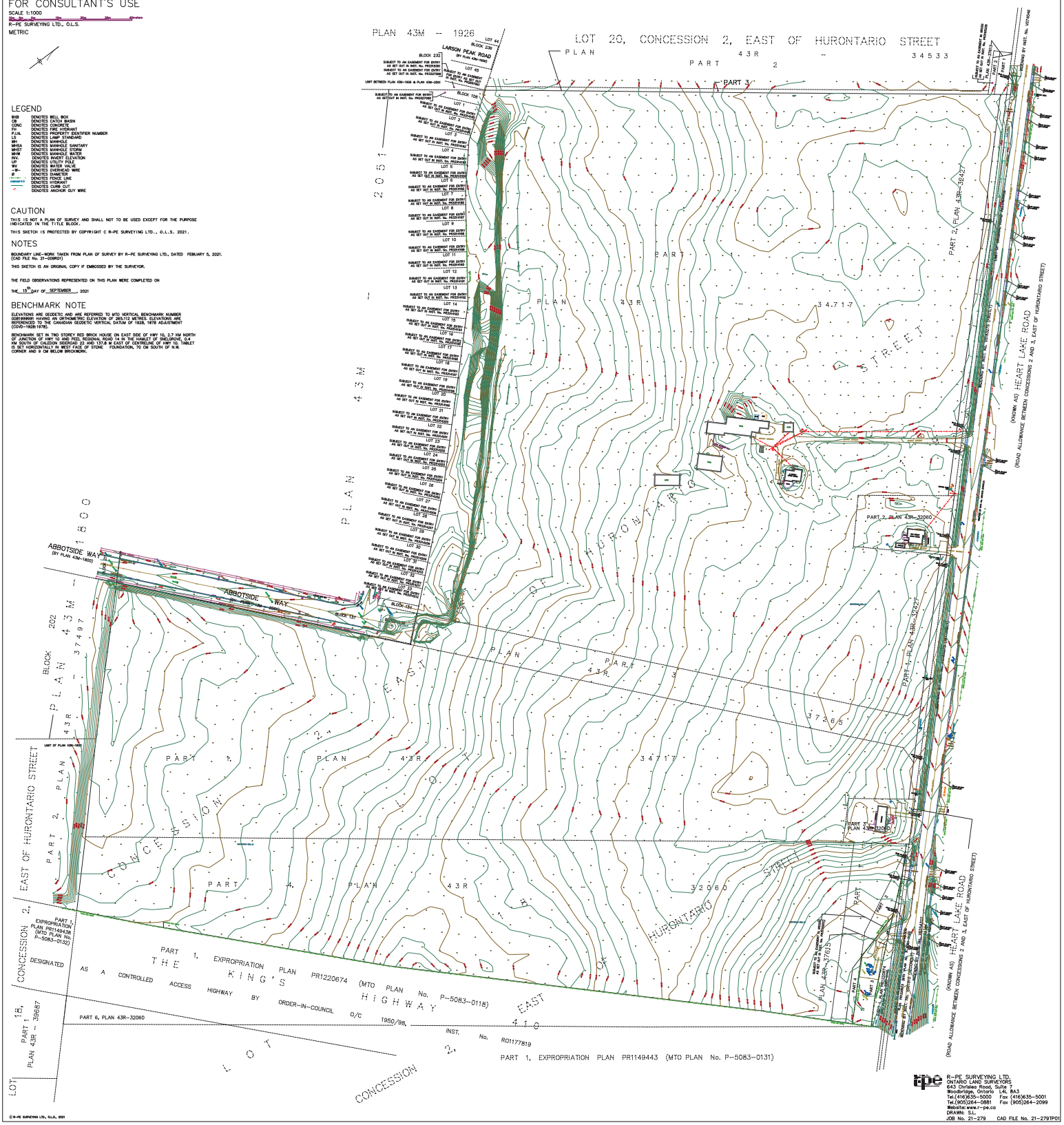
THE FIELD OBSERVATIONS REPRESENTED ON THIS PLAN WERE COMPLETED ON

THE 15TH DAY OF SEPTEMBER, 2021

BENCHMARK NOTE

ELEVATIONS ARE GEODETIC AND ARE REFERRED TO MTO VERTICAL BENCHMARK NUMBER 0081999991 HAVING AN ORTHOMETRIC ELEVATION OF 265.112 METRES. ELEVATIONS ARE REFERENCED TO THE CANADIAN GEODETIC VERTICAL DATUM OF 1928, 1978 ADJUSTMENT (CGVD-1928:1978).

BENCHMARK: SET IN TWO STOREY RED BRICK HOUSE ON EAST SIDE OF HWY 10, 3.7 KM NORTH OF JUNCTION OF HWY 10 AND PEEL REGIONAL ROAD 14 IN THE HAMLET OF SNELGROVE, 0.4 KM SOUTH OF CALEDON SIDEROAD 23 AND 17.8 M EAST OF CENTRELINE OF HWY 10. TABLET IS SET HORIZONTALLY IN WEST FACE OF STONE FOUNDATION, 70 CM SOUTH OF N.W. CORNER AND 9 CM BELOW BRICKWORK.



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