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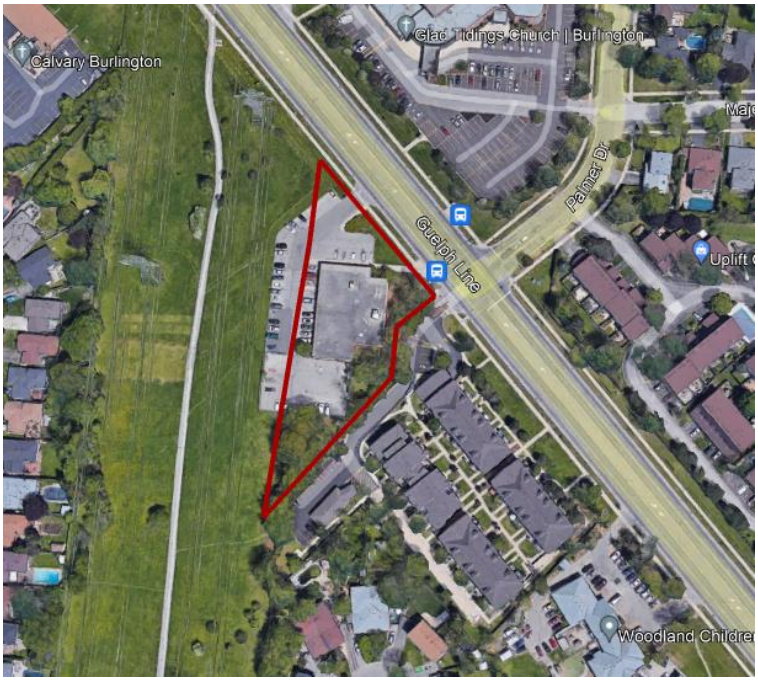
ENGINEERING

Professional Engineers Ontario

LABORATORY

CALA
Canadian Association for Laboratory Accreditation Inc.

HYDROGEOLOGICAL INVESTIGATION



1396 GUELPH LINE, BURLINGTON, ONTARIO

Prepared for:

INFINITY DEVELOPMENT GROUP

Project No. FE-P 22-11967H

March 11, 2022

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Project Name:	Hydrogeological Investigation for Proposed Development
Project Address:	1396 Guelph Line, Burlington, ON.
Project Number:	FE-P 22-11967H
Issued on:	March 11, 2022
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1. INTRODUCTION

Fisher Engineering Limited was retained by Infinity Development Group to carry out a Hydrogeological Investigation for the proposed redevelopment at the property located at 1396 Guelph Line in Burlington, Ontario, hereinafter referred to as the 'Site'.

The purpose of the Hydrogeological Investigation was to evaluate groundwater conditions with respect to the redevelopment of the site.

The report has been prepared specifically and solely for the proposed development regarding hydrogeological aspects for design and construction.

The Hydrogeological Review has been prepared in accordance with the Ontario Water Resources Act, Ontario Regulation 387/04 and the Ontario Halton Sanitary and Storm Sewer By-Law No. 02-03.

2. SITE AND PROJECT DESCRIPTIONS

Site Settings

Guelph line is taken as running in a north-south direction for the purpose of this report. The site is located on the west side of Guelph Line, in a mixed commercial-residential neighbourhood, approximately 1.5km north of the onramp with Queen Elizabeth Way and is bounded by Guelph Line to the east, residential properties to the south, a hydro corridor to the west and north, beyond which are houses.

At the time of the investigation, the site was occupied by a single-storey commercial building with loading area located at the rear. The remaining areas of the site were mainly covered with asphalt pavement and utilized for parking.

Topography

The site is mostly flat and graded for drainage towards catch basins.

Proposed Development

It was understood that the existing building will be demolished to permit the construction of a new eleven-storey residential building, with three levels of underground parking. Finished Floor Elevation (FFE) is expected at 131.45m asl with TOS for P3 at 9.75m below (121.70m asl) according to the Site Plans prepared by Zedd Architecture dated March 8, 2022.

3. SCOPE OF HYDROGEOLOGICAL INVESTIGATION

The Hydrogeological Investigation works were required to:

1) Establish groundwater conditions for the design of dewatering works, if required, prior to construction of the proposed building.
2) Determine the need for permanent drainage and
3) Conduct calculations/analyses of the groundwater quantity and quality to be used for the necessary applications for permits prior to proceeding with construction dewatering and design of permanent drainage, if necessary.

The scope of this work generally consisted of the following:

- **Drilling/locating Monitoring Wells.** Drilling of monitoring wells and reviewing / compiling the borehole logs and onsite / laboratory testing.
- **Data Evaluation.** Evaluating the results of soil types, groundwater static levels, ground surface elevation, groundwater quality, flow direction and other available hydrogeological data for the site and their potential impact on the proposed development.
- **Hydraulic Conductivity Tests.** Conduct single well response tests and record groundwater level drawdown and recovery to model/calculate hydraulic conductivity.
- **Groundwater Quality Analysis.** Carry out laboratory analyses on groundwater to determine compliance with the Ontario Halton Sewer Use Bylaws No. 02-03 (Mar 2003) – Halton Sanitary Sewer and Halton Storm Sewer.
- **Groundwater Level Monitoring.** Conduct long-term monitoring of the groundwater levels to determine the seasonal high-water levels.
- **Hydrogeological Report.** Prepare and submit a report detailing the findings and recommendations of the Hydrogeological Investigation.

4. FIELD AND LABORATORY WORKS

Subsurface exploration for the hydrogeological investigation was carried out concurrent with drilling for the geotechnical investigation on March 2 and 3, 2022 and consisted of (6) borehole advanced to depths of 9.12m to 15.32m below prevailing grade. All boreholes were instrumented as monitoring wells with 3.05m (10') long, 51mm diameter PVC slotted screen pipes. A clean silica sand pack was placed around each well screen which was isolated with bentonite extending to slightly below existing grade as shown on the Log of Boreholes in Appendix B.

A CME-55 Truck mounted drill rig equipped with solid stem augurs, supplied by Terra Firma Services, was used for all drilling work under direct supervision of Fisher Engineering personnel. Soil samples, in the overburden soils, were taken at regular intervals using a split–spoon sampler advanced by means of the Standard Penetration Test (SPT) which was conducted in general accordance with ASTM Specification D1586. Field tests to determine engineering parameters of the soils were carried out during drilling, which included Standard Penetration Tests (SPT). Approximate locations of the boreholes are shown on the Borehole Location Plan in Appendix A.

Laboratory Analyses

The soil samples were taken to the Fisher Environmental laboratory for further visual assessment and classification. Three (3) representative soil samples from BH1, BH3 and BH6 were submitted for grain size analyses and nine (9) samples for moisture content tests. Two (2) samples were submitted for pH, Chloride and Sulphate analyses to determine impact on concrete. The laboratory samples were tested and classified in general accordance with the Unified Soil Classification System, ASTM D 2487, and Standard Practice for Classification of Soil for Engineering Purposes. The laboratory results, which are presented in Appendix C, confirm the field description for subsurface soils discussed in Section 5.0.

One (1) groundwater sample from MW6 was submitted to ALS Environmental laboratory for analyses of water quality under the Ontario Halton Sewer Use Bylaws No. 02-03 (Mar 2003) – Halton Sanitary Sewer and Halton Storm Sewer. The results are presented in Appendix D.

The soil samples recovered during the investigation will be stored in the Fisher Environmental laboratory for a period of 30 days after submitting this report and will be discarded thereafter unless instructed otherwise by the client.

Site Survey

Elevations at borehole/monitoring well locations were interpolated from a topographic survey plan, prepared by Ashenhurst Nouwens & Associates Inc, dated December 20, 2021.

5. SUBSOIL CONDITIONS

Surface and subsurface conditions encountered at borehole locations are shown in Appendix B - Log of Boreholes and are summarized in the following sections. The logs include soil stratification at borehole locations along with detailed soil descriptions. Variations in soil stratification may occur and should be expected between borehole locations and elsewhere on the site.

Asphalt/Fill - Approximately 1.5" to 3" of asphalt pavement was encountered at the surface of all boreholes and was underlain by granular material consisting generally of moist, dense gravelly sand to sand and gravel. Fill soils consisting of dark grey to black clayey silt to brown sandy silt with trace gravel, pieces of concrete and asphalt and some organic materials were encountered below the granular material in BH1, BH3, BH5 and BH6. A layer of dark brown, moist, firm clayey silt at 0.91m to 2.29m in BH4 could not be positively identified and was described as 'possibly fill'. Fill depths and elevations are presented in Table 1.

Table 1: Fill Depths and Elevations

Borehole No.	Surface Elevation (m asl)	Depth of Borehole (m bgs)	Ele at Bottom of Borehole (m asl)	Depth of Fill (m bgs)	Ele at Bottom of Fill (m asl)
BH1	131.11	10.75	120.36	0.91	130.20
BH2	131.27	10.36	120.91	0.46	130.81
BH3	130.96	15.37	115.59	1.68	129.28
BH4	130.64	15.24	115.40	1.52	129.12
BH5	129.92	13.80	116.12	0.61	129.31
BH6	130.12	9.25	120.87	1.37	128.75

Grey to Brown Sandy Silt Till – A layer of grey/grey to brown, generally moist, compact, sandy silt till, with trace gravel and trace clay was encountered below the fill of BH1, BH2, BH4 (possibly fill), BH5 and BH6 and below clayey silt till in BH3. The sandy silt layer extended to depths of 1.98m (BH1) to 3.35m (BH6).

Reddish Brown Silt to Clayey Silt Till - Reddish brown, moist to dry, hard to very stiff, clayey silt till with trace sand and pieces of shale/cobbles was encountered generally below the sandy silt till extending to depths of 5.18m (BH5) to 6.10m (BH2 & BH4).

Light Brown Silty Sand - A pocket of light brown, wet, silty sand was encountered at depth of 2.44m to 3.05m bgs in BH3.

Red Weathered Shale – Red, moist to dry, hard, weathered shale was encountered beneath the overburden soils in all boreholes at depths of 5.18m (BH5) to 6.10m (BH2, BH3 & BH4). Power auguring was undertaken to refusal in the weathered shale to borehole termination depths of 9.25m (BH6) to 15.37m (BH3).

6. HYDROGEOLOGICAL STUDY

A hydrogeological study for the subject site was conducted based on the boreholes/wells' exploration, observation and site/laboratory testing. Groundwater details from the six (6) newly installed monitoring wells were used in the Hydrogeological Study. The wells were constructed with 3.05m (10') long, 51mm diameter PVC slotted screen pipes, with the bases at approximate depths below existing grade as shown in Appendix B. Clean silica sand packs were placed around each well screen which was isolated with bentonite extending to slightly below existing grade.

Standing water was measured at 5.18m in BH2 and BH4 and at 4.57m bgs in BH6 on completion of drilling. The other open boreholes were observed to be dry. A pocket of wet silty sand was observed between 2.44m and 3.05m bgs while wet seams were observed at 4.57m bgs in BH6.

6.1 Hydrogeological Conditions

Review of the available surficial geological and hydrogeological information for the area shows that the site is underlain generally with clay to silt-textured till (derived from glaciolacustrine deposits or shale). Underlying bedrock is represented by shale, limestone, dolostone and siltstone of the Queenston Formation and is generally less than 10m below prevailing grade. Surficial geology and bedrock maps are presented in Appendix A.

The subsoils and hydrogeological conditions were observed and recorded during both the geotechnical and hydrogeological investigations. Based on the boreholes/wells' exploration, the saturated soil layers on the site were dominated by light brown silty sand and silt seams embedded in the predominantly clayey silt till and sandy silt till.

All monitoring wells were purged/developed and allowed to fully recover prior to carrying out groundwater level measurements and sampling. Measured groundwater depths and elevations are summarized in Table 2.

Comments on Table 2:

The following general comments regarding groundwater conditions at the site are based on the groundwater level data and the geotechnical investigation:

- Static groundwater levels approximately one week after drilling (March 9, 2022) were observed at 2.70m to 10.15m below grade (elevations of 127.70m to 120.96m).
- Pockets of perched and seepage water from more pervious soils may be expected on the site.
- Roseland Creek is located approximately 1.3km southeast of the site while several several smaller creeks are located within a 3km radius of the site.
- The site is located in a developed residential/commercial area, with no indication of active domestic wells within a 500m radius measured from the centre of the property. Water supply in the area is generally via municipal water system.
- Groundwater levels are being monitored biweekly during the rainy season to determine highwater levels at the site.

Table 2: Groundwater Depths and Elevations

Well No.		MW1	MW2	MW3	MW4	MW5	BH6
Elev. at Ground (m asl)		131.11	131.27	130.96	130.64	129.92	130.12
Depth of MW	m bgs	10.67	10.36	14.63	15.24	13.41	9.15
Elev. at bottom of well	m asl	120.44	120.91	116.33	115.40	116.51	120.97
On Completion	GW level, m bgs	Dry	5.18	Dry	5.18	Dry	4.57
	GW Ele, m asl	-	126.09	-	125.46	-	125.55
2-Mar-22	GW level, m bgs	n/a	n/a	12.64	11.17	n/a	2.84
	GW Ele, m asl	-	-	118.32	119.47	-	127.28
9-Mar-22	GW level, m bgs	10.15	3.57	4.00	3.95	6.05	2.70
	GW Ele, m asl	120.96	127.70	126.96	126.69	123.87	127.42

6.2 Hydraulic Conductivity K Modeling Results

Single Well Response Tests

Single well response tests (SWRT) were conducted in MW3, MW4 and MW6 on March 2, 2022. The water bearing media mainly consisted of occassional pockets/seams of silty sand and silt seams interbedded in the sandy silt till and clayey silt till at various intervals, and were assumed to be unconfined, homogenous, isotropic and of uniform thickness. It was also assumed that the wells fully penetrated the water bearing soils. Water bearing weathered shale seams may also be expected at further depths. Data from the single well response tests were used to calculate the hydraulic conductivity values using Luthin's method.

Calculated values for hydraulic conductivity (k) are summarized in Table 3 and are representative of the water bearing soil characteristic consisting of pockets/seams of silty sand/silt embedded in the till soils and or wet lenses/seams in the weathered shale at the screened depths. Details of the hydraulic conductivity analyses are presented in Appendix C.

Table 3: Summary of screen interval, Single Well Response Tests and Hydraulic Conductivity Results

Test Wells	Well Surface Elevation (m asl)	Groundwater Depth (m)	Screen Elevation (m asl)	Variance of water head created (m)	Minutes/ Recovery Percentage	Hydraulic Conductivity, K (Luthin's Method)	
						m/s	m/day
MW1	131.11	10.15	120.44 – 123.45	n/a	n/a	n/a	n/a
MW2	131.27	3.57	120.91 – 123.96	n/a	n/a	n/a	n/a
MW3	130.96	12.64	116.33 – 120.90	1.76	31 min / 15%	3.03×10^{-7}	0.026
MW4	130.64	11.17	115.40 – 121.50	2.18	31 min / 11%	1.06×10^{-7}	0.009
MW5	129.92	6.05	116.51 – 119.55	n/a	n/a	n/a	n/a
MW6	130.12	2.84	120.97 – 124.02	6.10	31 min / 13%	3.03×10^{-7}	0.026

6.3 Grain Size Analysis for Hydraulic Conductivity K

Representative samples from BH3 were selected and submitted to Fisher Environmental Laboratory for grain size distribution analyses. The laboratory results are presented in Appendix C and summarized in Table 4.

Based on the field soil description (Unified Soil Classification System) and grain size distribution, the overburden soils within the excavation depths can by classified as: SC – Clayey sands, sand-clay mixtures to SM – Silty sands, sand-silt mixtures with estimated coefficient of permeability k and corresponding percolation times T as shown in Table 4 based on Table 2 of the Supplementary Guidelines to the Ontario Building Code, 1997. These values are generally consistent with field observation and hydraulic conductivity tests.

Table 4: Hydraulic Conductivity Estimated from Grain Size Analysis

Location	Depth of soil sample (m)	Soil Classification	Permeability and Percolation Time (Suplementary Guidelines to the OBC)	
			Coefficient of permeability, k in cm/s	Percolation Time, T in mins/cm
BH3	5 - 6½'	Clay & Silt, some Sand, trace Gravel (Till)	10^{-4} - 10^{-6}	12 - 50
	10 – 11½'	Clay & Silt, some Sand, trace Gravel (Till)	10^{-4} - 10^{-6}	12 - 50
	15 – 16½'	Sandy Clay & Silt, trace Gravel (Till)	10^{-3} - 10^{-5}	8 - 20

7. CONSTRUCTION DEWATERING & PERMANENT DRAINAGE

7.1 Construction Dewatering

It was understood that the development will consist of a mid-rise residential building with three underground levels. Subsoil conditions were observed to be generally consistent across the site. FFE is 131.45m with TOS for P3 at 121.70m asl. Conventional strip and or spread footings were recommended in the geotechnical report at 1.2m below TOS, 120.50m asl with elevator shaft expected at another 1.5m below. This means that the footings will likely extend below the groundwater levels observed during the investigation. The groundwater level should therefore be lowered to 1m below the designed footing depths to protect footing subgrade from hydraulic pressure disturbance during construction.

Construction dewatering flowrate of **20.23 m^3/day (20,230 L/day)** is recommended with three underground levels. Factored dewatering rate of **30.34 m^3/day (FS of 1.5)** should be used for planning purposes.

Seasonal High Groundwater Levels

Groundwater levels will be monitored during the rainy season, March through to June 2022, to determine seasonal highwater levels on the site. An average groundwater of the two highest groundwater levels from MW6 (2.77m asl) was used to calculate construction dewatering rate. The highest groundwater level was increased by 1.0m (1.70m bgs) and used to calculate permanent drainage rate.

Accounting for Accumulated Precipitation

Provisions should be made to pump accumulated water from the excavation areas during construction, particularly following a period of heavy rainfall. For example, 25mm rainfall in 24 hrs may result in accumulation of up to 83m^3 in the excavated area. Subsurface soils at the site are dominated by sandy to clayey silt till with occasional layer of silty sand and silt overlying shale. Consequently, some amount of ponding of rainwater may be expected. A conservative accumulated volume of **30 m^3/day** may therefore be assumed for planning purposes. Accumulated precipitation may be stored on site for subsequent disposal to an MOECC-licensed facility. If the water is to be discharged into the public sewer system, then an application for the discharge of private water will have to be made to Halton Region. The water quality, at the time of the application, will need to be ascertained to ensure compliance with Ontario Sewer Use Bylaws – Halton Sanitary Sewer Bylaw No. 02-03.

*Maximum construction discharge rates, taking into consideration accumulated precipitation volumes, are **50,230 L/day** (unfactored) and **60,340 L/day (factored**).*

7.2 Permanent Drainage

Permanent drainage rate of **17.81 m^3/day (17,810 L/day)** was obtained for three underground levels with the lowest P3 TOS elevation of approximately 121.70m asl. A factored permanent drainage rate of **26.72 m^3/day (FS of 1.5)** should be used for planning purposes.

An application for permission to discharge to the municipal/regional sewer system will be required unless the subsurface structure of the building is designed as watertight or onsite disposal facilities are implemented.

It is further recommended that the subsurface portion of the elevator shaft, below P3 level, be designed as watertight to prevent the need to have deeper groundwater sump pits for permanent drainage.

7.3 Permit to Take Water (PTTW)

As the calculated construction dewatering flowrate for the building, including accumulated precipitation, is more than 50 m^3/day, registration on the MOECC Environmental Activity and Sector Registry (EASR) for Water Taking will be required for construction. An application for permission to take water (PTTW) will not be required for neither construction dewatering nor permanent drainage as the daily flowrates are less than 400,000 and 50,000 L/day respectively.

7.4 Groundwater Quality

The results (March 3, 2022) of analyses for groundwater quality under the Ontario Halton Sanitary Sewer Bylaw No. 02-03 (Mar 2003) and Halton Storm Sewer By-law No. 02-03 show compliance with all parameters as shown in Appendix D.

Based on the results of the laboratory analyses,the groundwater in its present form may be discharged to the public storm and sanitary systems without treatment.

It should be noted however that testing of groundwater at the depths observed during the investigation would not be representative of the water that might accumulate during a high rainfall event. Any accumulation of precipitation occurring in the excavation during construction, that may require offsite discharge, will have to be tested at the time of the event to determine the quality of water for discharge.

7.5 Dewatering Influence Zone

The estimated construction dewatering quantities are based on the worst-case groundwater conditions that might occur during the construction period. Calculated dewatering influence zone is expected to be up to 7.64m from the edge of the dewatering point in the predominantly sandy silt till to clayey silt till and much lower in the weathered shale. Recharge was observed to be relatively slow during SWRT. Consequently, construction dewatering may be achieved by pumping from sump pits where necessay.

7.6 Hydrogeological Impact

During the investigation, it was determined that there will not be any negative impact to the natural environment, Halton Region Sewer works nor surrounding properties due to construction dewatering because of the depth at which groundwater was observed and the types of soil/rock on the site. No groundwater induced depression at surface level is expected. Consequently, it is not expected that construction will impact public infrastructure, the natural environment nor will there be any settlement issues.

8. DISCUSSION

Hydraulic conductivity values (k) calculated from onsite single well response tests are 1.06×10^{-7} to 3.03×10^{-7} m/s (0.009 to 0.026 m/day) in the wells screened within the silty sand/silt/ sandy silt till and clayey silt till and partly into the shale. These are representative of the water bearing soils comprising silty sand/silt layers/seams embedded in the till material and weathered shale at the expected excavation depths for footings based on the geotechnical and hydrogeological field investigations.

An approximate construction dewatering discharge rate of 20.23 m^3/day will be required for the recommended footing depths for three underground level. Permanent drainage of 17.81 m^3/day will be required. A factor of safety of 1.5 should be applied to construction dewatering and permanent drainage rates.

Registration on the MOECP's EASR Website for water taking will be required during construction however an application for PTTW will not be required under conditions observed on the site during the investigation.

The groundwater quality determined by laboratory analyses revealed compliance to parameters of the Halton Region sanitary and storm sewer. Groundwater may therefore be discharged to the Region's sanitary or storm systems without treatment.

It should be noted that if it is intended that any accumulated water, following periods of heavy rainfall, be discharged into the public sewer, then a permit to discharge would be required along with laboratory analyses to ensure compliance with relevant sewer bylaws.

The discharge rates for construction dewatering and permanent drainage, given in the preceding, are based on common practice and reasonable assumption for excavation depths and are subject to further modifications when details of the structures become available.

9. LIMITATIONS

This report is limited in scope to those items specifically referenced in the text. The discussions and recommendations presented in this report are intended only as guidance for the named client, design engineers and those directly associated with implementing, regulating and monitoring of the project. The information on which these recommendations are based is subject to confirmation by engineering personnel at the time of construction. Localized variations in the subsoil conditions may be present between and beyond the boreholes and should be verified during construction.

As more specific subsurface information becomes available during excavations on the Site, this report should be updated. Contractors bidding on or undertaking the work should decide on their own investigations, as well as their own interpretations of the factual borehole results. This concern specifically applies to the classification of the subsurface soil and the potential reuse of these soils on/off Site. Contractors should draw their own conclusions as to how the near surface and subsurface conditions may affect them.

APPENDIX A – SITE AND LOCATION MAPS AND PLAN



FISHER ENGINEERING

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NORTH

N

LEGEND

SITE BOUNDARY

PROJECT NAME AND ADDRESS

HYDROGEOLOGICAL INVESTIGATION

1396 Guelph Line,
BURLINGTON,ONTARIO

FIGURE A1:

SITE LOCATION PLAN

SHEET NO.

PROJECT NO.

FE-P22-11967

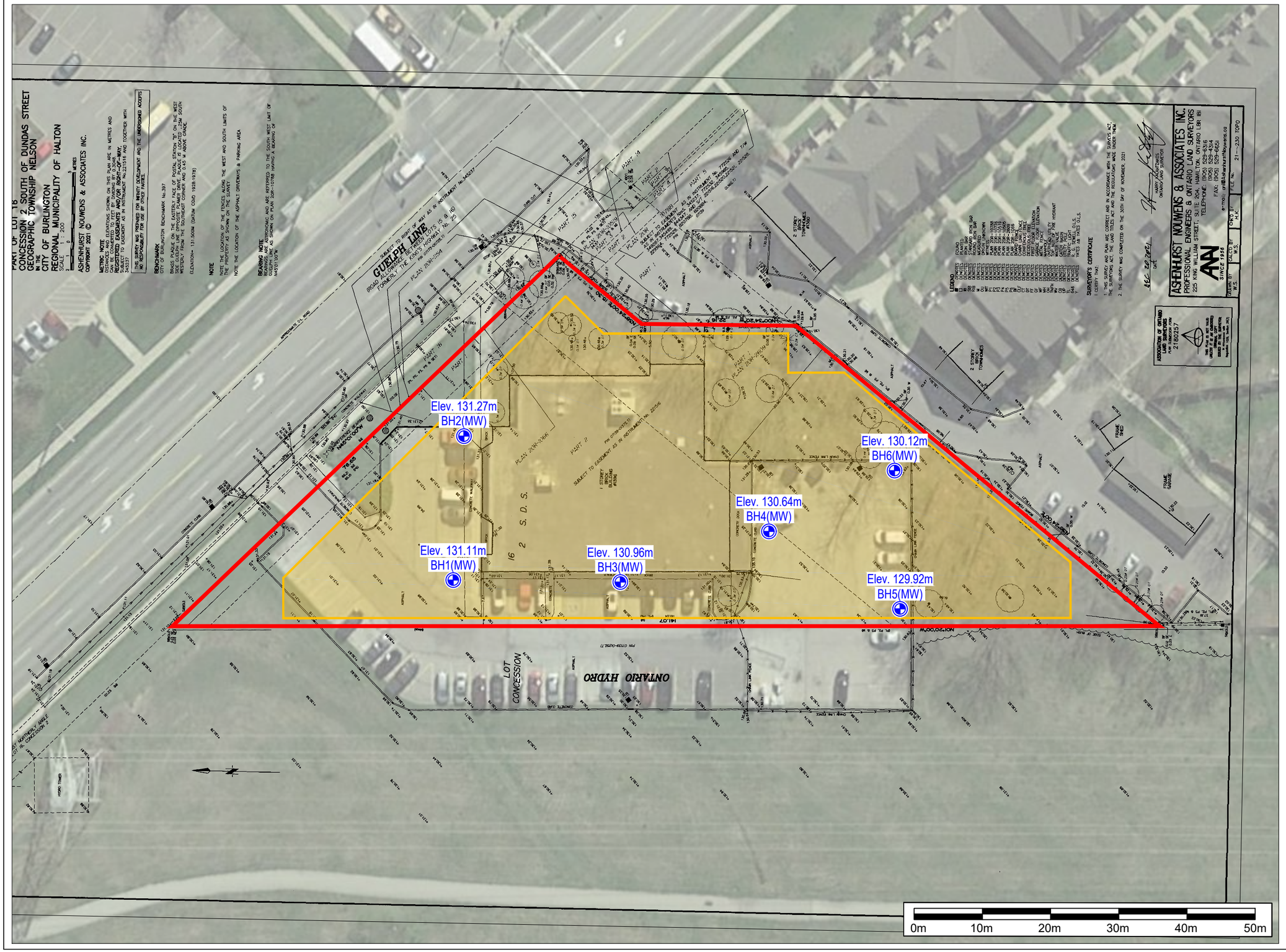
DATE

MARCH 2022

SCALE

AS SHOWN

A1



FISHER ENGINEERING

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Markham, Ontario
L3R 3K2

Tel: 905 475-7755
Fax: 905 475-7718

NORTH

LEGEND

- PROPERTY BOUNDARY
- PROPOSED BUILDING FOOTPRINT (PARKING GARAGE BELOW)
- BOREHOLE WITH MONITORING WELL LOCATION

PROJECT NAME AND ADDRESS

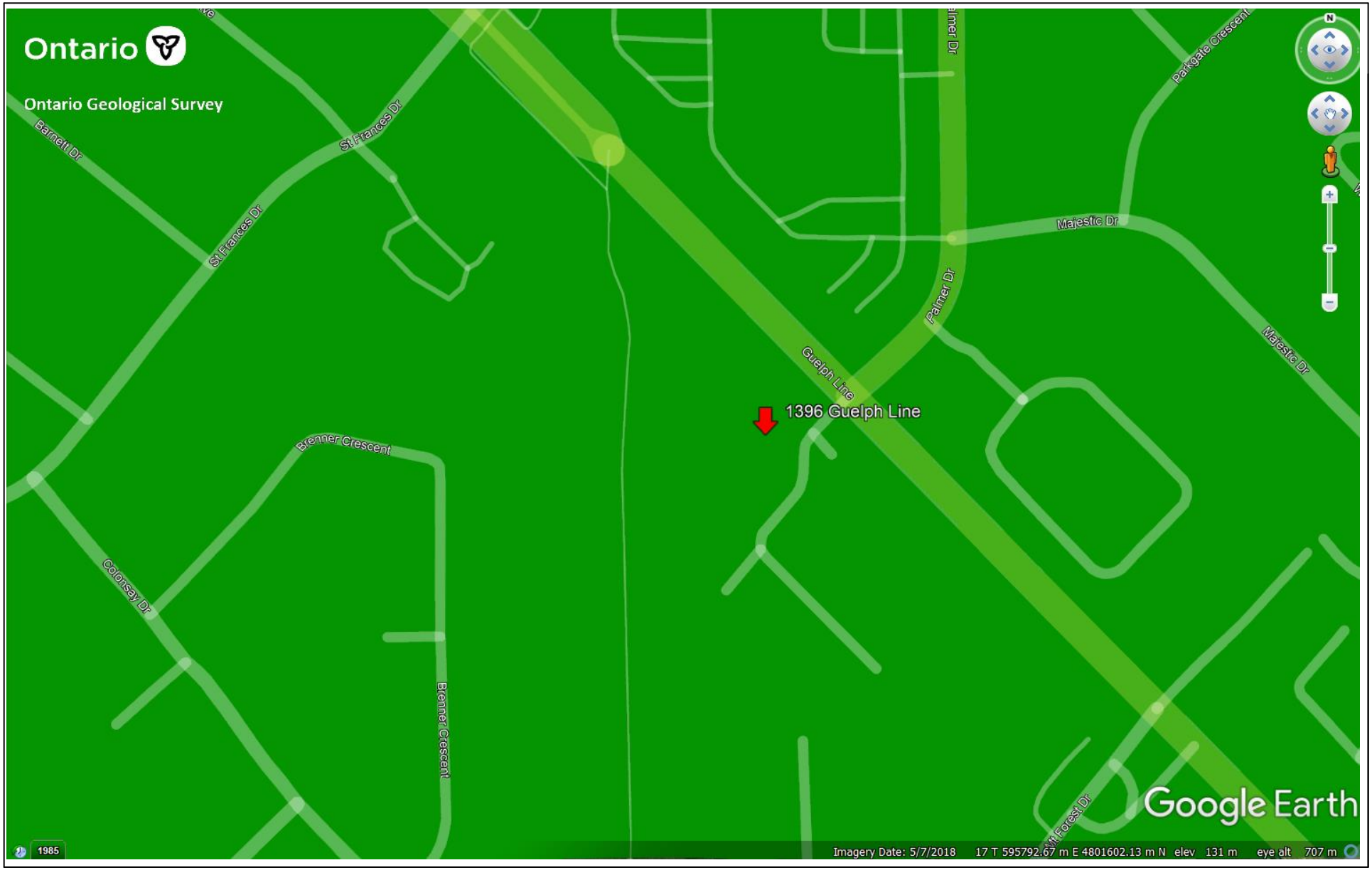
GEOTECHNICAL & HYDROGEOLOGICAL INVESTIGATIONS

1396 Guelph Line,
Burlington, ON

FIGURE 1.1:

SITE PLAN WITH BOREHOLE MONITORING WELL LOCATIONS

PROJECT NO.	SHEET NO.
FE-P 22-11966/67	A2
DATE: 4 March 2022	
SCALE: AS SHOWN	



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KEY PLAN

LEGEND

Clay to silt-textured till (derived from glaciolacustrine deposits or shale)

PROJECT NAME AND ADDRESS

HYDROGEOLOGICAL INVESTIGATION

1396 Guelph Line,
Burlington, Ontario

PROJECT NO. FE-P 21-11967H

DATE MARCH 2022

SCALE

A3

Surficial Geology Map



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KEY PLAN

LEGEND

Shale, limestone, dolostone, siltstone from the Queenston Formation

PROJECT NAME AND ADDRESS

HYDROGEOLOGICAL INVESTIGATION

1396 Guelph Line,
Burlington, Ontario

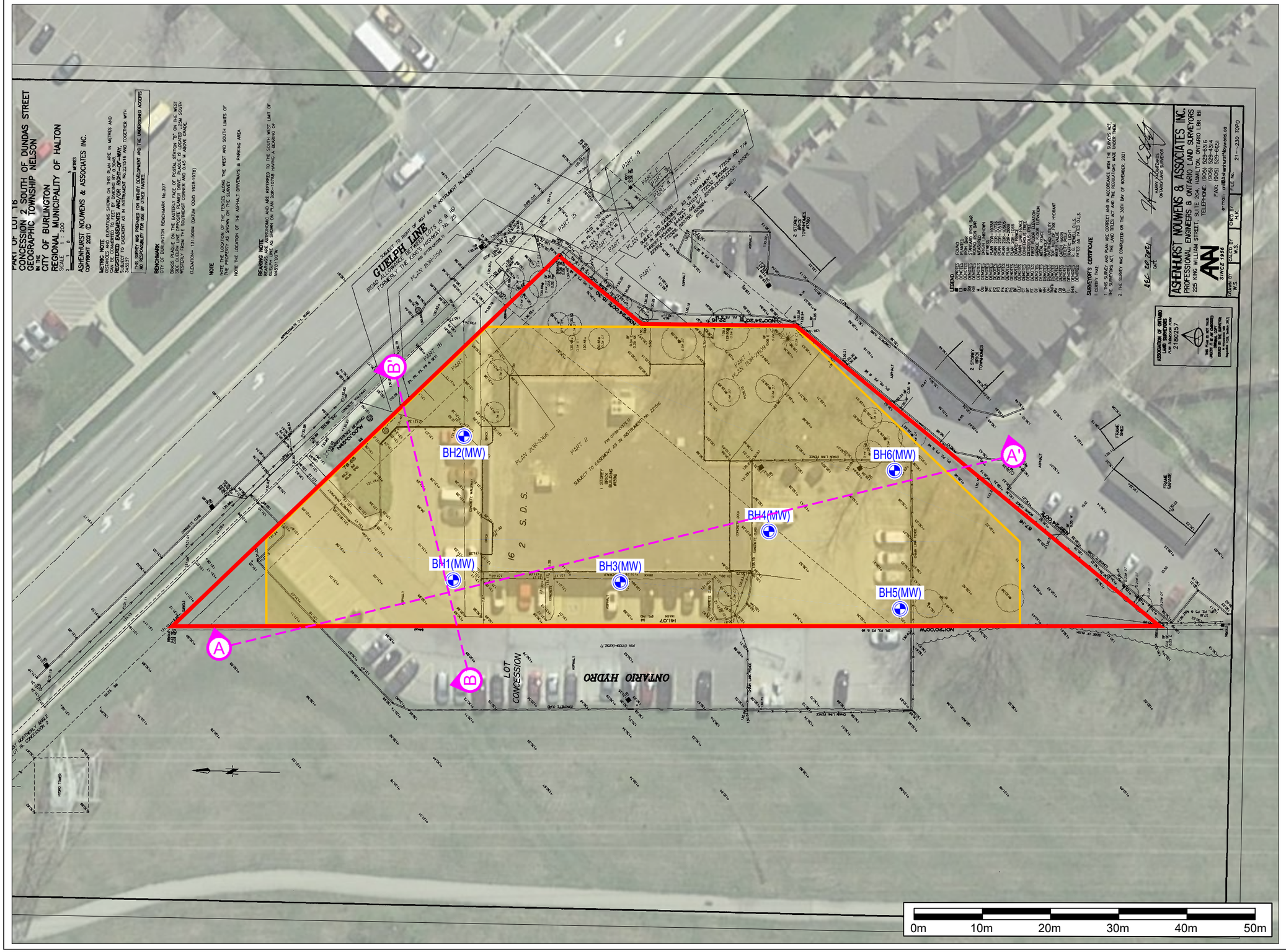
PROJECT NO. FE-P 22-11967H

DATE MARCH 2022

SCALE

A4

Bedrock Geology Map



PART OF LOT 15
CONCESSION 2 SOUTH OF DUNDAS STREET
GEOGRAPHIC TOWNSHIP NELSON
IN THE
CITY OF BURLINGTON
REGIONAL MUNICIPALITY OF HALTON
SCALE 1 : 200

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METRIC NOTE
DISTANCES AND ELEVATIONS SHOWN ON THIS PLAN ARE IN METRES AND CAN BE CONVERTED TO FEET BY DIVIDING BY 0.3048.
BEARINGS ARE UTM GRID BEARINGS, ZONE 17, NAD 83 (1997) AND ARE SUBJECT TO EASEMENT AS IN INSTRUMENT No.225084 AND TOGETHER WITH AN EASEMENT AS IN INSTRUMENT No.221514 AND TOGETHER WITH AN EASEMENT AS IN INSTRUMENT No.225085

THIS SURVEY WAS PREPARED FOR INFINITY DEVELOPMENT AND THE UNDERSIGNED ACCEPTS NO RESPONSIBILITY FOR USE BY OTHER PARTIES

BENCHMARK
CITY OF BURLINGTON BENCHMARK No.397
BRASS PLAQUE ON THE EASTERLY FACE OF POSTAL STATION 'B' ON THE WEST SIDE OF GUELPH LINE, 20.0 m SOUTHERLY OF THE CENTRELINE OF DUNDAS STREET AND 0.45 m WESTERLY FROM THE SOUTHEAST CORNER AND 0.45 m ABOVE GRADE.
ELEVATION= 131.500M (DATUM CGVD 1928:1978)

NOTE
NOTE THE LOCATION OF THE FENCES ALONG THE WEST AND SOUTH LIMITS OF THE PROPERTY AS SHOWN ON THE SURVEY.
NOTE THE LOCATION OF THE ASPHALT DRIVEWAYS & PARKING AREA.

BEARING NOTE
BEARINGS ARE UTM GRID BEARINGS AND ARE REFERRED TO THE SOUTH WEST LIMIT OF GUELPH LINE, AS SHOWN ON PLAN 20R-13709, HAVING A BEARING OF N40°01'00"W

LEGEND
FOUND
STANDARD IRON BAR
IRON BAR
SURVEY MONUMENT
MEASURED
PLAN 20R-10788
PLAN 20R-11013
PLAN 20R-11078
PLAN 20R-20504
PLAN 20R-20506
CONCRETE MONUMENT
CONIFEROUS TREE
DECIDUOUS TREE
FIRST FLOOR ELEVATION
BASEMENT FLOOR ELEVATION
MEGA TANK
HYDRO POLE
HYDRO POLE WITH GUY
MAILBOX
CATCH BASIN
HYDRO MANHOLE
TRAFFIC LIGHT
TRAFFIC CONTROL BOX
WATER VALVE
WATER VALVE CHAMBER
SANITARY MANHOLE
STORM MANHOLE
UTILITY MANHOLE
GAS VALVE
GAS METER
SIGN
CLEAN OUT
CONCRETE CURB
DEPRESSED CURB
ASPHALT
CONCRETE
GRAVEL
BUILDING
WOOD FENCE
CHAIN LINK FENCE
WIRE FENCE
METAL FENCE
CONCRETE WALL
RETAINING WALL
DENOTES
O.L.S.
SURVEYED

SURVEYOR'S CERTIFICATE
1. THIS SURVEY AND PLAN ARE CORRECT AND IN ACCORDANCE WITH THE SURVEYS ACT, THE SURVEYORS ACT, THE LAND TITLES ACT AND THE REGULATIONS MADE UNDER THEM.
2. THE SURVEY WAS COMPLETED ON THE 30TH DAY OF NOVEMBER, 2021

see re-level
DATE

HARRY ASHTENHURST
ONTARIO LAND SURVEYOR

ASHENHURST NOUWENS & ASSOCIATES INC.
PROFESSIONAL ENGINEERS & ONTARIO LAND SURVEYORS
225 KING WILLIAM STREET, SUITE 204, HAMILTON, ONTARIO L8R 1B1
TELEPHONE: (905) 529-6456 FAX: (905) 529-6653
SINCE 1956
EMAIL: anl@ashenhurstnouwens.ca

DRAWN BY: W.S. | CHKD BY: H.A.A. | FILE No.: 21-230 TOPO

ASSOCIATION OF ONTARIO LAND SURVEYORS
2180257
THE PLAN AND REPORT AS DESCRIBED ON THIS CERTIFICATE OF AUTHORIZATION ARE RECOGNIZED BY THE ASSOCIATION OF ONTARIO LAND SURVEYORS

FISHER ENGINEERING
400 Esna Park Dr., #15
Markham, Ontario
L3R 3K2
Tel: 905 475-7755
Fax: 905 475-7718

NORTH

LEGEND

- PROPERTY BOUNDARY
- PROPOSED BUILDING FOOTPRINT
- BOREHOLE WITH MONITORING WELL LOCATION
- A — A' CROSS SECTION MARK

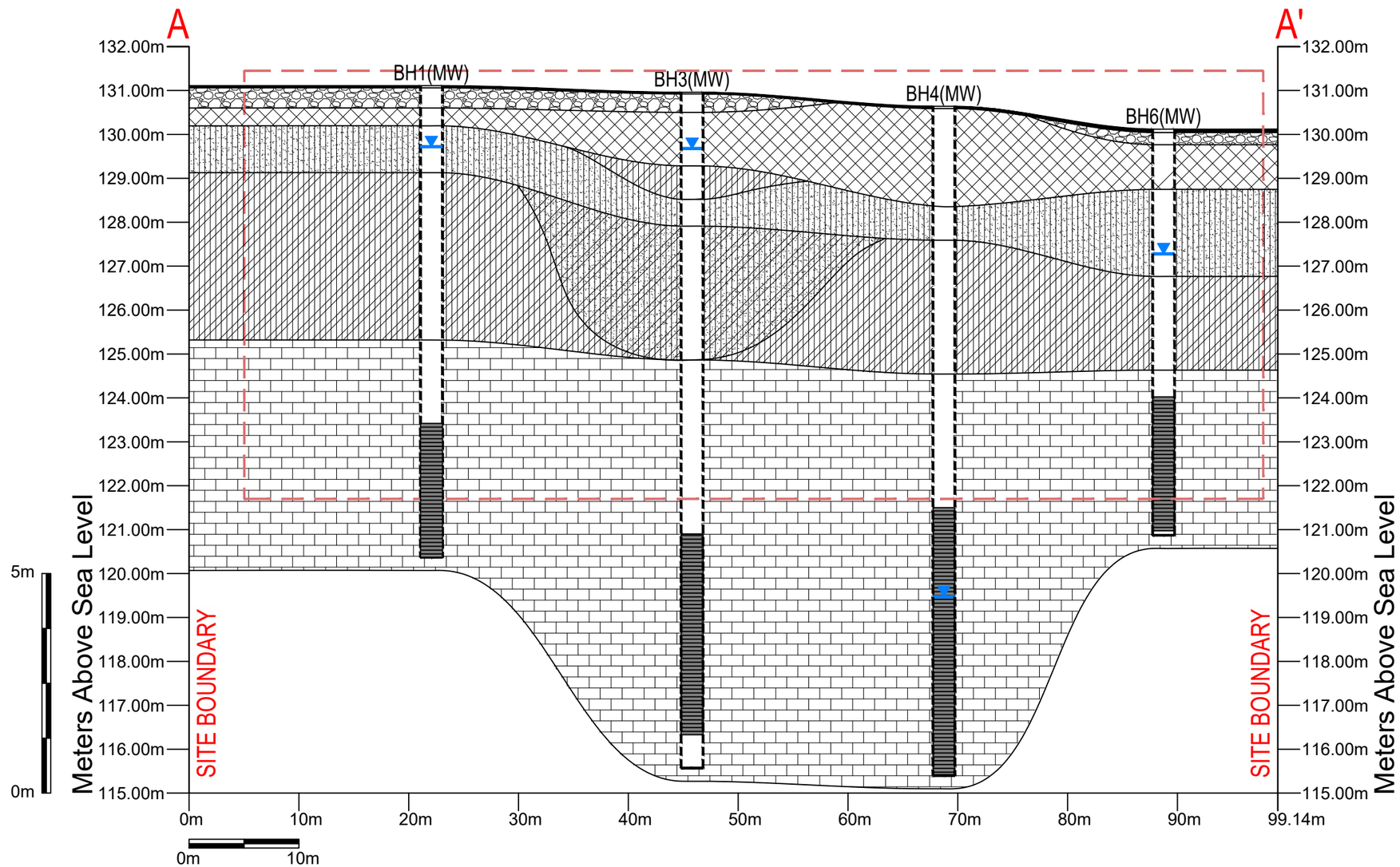
PROJECT NAME AND ADDRESS

GEOTECHNICAL & HYDROGEOLOGICAL INVESTIGATIONS

1396 Guelph Line,
Burlington, ON

FIGURE A5:
SITE PLAN WITH BOREHOLE MONITORING WELL LOCATIONS

PROJECT NO.	SHEET NO.
FE-P 22-11966/67	A5
DATE: 4 March 2022	
SCALE: AS SHOWN	



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NORTH

LEGEND

- ASPHALT
- GRANULAR MATERIAL
- FILL
- SAND
- SILT
- CLAY
- SHALE
- OUTLINE OF PROPOSED BUILDING UNDERGROUND PARKING GARAGE
- GROUNDWATER POTENTIOMETRIC LEVEL

PROJECT NAME AND ADDRESS

GEOTECHNICAL & HYDROGEOLOGICAL INVESTIGATIONS

1396 Guelph Line,
Burlington, ON

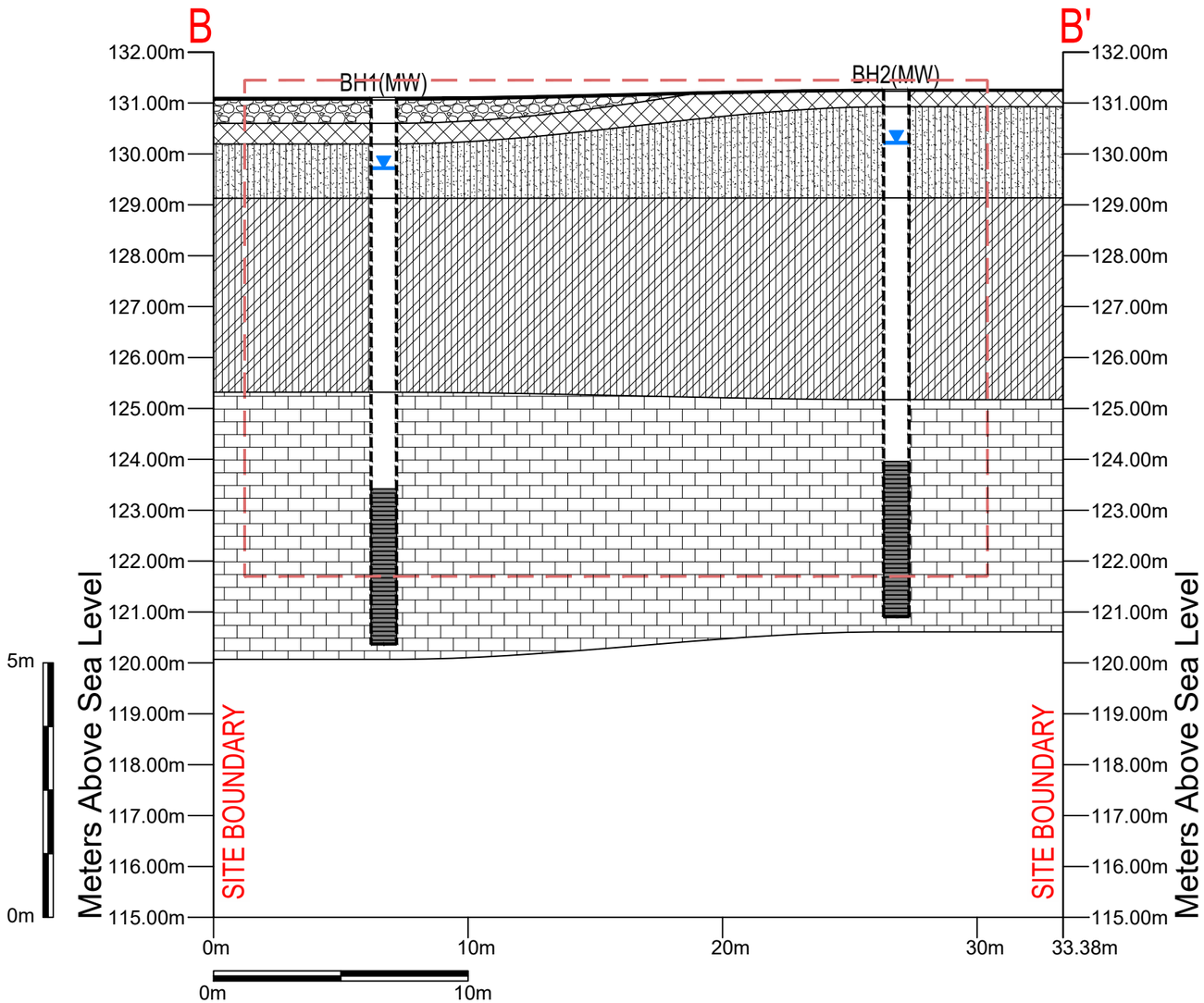
PROJECT NO. FE-P 22-11966/67

DATE. 7 March 2022

SCALE. AS SHOWN

FIGURE 5.1: **CROSS-SECTION A - A';**

SHEET NO. A5.1



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NORTH

LEGEND

- ASPHALT
- GRANULAR MATERIAL
- FILL
- SAND
- SILT
- CLAY
- SHALE
- OUTLINE OF PROPOSED BUILDING UNDERGROUND PARKING GARAGE
- GROUNDWATER POTENTIOMETRIC LEVEL

PROJECT NAME AND ADDRESS

GEOTECHNICAL & HYDROGEOLOGICAL INVESTIGATIONS

1396 Guelph Line,
Burlington, ON

PROJECT NO. FE-P 22-11966/67

DATE. 7 March 2022

SCALE. AS SHOWN

FIGURE 5.2: **CROSS-SECTION B - B';**

SHEET NO. A5.2



Infinity Development Group

1396 Guelph Line
Burlington, Ontario

21-027

March 08, 2022

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PROJECT STATISTICS

PROJECT#: 21-027
MARCH 04 2022

1396 GUELPH LINE
BURLINGTON

SITE

	Acre	Hectare	ft²	m²
TOTAL SITE AREA	**1.03**	**0.4168**	**44,867**	**4,168**

LOT COVERAGE (%)	33% (1,392 m²)
BUILDING HEIGHT (m)	42.37 (11 STOREYS)
VEHICLE PARKING	236 (1.00 PER UNIT)
BICYCLE PARKING	85 (0.36 PER UNIT)
DENSITY (UNITS PER HECTARE)	566
FLOOR SPACE RATIO (m²) (ABOVE GRADE GFA / SITE AREA)	4.02
OUTDOOR AMENITY	1,807 m² (7.66 m² PER UNIT)
INDOOR AMENITY	446 m² (1.89 m² PER UNIT)

BUILDING

FLOOR AREAS (m²)		**BELOW GRADE**	**ABOVE GRADE**
P.03		3,326	0
P.02		3,326	0
P.01		3,326	0
LV.01		0	1,392
LV.02-LV.06 (x5)		0	1,679 (8,395)
LV.07-.LV.10 (x4)		0	1,450 (5,800)
LV.11		0	1,160
TOTAL GFA	**26,725**	**9,978**	**16,747**

UNITS	**TOTAL**	**3 BED**	**2 BED**	**1 BED**	**BACHELOR**
LV.01	5	0	0	5 (100%)	0
LV.02-LV.06 (x5)	26 (130)	0	5 (25) (19%)	20 (100) (77%)	1 (5) (4%)
LV.07-.LV.10 (x4)	21 (84)	0	6 (24) (28%)	13 (52) (62%)	2 (8) (10%)
LV.11	17	0	7 (41%)	10 (59%)	0
TOTAL UNITS	**236**	**0**	**56 (24%)**	**167 (70%)**	**13 (6%)**

AMENITY (m²)	**BALCONIES & TERRACES**	**INTERIOR SPACE**
LV.01	60	446
LV.02-LV.06 (x5)	218 (1,090)	0
LV.07	393	0
LV.08-LV.10 (x3)	114 (342)	0
LV.11	315	0
TOTAL AMENITY	**1,807**	**446**

PARKING		**BICYCLE**	**BARRIER-FREE** (2.75m x 5.6m)	**STANDARD** (2.6m x 5.6m)
P.01		80	4	88
P.02		0	4	90
P.03		0	1	41
LV.01		5	0	8
TOTAL PARKING	**236V / 85B**	**85**	**(4%) 9**	**227**

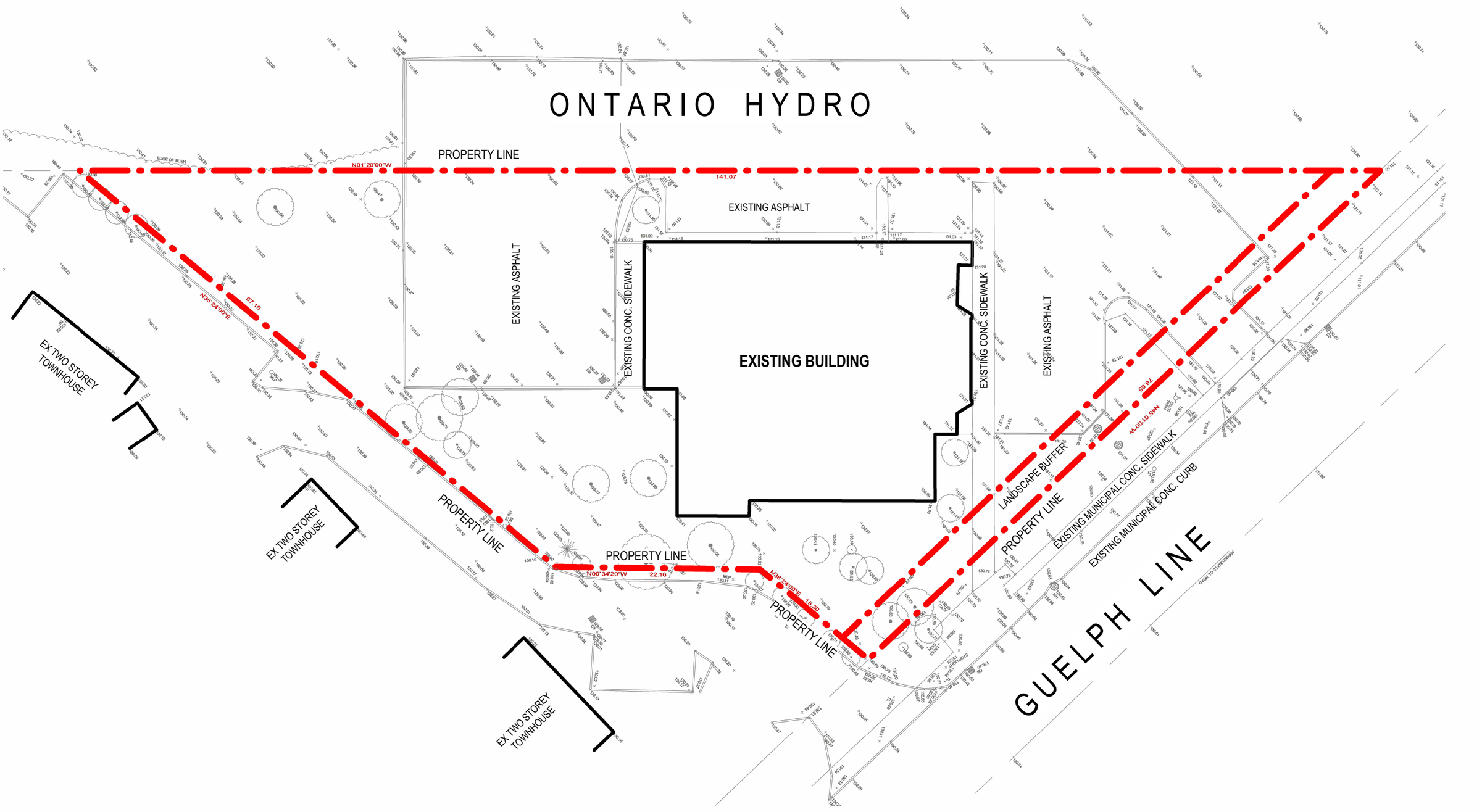
NOTE:
- GROSS FLOOR AREA INCLUDES ALL BELOW AND ABOVE GRADE SPACES WITHIN EXTERIOR WALLS AND IS CALCULATED TO THE EXTERIOR FACE OF EXTERIOR WALL.
- ROOM CALCULATIONS ARE MADE TO INTERIOR FACE OF DEMISING, CORRIDOR AND EXTERIOR WALLS.
- AMENITY AREAS ARE CALCULATED TO CENTERLINE OF DEMISING WALLS, EXTERIOR FACE OF CORRIDOR AND EXTERIOR WALLS.

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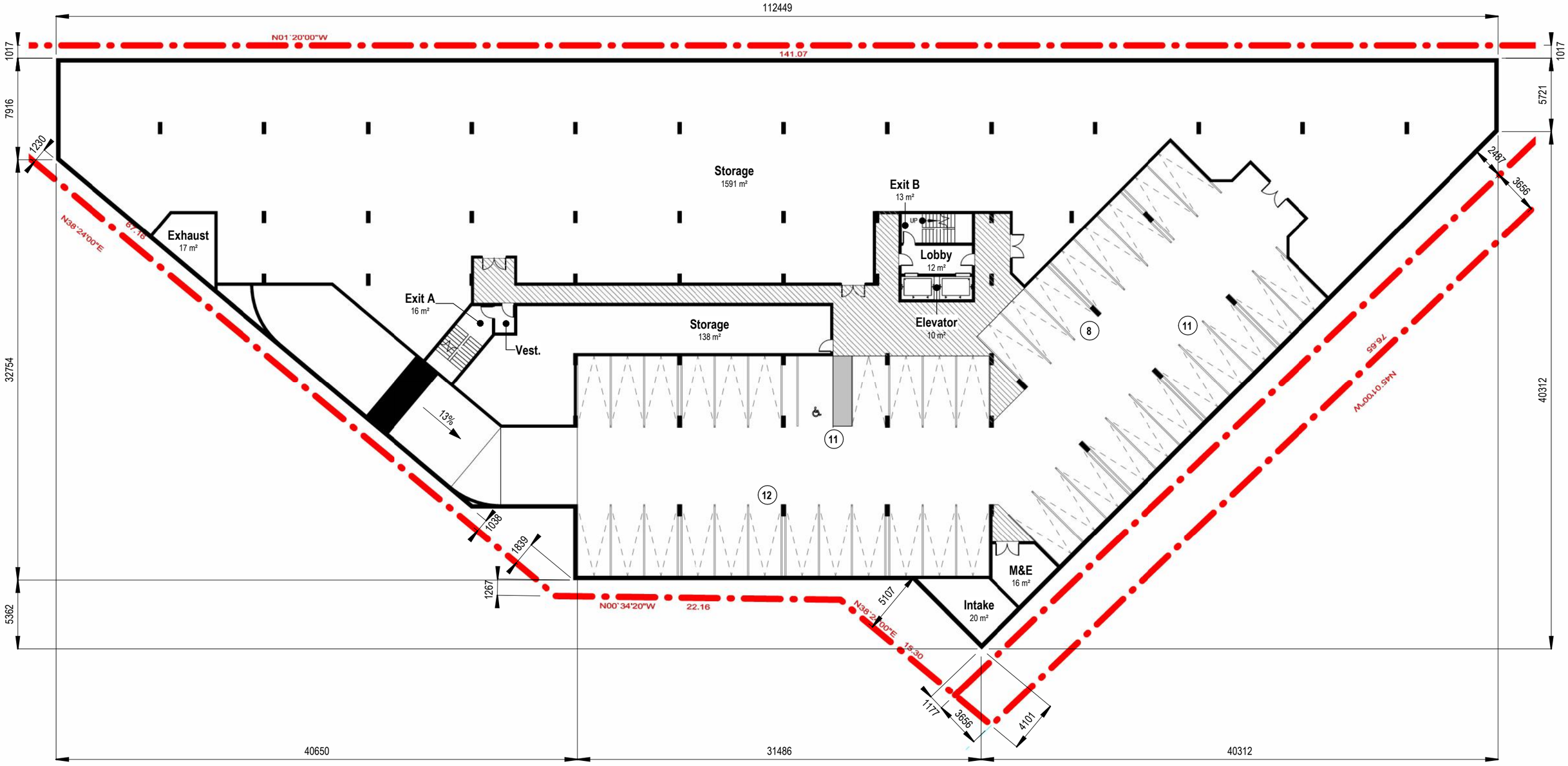
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21-027	Infinity Development Group	1396 Guelph Line Burlington, Ontario	Existing Site	March 08, 2022	SD1.1

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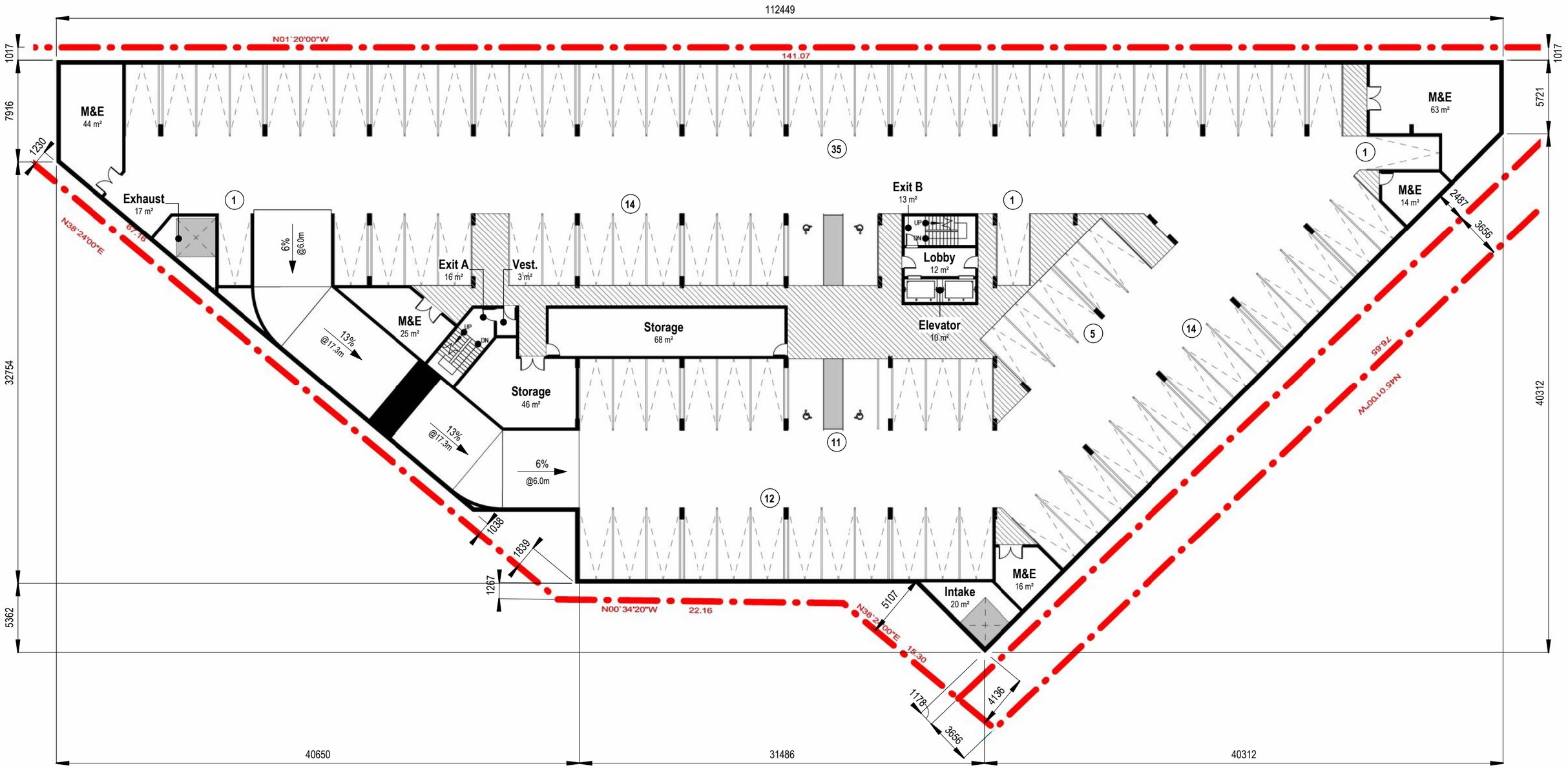


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21-027 | Infinity Development Group | 1396 Guelph Line Burlington, Ontario | Parking Level P3 Floor Plan | March 08, 2022 | SD2.1

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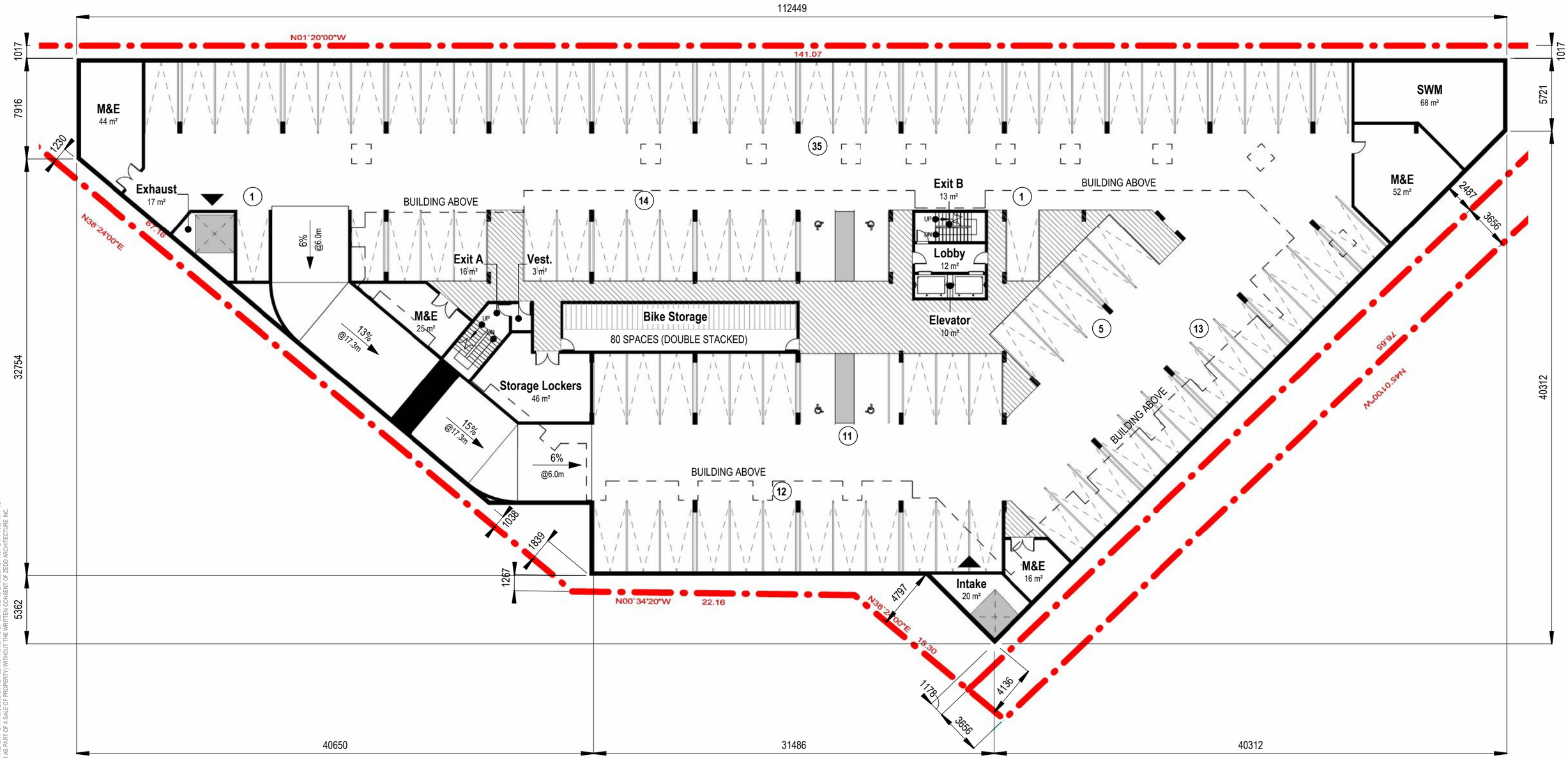
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21-027	Infinity Development Group	1396 Guelph Line Burlington, Ontario	Parking Level P2 Floor Plan	March 08, 2022	SD2.2

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21-027	Infinity Development Group	1396 Guelph Line Burlington, Ontario	Parking Level P1 Floor Plan	March 08, 2022	SD2.3

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SD4.3
1
1
SD5.2
PROPERTY LINE
OUTLINE OF PARKING BELOW
1
SD5.1
N01°20'00"W
141.07
73115
13096
11381
11381
CANTILEVER ABOVE
CANTILEVER ABOVE
DN
1
SD5.3
N36°24'00"E
67.15
M&E
40 m²
M&E
36 m²
Garbage & Recycling
Amenity
111 m²
Exit B
13 m²
Mail
13 m²
Parcel
24 m²
Exit C
15 m²
CACF
13 m²
Vest.
26 m²
Lobby
141 m²
Elevator
Loading Bay
154 m²
HATCH DENOTES
FFE = 131.10m
GARBAGE CHUTE
SD4.4
1
22860
UP
DN
Exit A
14 m²
Exit
14 m²
7375
8412
7398
M&E
38 m²
Unit Th-1
46 m²
Unit Th-1
46 m²
Unit Th-1
46 m²
Unit Th-1
46 m²
Unit Th-1
48 m²
FFE - 131.45m
Amenity
335 m²
7952
5586
76.65
N45°01'00"W
29225
LANDSCAPE BUFFER
34463
PROPERTY LINE
PROPERTY LINE
8709
9049
7729
5500
9274
N00°34'20"W
22.16
PROPERTY LINE
N36°24'00"E
15.30
17447
32432
23236
1
SD4.2
2
SD4.1
APPROACH ROAD
N

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21-027	Infinity Development Group	1396 Guelph Line Burlington, Ontario	Level 1 Floor Plan	March 08, 2022	SD2.4

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Exterior Finish Legend

1	BRICK
2	PAINT
3	ARCHITECTURAL PANEL 1
4	ARCHITECTURAL PANEL 2
5	VISION GLASS HANDRAIL
6	DOUBLE GLAZED ALUMINUM VISION GLASS
7	ALUMINUM FRAME WITH METAL SPANDREL PANEL - WOOD GRAIN PANEL
8	DOUBLE GLAZED ALUMINUM ALUMINUM WINDOW WALL SYSTEM
9	METAL SLAB EDGE COVER
10	EXTRUDED ALUMINUM PENTHOUSE

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Scale : As indicated

21-027	Infinity Development Group	1396 Guelph Line Burlington, Ontario	Northeast Elevation	March 08, 2022	SD4.1

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21-027	Infinity Development Group	1396 Guelph Line Burlington, Ontario	East Elevation	March 08, 2022	SD4.2

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21-027	Infinity Development Group	1396 Guelph Line Burlington, Ontario	West Elevation	March 08, 2022 SD4.3

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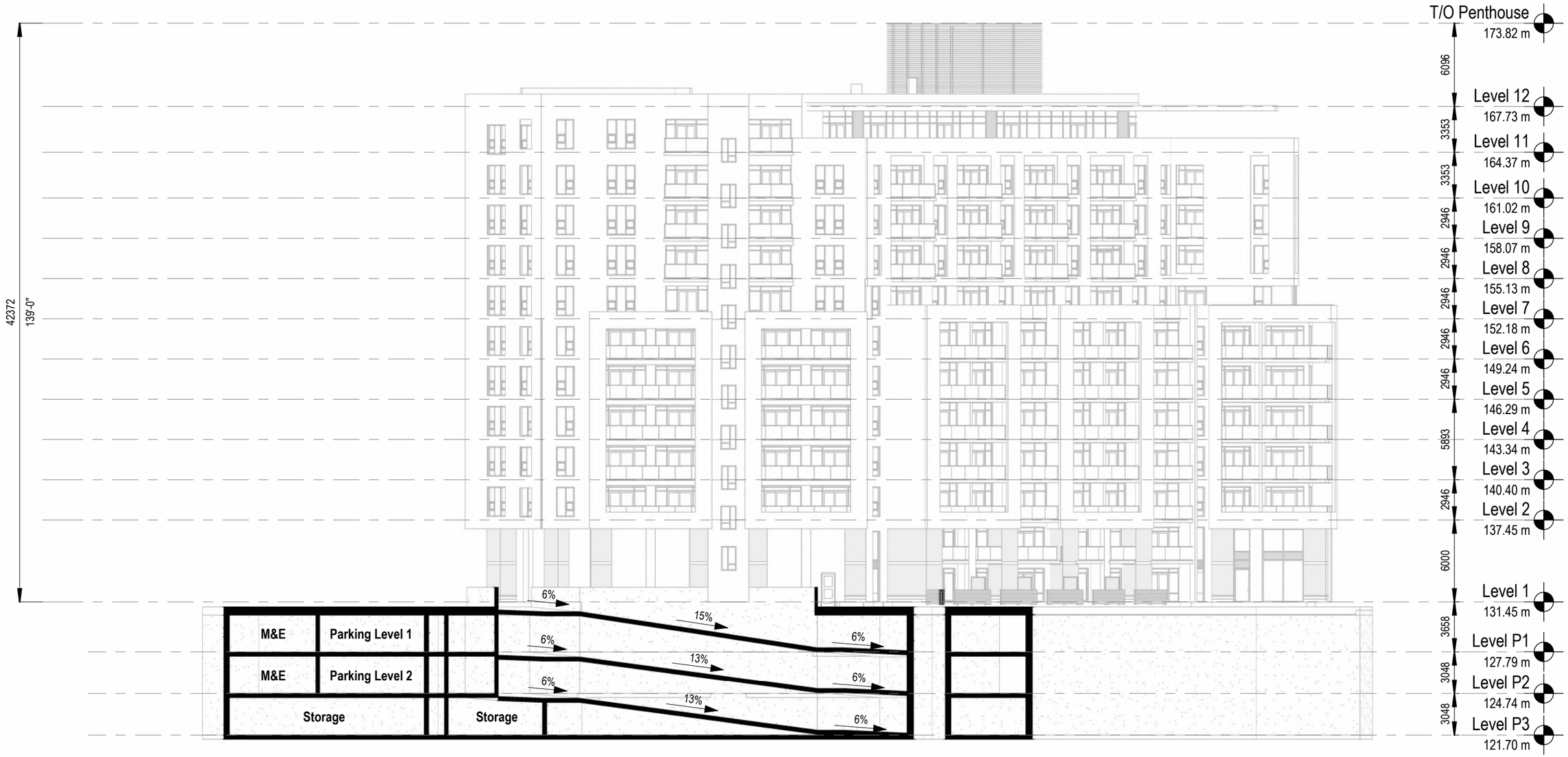


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21-027	Infinity Development Group	1396 Guelph Line Burlington, Ontario	South Elevation	March 08, 2022	SD4.4

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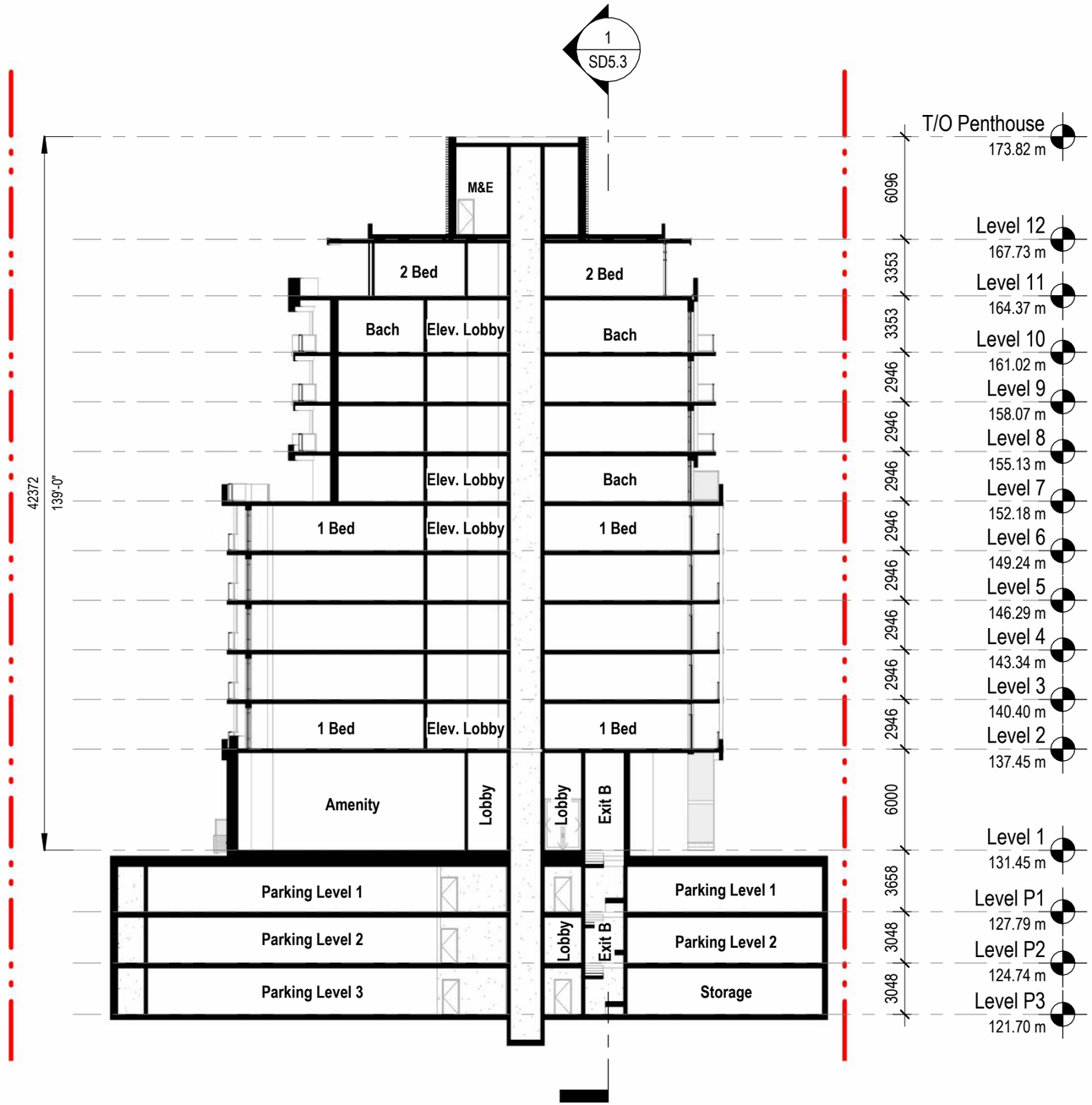


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21-027	Infinity Development Group	1396 Guelph Line Burlington, Ontario	Parking Ramp Section	March 08, 2022	SD5.1

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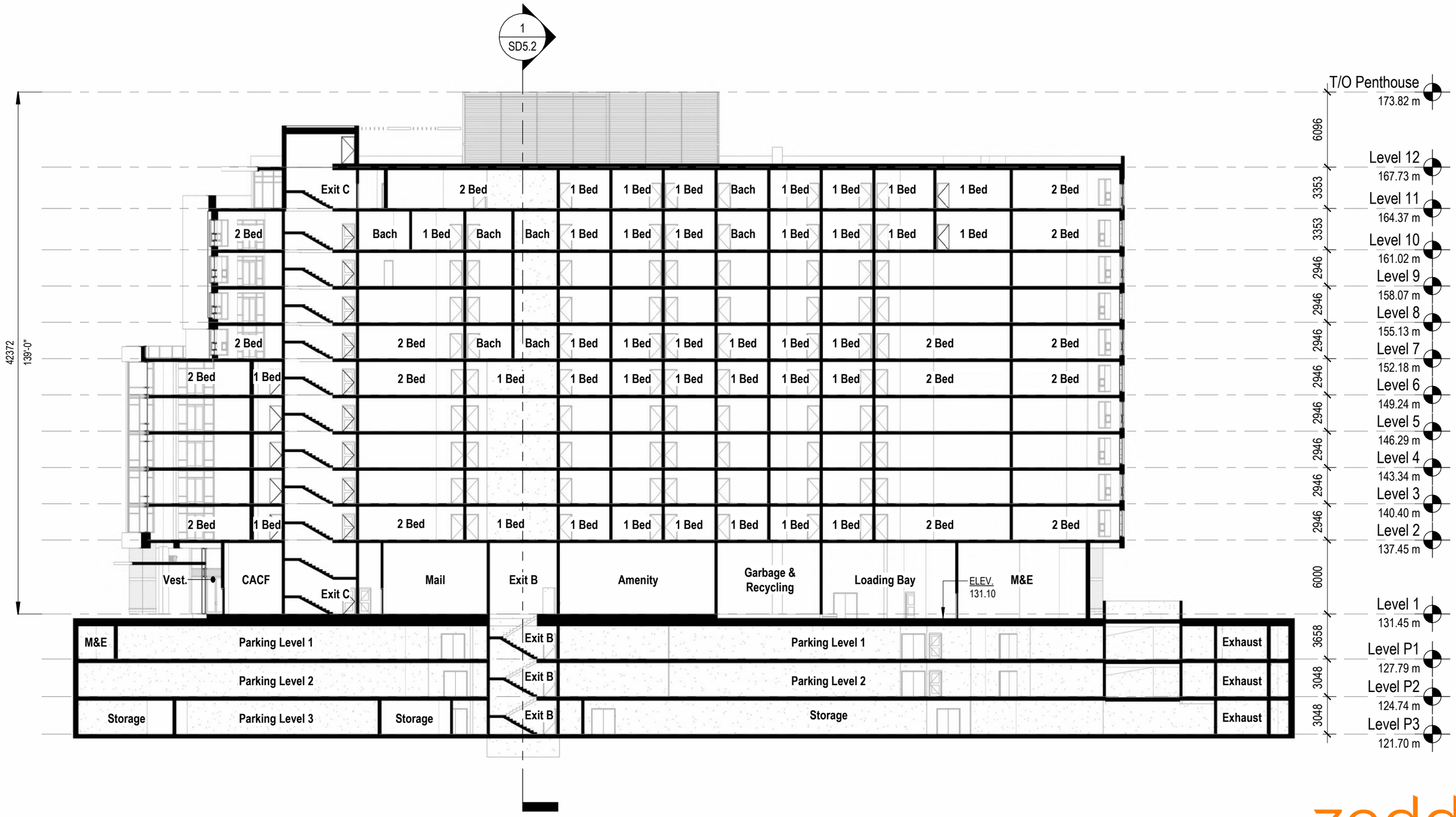


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21-027	Infinity Development Group	1396 Guelph Line Burlington, Ontario	Building Section	March 08, 2022	SD5.2

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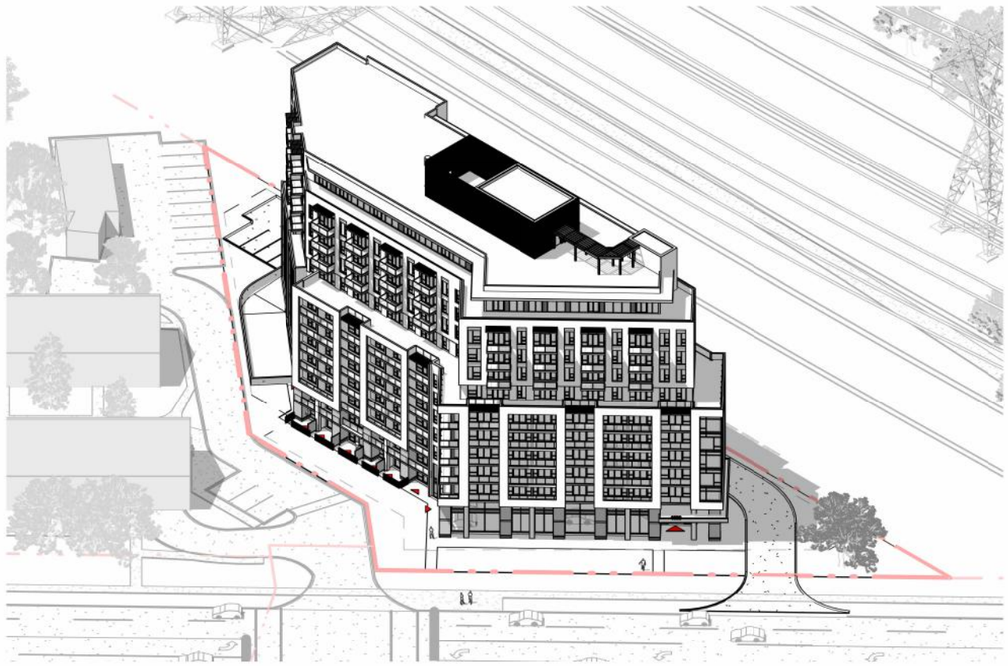
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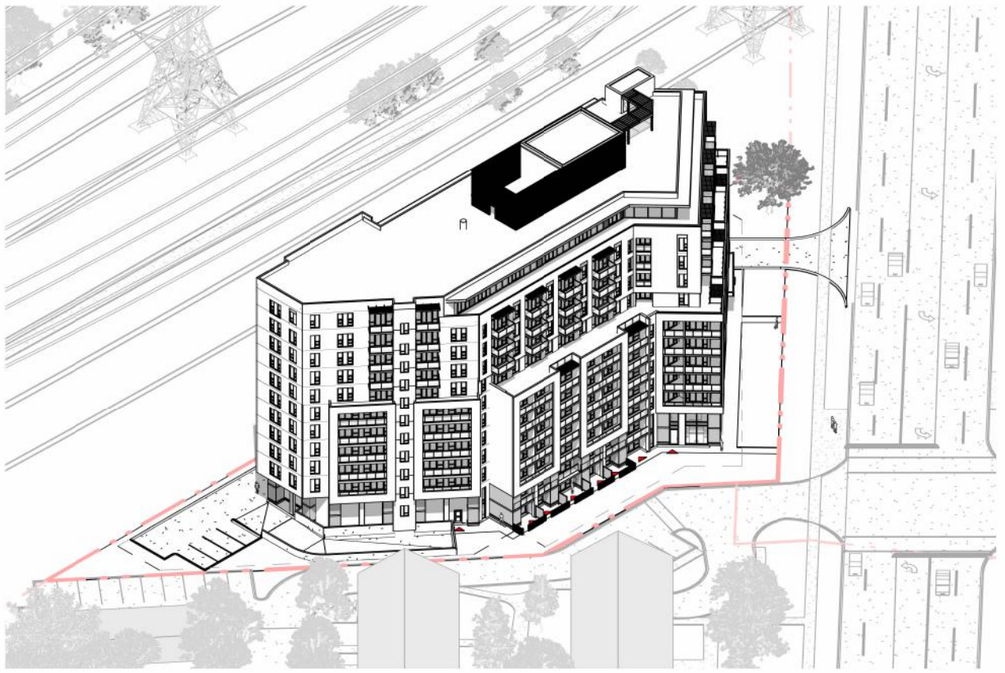
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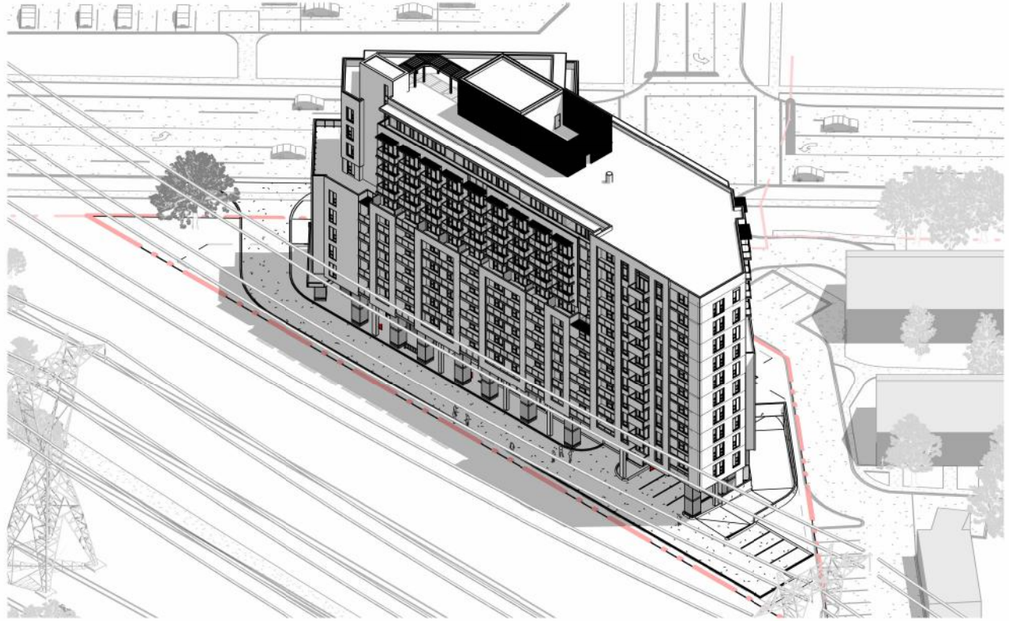
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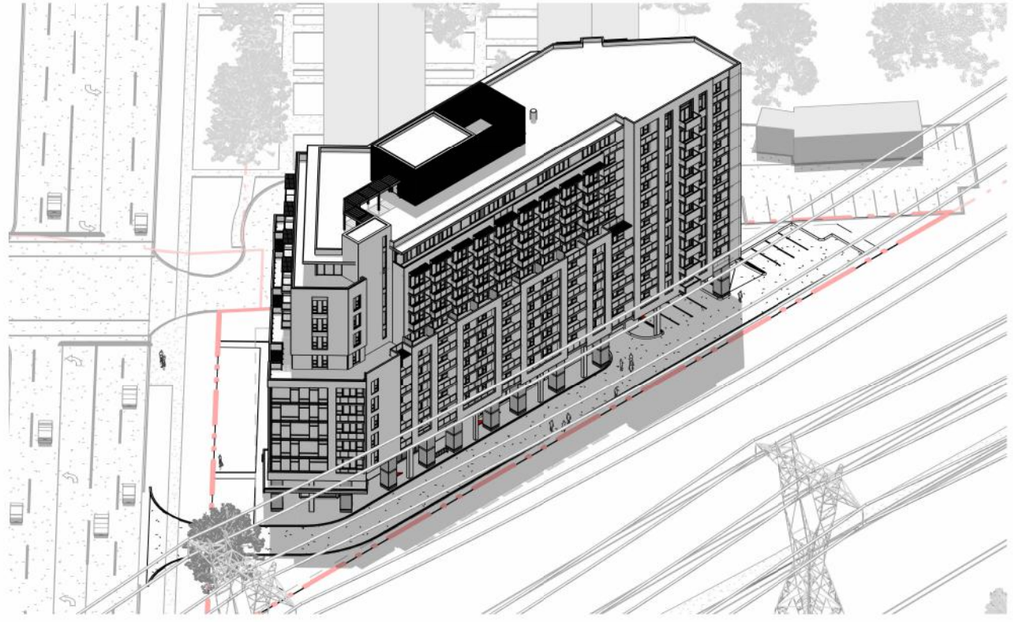
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21-027	Infinity Development Group	1396 Guelph Line Burlington, Ontario	B&W Isometric	March 08, 2022	SD6.0

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NORTHWEST ISOMETRIC



SOUTHWEST ISOMETRIC

Scale :

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21-027	Infinity Development Group	1396 Guelph Line Burlington, Ontario	Render Isometrics	March 08, 2022	SD6.2

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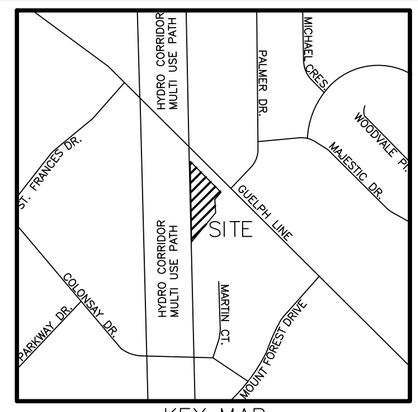
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EX. HYDRO CORRIDOR

EX. RESIDENTIAL LANDS

LEGEND:

- EXISTING GROUND ELEVATION
- PROPOSED GROUND ELEVATION
- PROPOSED ELEVATION TO MATCH EXISTING
- PROPOSED DIRECTION OF SHEET FLOW
- EXISTING CATCHBASIN
- EXISTING STORM/SANITARY MANHOLE
- PROPOSED CATCHBASIN
- PROPOSED STORM/SANITARY MANHOLE
- PROPOSED GATE VALVE
- EXISTING DIRECTION OF DRAINAGE
- PROPOSED EMERGENCY OVERLAND FLOW ROUTE
- PROPOSED DRAINAGE BREAK LINE
- PROPOSED SILTATION CONTROL FENCE
- PROPOSED CATCHBASIN SILT SACK
- PROPOSED SWALE
- PROPOSED SWALE WITH SUBDRAIN



KEY MAP
N.T.S.

PROP. MH1 T/G 131.30
PROP. SILT SACK (TYP)
PROP. AD1 (NYLOPLAST) T/G 130.95
PROP. AD2 (NYLOPLAST) T/G 131.95
PROP. AD3 (NYLOPLAST) T/G 130.95
PROP. AD4 (NYLOPLAST) T/G 131.00
PROP. AD5 (NYLOPLAST) T/G 131.30
PROP. AD6 (NYLOPLAST) T/G 131.20
PROP. AD7 (NYLOPLAST) T/G 131.20
PROP. CB1 (OPSD 705.010) T/G 130.05
PROP. 41.0m SWALE @ 1.2% C/W SUBDRAIN
PROP. BUILDING OVERHANG
PROP. 11-STOREY RESIDENTIAL BUILDING FFE=131.45 P1=127.79 P2=124.74 P2=121.69
#1396 EX. 1 STOREY BRICK BUILDING
450mmø NYLOPLAST INSPECTION PORT C/W SUMP INSERT T/G=130.90 (CONTRACTOR TO PROVIDE SHOP DRAWINGS)
LIMIT OF UNDERGROUND
PROP. CONCRETE RAMP (TO BE HEATED)
PROP. RETAINING WALL (DESIGN BY OTHERS) (C/W RAILING)
PROP. RETAINING WALL (DESIGN BY OTHERS) (C/W RAILING)
PROP. RETAINING WALL TO TIE INTO THE UNDERGROUND (DESIGN BY OTHERS)
PROP. SILT FENCE
PROP. PAD MOUNTED TRANSFORMER
CONCRETE BARRIER CURB (AS PER OPSD 600.110)
PROP. DEPRESSED CURB & GUTTER AS PER OPSD 600.040
MAINTAIN EX. GRADES AT PROPERTY LINE
EX. CONCRETE CURB (TO BE REMOVED)
EX. ASPHALT AREA (TO BE REMOVED)
EX. CHAIN LINK FENCE (TO BE REMOVED)
EX. LANDSCAPED AREA
EX. CONCRETE CURB
EX. CONCRETE WALKWAY
EX. ASPHALT
EX. ASPHALT PARKING
EX. BRICK
EX. CONCRETE
EX. CONCRETE DOCK
EX. ROOF OVERHANG
EX. CHAIN LINK FENCE
EX. BRICK SIDEWALK
EX. CURB CUT
EX. BUS SHELTER
EX. STOP LIGHT
EX. SIGN
EX. TREE
EX. HYDRANT
EX. WV
EX. APPROX. CENTRE LINE OF ROAD
EX. STMMH T/G=130.66 W INV. 127.57 E INV. 127.54
EX. SANMH T/G=130.49 SE INV. 127.56
EX. 2 STOREY BRICK TOWNHOMES F.F.E=150.82
EX. FRAME SHED
EX. FRAME GARAGE F.F.E=130.22
#1380 EX. 2 STOREY BRICK TOWNHOMES
EX. CB T/G=130.80
EX. CB T/G=130.25 E. INV. 129.43 (TO BE REMOVED)
EX. CB T/G=130.27
EX. CB (NOT SURVEYED) T/G=129.31 S.INV. 128.78
EX. CB T/G=129.88
EX. CB T/G=129.68
EX. CB T/G=129.45
EX. CB T/G 130.40
EX. CB T/G 130.56
EX. SANMH T/G=130.49 SE INV. 127.56
EX. STMMH T/G=130.66 W INV. 127.57 E INV. 127.54
MECH. & ELEC.
#1396 EX. 1 STOREY BRICK BUILDING
1.25%
1.5%
1.3%
0.9%
2.0%
1.0%
0.8%
2.3%
3.3%
6.0%
15.0%
15.4%
1.0%
0.9%
1.2%
(131.45)
(131.10)
(131.30)
(131.20)
(131.35)
(131.25)
(131.00)
(130.92)
(128.17)
(127.70)
(131.40)TW (130.00)BW
(131.40)TW (128.17)BW
(131.35)TW (131.35)BW
(131.50)TW (130.30)BW
(131.30)TW (130.30)BW
(130.40)TW (130.40)BW
131.07EX.
131.24EX.
130.74EX. (130.79)
131.04EX.
131.05EX.
131.08EX.
131.09EX.
130.86EX.
130.70EX.
130.30EX.
130.27EX.
130.31EX.
129.96EX.
129.89EX.
130.74EX.
130.95EX.
130.55SW
130.03EX.
130.52EX.
130.36EX.
130.34EX.
130.29EX.
130.28EX.
130.22EX.

BENCH MARK NOTE:

CITY OF BURLINGTON BENCHMARK NO.397

BRASS PLAQUE ON THE EASTERLY FACE OF POSTAL STATION "B" ON THE WEST SIDE GUELPH LINE OPPOSITE PALMER DRIVE. PLAQUE IS LOCATED ,.25M SOUTH WESTERLY FROM THE SOUTHEAST CORNER AND 0.45 M ABOVE GRADE.

ELEVATION = 131.500M (DATUM CGVD 1928:1978)

NO.	DATE	BY	REVISIONS

NOTES TO CONTRACTOR:

1. CONTRACTORS AND SUBCONTRACTORS SHALL NOT SCALE FROM THIS DRAWING.
2. ANY INCONSISTENCIES AND OMISSIONS FOUND ON THE DRAWINGS MUST BE REPORTED TO THE ENGINEER FOR CLARIFICATION BEFORE COMMENCING THE WORK.
3. PRIOR TO THE START OF CONSTRUCTION, THE CONTRACTOR MUST CHECK AND VERIFY ALL DIMENSIONS AND ELEVATIONS AND REPORT ALL FINDINGS TO THE ENGINEER. ONCE CONSTRUCTION HAS COMMENCED, THE CONTRACTOR ACCEPTS RESPONSIBILITY FOR ALL DIMENSIONS, ELEVATIONS, AND SITE CONDITIONS.
4. THE POSITIONS OF POLE LINES, CONDUITS, WATERMAINS, SEWERS AND OTHER UNDERGROUND AND OVER-GROUND UTILITIES AND STRUCTURES ARE NOT NECESSARILY SHOWN ON THE DRAWINGS. WHERE SHOWN ON THE DRAWING, THE ACCURACY OF THE POSITION OF SUCH UTILITIES AND STRUCTURES IS NOT GUARANTEED. BEFORE STARTING WORK, THE CONTRACTOR SHALL INFORM THEMSELVES OF THE EXACT LOCATION OF ALL SUCH UTILITIES AND STRUCTURES AND ASSUME ALL LIABILITY FOR DAMAGE TO THEM.
5. ALL DRAWINGS REMAIN THE PROPERTY OF THE ENGINEER AND SHALL NOT BE REPRODUCED, REUSED, OR REVISED WITHOUT THE WRITTEN CONSENT OF S. LLEWELLYN AND ASSOCIATES LIMITED.

DESIGN	YM	CHK'D	SN	DATE MAR. 8, 22
DRAWN	YM	CHK'D	SN	

SCALE 1:200 (0, 5, 10, 20)

APPROVALS

STAMP

NOTES TO CONTRACTOR:

1. INSPECTION
   CONTRACTOR IS RESPONSIBLE FOR CONTACTING ENGINEER 48 HRS PRIOR TO COMMENCING WORK TO ARRANGE FOR INSPECTION. ENGINEER TO DETERMINE DEGREE OF INSPECTION AND TESTING REQUIRED FOR CERTIFICATION OF UNDERGROUND SERVICE INSTALLATION AS MANDATED BY ONTARIO BUILDING CODE DIVISION C, PART 1, SECTION 1.2.2, GENERAL REVIEW. FAILURE TO NOTIFY ENGINEER WILL RESULT IN EXTENSIVE POST CONSTRUCTION INSPECTION AT CONTRACTORS EXPENSE.
2. CONFIRMATION OF EXISTING INVERTS
   72 HOURS PRIOR TO THE START OF CONSTRUCTION, THE CONTRACTOR IS TO LOCATE, EXPOSE AND VERIFY INVERTS OF EXISTING UTILITIES AND EXISTING SEWERS AT CONNECTION POINTS. SHOULD THE CONTRACTOR PROCEED WITHOUT COMPLETING THESE LOCATES, EXTRA COSTS RESULTING FROM DELAYS AND STANDBY TIME WILL NOT BE CONSIDERED.

S. LLEWELLYN & ASSOCIATES LIMITED
CONSULTING ENGINEERS
Tel. (905) 631-6978
Website: www.sla.on.ca
email: info@sla.on.ca
3228 South Service Road, Suite #105 East Wing, Burlington, Ont., L7N 3H8

CLIENTS

INFINITY DEVELOPMENT INC.
101-2275 UPPER MIDDLE ROAD,
OAKVILLE, ON L6H 0C3

PROJECT NAME

1396 GUELPH LINE
BURLINGTON, ON

TITLE

PRELIMINARY GRADING AND EROSION CONTROL PLAN

PROJECT No.	DRAWING No.
22024	C101

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SAWCUT, REMOVE & RESTORE EX. ASPHALT, CONCRETE & LANDSCAPED AREAS TO EXISTING CONDITION OR BETTER (TYP.) (AS PER CITY OF BURLINGTON STANDARD S-114, S114A & S114B OR S-115 & S-115A IF CONCRETE ROAD BASE IS PRESENT)

PROP. ASPHALT LAP JOINT (TYP.)

CONNECT PROP. 30.0m-250mmø STM @ 1.0% TO EX. 750mmø STM
EX. INV=128.09±
PROP. INV=129.32

EX. 75mmø HYDRO (UNDERGROUND)
EX. 100mmø BELL (UNDERGROUND)
EX. GAS MAIN
EX. CONCRETE CURB
EX. 400mmø WTM
EX.CB T/G 130.80

PROP. DEPRESSED CURB & GUTTER AS PER OPSD 600.040

GUELPH LINE

EX. 350mmø CI WTM (ABANDONED)
EX. 86.9m-750mmø STM @ 0.9%
PROX. CENTRE LINE OF ROAD

PROP. MH1
T/G 131.30
NE.INV.=129.62
S.INV.=129.65

PROP. 4.5m-250mmø STM @ 1.0%
INV. 129.70

CONNECT PROP. 150mmø FIRE WTM TO EX. 400mmø WTM
(TAP BY HALTON REGION FORCES ONLY)

ABANDON EX. WATER SERVICE AS PER CITY OF BURLINGTON STANDARDS

PROP. CAST-IN-PLACE STORMWATER STORAGE TANK C/W ACCESS LID, PUMP & 140mmø OUTLET (DESIGN BY OTHERS)
TOTAL VOLUME=161m³
100-YEAR REQ'D VOLUME=117m³
TOP OF TANK=130.35
140mmø OUTLET INVERT=129.70
BOTTOM OF TANK=127.79

PROP. 100mmø DOM. WTM

PROP. SILT SACK (TYP)

MECH. & ELEC.

EX. CONCRETE WALKWAY
EX. HYDRANT
EX. BELL MANHOLE T/G=131.00
EX. LS
EX. BELL (UNDERGROUND)
EX. WTM (APPROX. LOCATION)
EX. 75mmø HYDRO (UNDERGROUND)
EX. 100mmø BELL (UNDERGROUND)
EX. GAS MAIN

PROP. AD1
(NYLOPLAST)
T/G 130.95

EX. ASPHALT
EX. ASPHALT PARKING

PROP. BUILDING OVERHANG

CONNECT PROP. 12.0m-200mmø SAN @ 1.0% TO EX. SAN MH INCLUDING RE-BENCHING
PROP. INV=127.62

EX. SANMH
T/G=130.49
SE INV. 127.56

EX. STMMH
T/G=130.66
W INV. 127.57
E INV. 127.54

EX. 400mmø WTM
EX. 200mmø SAN.
EX. 65.7m 825mmø STM @ 0.9%

PROP. AD2
(NYLOPLAST)
T/G 131.95

EX. CONCRETE WALKWAY

450mmø NYLOPLAST INSPECTION PORT
C/W SUMP INSERT
T/G=130.90
SW INV. 127.75
NE INV. 127.74
(CONTRACTOR TO PROVIDE SHOP DRAWINGS)

EX. BUS SHELTER
EX. CABLE TV BOX
EX. STOP LIGHT
EX. SIGN
EX.CB T/G 130.40
EX. 300mmø WTM

EX. LANDSCAPED AREA
CONRETE BARRIER CURB (AS PER OPSD 600.110)
EX. CONCRETE
F.F.E

PROP. 1.5m- 200mmø SAN @ 1.0%
INV=127.77

LIMIT OF UNDERGROUND

MECH. & ELEC.

EX. 0.4ø DT
EX. 0.1ø DT
EX. 0.3ø DT
EX. VC T/G 130.56
EX. 400mmø WTM
EX. CURB CUT

PROP. 11-STOREY RESIDENTIAL BUILDING
FFE=131.45
P1=127.79
P2=124.74
P2=121.69

#1396
EX. 1 STOREY BRICK BUILDING

PROP. AD7
(NYLOPLAST)
T/G 131.20

EX. BOARD FENCE
EX. 0.2ø DT
EX. LS
EX. ASPHALT

EX. ASPHALT AREA (TO BE REMOVED)
EX. CONCRETE CURB (TO BE REMOVED)

PROP. CB1
(OPSD 705.010)
T/G 130.05
E.INV.=128.55

EX. ASPHALT
EX. SIDEWALK
EX. BRICK

EX.CB
T/G=130.25
E. INV. 129.43
(TO BE REMOVED)

PROP. 1.0m- 250mmø STM @ 1.0%
INV=128.54
(TO CONNECT TO INTERNAL MECHANICAL SYSTEM AND BE PUMPED TO THE 250mmø STORM SERVICE, BYPASSING THE STORAGE TANK)

PROP. AD3
(NYLOPLAST)
T/G 130.95

EX. CONCRETE CURB
EX. 0.3ø DT
EX. CHAIN LINK FENCE (TO BE REMOVED)
EX. CONCRETE DOCK
EX. ROOF OVERHANG
EX. CONCRETE CURB
EX.CB T/G=130.27

EX. PAD MOUNTED TRANSFORMER (TO BE REMOVED)
PROP. AD6
(NYLOPLAST)
T/G 131.20
EX. 0.6ø DT
EX. 0.4ø DT
EX. 0.2ø DT
EX. ASPHALT
EX. CB T/G=129.68

MECH. & ELEC.
EX.CB (NOT SURVEYED) T/G=128.31 S.INV. 128.78
EX. 0.2ø CT
#1380
EX. 2 STOREY BRICK TOWNHOMES

EX. CHAIN LINK FENCE (TO BE REMOVED)
EX. CHAIN LINK FENCE
PROP. AD5
(NYLOPLAST)
T/G 131.30

MECH. & ELEC.
EX. CB T/G=129.88
EX. 0.4ø DT
EX. 0.3ø DT
PROP. CONCRETE RAMP (TO BE HEATED)

PROP. BUILDING OVERHANG

PROP. AD4
(NYLOPLAST)
T/G 131.00

EX. CHAIN LINK FENCE
EX. ASPHALT
EX. CONCRETE CURB
EX. 0.3ø DT
PROP. RETAINING WALL
(DESIGN BY OTHERS)
(C/W RAILING)

EX. TREE

EX. 2 STOREY BRICK TOWNHOMES
F.F.E=150.82

EX. TREE
EX. LS

EX. RESIDENTIAL LANDS

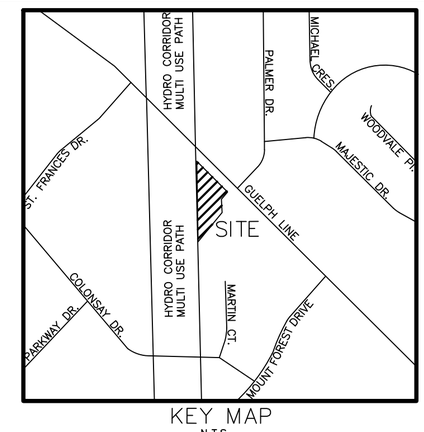
EX. BOARD FENCE
EX. ASPHALT
PROP. RETAINING WALL
(DESIGN BY OTHERS)
(C/W RAILING)

PROP. RETAINING WALL TO TIE INTO THE UNDERGROUND
(DESIGN BY OTHERS)

LIMIT OF UNDERGROUND
EX. EDGE BUSH
PROP. SILT FENCE
EX. CONCRETE CURB
EX. 0.25ø DT
EX. FRAME SHED
EX. FRAME GARAGE F.F.E=130.22

EX. CB
T/G=129.45

EX. HYDRO CORRIDOR



KEY MAP
N.T.S.

LEGEND:

- EXISTING CATCHBASIN
- EXISTING STORM/SANITARY MANHOLE
- PROPOSED CATCHBASIN
- PROPOSED STORM/SANITARY MANHOLE
- PROPOSED GATE VALVE
- PROPOSED WATER METER
- PROPOSED BACKFLOW PREVENTOR
- SEWER CROSSING
- PROPOSED SEWER INSULATION
- PROPOSED ROAD RESTORATION

BENCH MARK NOTE:

CITY OF BURLINGTON BENCHMARK NO.397

BRASS PLAQUE ON THE EASTERLY FACE OF POSTAL STATION "B" ON THE WEST SIDE GUELPH LINE OPPOSITE PALMER DRIVE. PLAQUE IS LOCATED „25M SOUTH WESTERLY FROM THE SOUTHEAST CORNER AND 0.45 M ABOVE GRADE.

ELEVATION = 131.500M (DATUM CGVD 1928:1978)

NO.	DATE	BY	REVISIONS

NOTES TO CONTRACTOR:

1. CONTRACTORS AND SUBCONTRACTORS SHALL NOT SCALE FROM THIS DRAWING.
2. ANY INCONSISTENCIES AND OMISSIONS FOUND ON THE DRAWINGS MUST BE REPORTED TO THE ENGINEER FOR CLARIFICATION BEFORE COMMENCING THE WORK.
3. PRIOR TO THE START OF CONSTRUCTION, THE CONTRACTOR MUST CHECK AND VERIFY ALL DIMENSIONS AND ELEVATIONS AND REPORT ALL FINDINGS TO THE ENGINEER. ONCE CONSTRUCTION HAS COMMENCED, THE CONTRACTOR ACCEPTS RESPONSIBILITY FOR ALL DIMENSIONS, ELEVATIONS, AND SITE CONDITIONS.
4. THE POSITIONS OF POLE LINES, CONDUITS, WATERMAINS, SEWERS AND OTHER UNDERGROUND AND OVER-GROUND UTILITIES AND STRUCTURES ARE NOT NECESSARILY SHOWN ON THE DRAWINGS. WHERE SHOWN ON THE DRAWING, THE ACCURACY OF THE POSITION OF SUCH UTILITIES AND STRUCTURES IS NOT GUARANTEED. BEFORE STARTING WORK, THE CONTRACTOR SHALL INFORM THEMSELVES OF THE EXACT LOCATION OF ALL SUCH UTILITIES AND STRUCTURES AND ASSUME ALL LIABILITY FOR DAMAGE TO THEM.
5. ALL DRAWINGS REMAIN THE PROPERTY OF THE ENGINEER AND SHALL NOT BE REPRODUCED, REUSED, OR REVISED WITHOUT THE WRITTEN CONSENT OF S. LLEWELLYN AND ASSOCIATES LIMITED.

DESIGN	YM	CHK'D	SN	DATE MAR. 8, 22
DRAWN	YM	CHK'D	SN	

SCALE 1:200 (0, 5, 10, 20)

APPROVALS

STAMP

NOTES TO CONTRACTOR:

1. INSPECTION
CONTRACTOR IS RESPONSIBLE FOR CONTACTING ENGINEER 48 HRS PRIOR TO COMMENCING WORK TO ARRANGE FOR INSPECTION. ENGINEER TO DETERMINE DEGREE OF INSPECTION AND TESTING REQUIRED FOR CERTIFICATION OF UNDERGROUND SERVICE INSTALLATION AS MANDATED BY ONTARIO BUILDING CODE DIVISION C, PART 1, SECTION 1.2.2, GENERAL REVIEW. FAILURE TO NOTIFY ENGINEER WILL RESULT IN EXTENSIVE POST CONSTRUCTION INSPECTION AT CONTRACTORS EXPENSE.

2. CONFIRMATION OF EXISTING INVERTS
72 HOURS PRIOR TO THE START OF CONSTRUCTION, THE CONTRACTOR IS TO LOCATE, EXPOSE AND VERIFY INVERTS OF EXISTING UTILITIES AND EXISTING SEWERS AT CONNECTION POINTS. SHOULD THE CONTRACTOR PROCEED WITHOUT COMPLETING THESE LOCATES, EXTRA COSTS RESULTING FROM DELAYS AND STANDBY TIME WILL NOT BE CONSIDERED.

S. LLEWELLYN & ASSOCIATES LIMITED
CONSULTING ENGINEERS
Tel. (905) 631-6978
Website: www.sla.on.ca
email: info@sla.on.ca
3228 South Service Road, Suite #105 East Wing, Burlington, Ont., L7N 3H8

CLIENTS

INFINITY DEVELOPMENT INC.
101-2275 UPPER MIDDLE ROAD,
OAKVILLE, ON L6H 0C3

PROJECT NAME

1396 GUELPH LINE
BURLINGTON, ON

TITLE

PRELIMINARY SERVICING PLAN

PROJECT No. 22024

DRAWING No. C102

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Plotted: Tuesday, March 8, 2022 5:01:32 PM By: Scott Nelson

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GENERAL NOTES:

1. CONSTRUCTION OF SEWERS, AND RELATED APPURTENANCES SHALL BE UNDERTAKEN IN ACCORDANCE WITH THE CURRENT STANDARD DRAWINGS OF THE CITY OF BURLINGTON, THE REGIONAL MUNICIPALITY OF HALTON AND THE ONTARIO PROVINCIAL STANDARD DRAWINGS (OPSD). THE TOWN AND THE REGION'S DRAWINGS SHALL TAKE PRECEDENCE OVER THE OPSD DRAWINGS.
2. ONTARIO PROVINCIAL STANDARD DRAWINGS TO BE READ IN CONJUNCTION WITH THE REGION OF HALTON REVISIONS.
3. RELOCATION OF EXISTING SERVICES AND/OR UTILITIES SHALL BE CONSTRUCTED AS SHOWN ON THE DRAWINGS OR AS DIRECTED BY THE ENGINEER.
4. THE CONTRACTOR SHALL OBTAIN ALL PERMITS FOR CONSTRUCTION.
5. FOR ALL SEWERS AND WATERMAIN IN FILL SECTIONS, THE COMPACTION SHALL BE VERIFIED PRIOR TO LAYING OF PIPE.
6. NO SUBSTITUTIONS WILL BE ALLOWED WITHOUT WRITTEN APPROVAL FROM THE REGIONAL ENGINEER, CITY OF BURLINGTON OR THE ENGINEER.
7. ALL EXCAVATIONS TO BE BACKFILLED WITH SELECT NATIVE MATERIAL, APPROVED BY THE ENGINEER, TO 95% SPD.
8. THE CONTRACTOR IS RESPONSIBLE FOR INSTALLING AND MAINTAINING SILT CONTROL DEVICES AS SHOWN ON THE DRAWINGS AND AS DIRECTED BT THE ENGINEER.
9. TREE PROTECTION PROCEDURES TO BE IMPLEMENTED IN ACCORDANCE WITH CITY OF BURLINGTON STANDARDS.
10. THESE PLANS ARE NOT TO BE USED FOR CONSTRUCTION UNTIL SEALED BY THE ENGINEER AND INDICATED ISSUED FOR CONSTRUCTION ON THE DRAWING.
11. THIS/THESE PLAN(S) IS/ARE NOT TO BE REPRODUCED IN WHOLE OR IN PART WITHOUT THE WRITTEN PERMISSION OF S. LLEWELLYN AND ASSOCIATES LIMITED.
12. INFORMATION REGARDING ANY EXISTING SERVICES AND/OR UTILITIES SHOWN ON THE APPROVED SET OF CONSTRUCTION DRAWINGS ARE FURNISHED AS THE BEST AVAILABLE INFORMATION. THE CONTRACTOR SHALL INTERPRET THIS INFORMATION AS HE SEES FIT WITH THE UNDERSTANDING THAT THE OWNER AND HIS AGENTS DISCLAIM ALL RESPONSIBILITY FOR ITS ACCURACY AND /OR SUFFICIENCY. THE CONTRACTOR SHALL ASSUME LIABILITY FOR ANY DAMAGE TO EXISTING WORKS.
13. SITE PLAN INFORMATION TAKEN FROM PLANS PREPARED BY ZEDD ARCHITECTURE.
14. THIS/THESE PLAN(S) TO BE READ IN CONJUNCTION WITH THE FUNCTIONAL SERVICING REPORT (FSR) PREPARED BY S. LLEWELLYN AND ASSOCIATES LIMITED.
15. THIS PLAN TO BE USED FOR SERVICING AND GRADING ONLY, FOR BUILDING LOCATION REFER TO TO THE SITE PLAN.
16. MUNICIPAL APPROVAL OF THESE DRAWINGS IS FOR MATERIAL AND COMPLIANCE WITH CITY OF BURLINGTON AND PROVINCIAL SPECIFICATIONS AND STANDARDS ONLY. APPROVAL AND INSPECTION OF THE WORKS BY THE CITY OF BURLINGTON STAFF DOES NOT CERTIFIY THE LINE AND GRADE OF THE WORKS NOR RELIEVE THE CONTRACTOR OF CERTIFICATION OF ALL WORKS BY THE OWNER'S ENGINEER.
17. ALTERNATE MATERIALS MAY BE ACCEPTABLE PROVIDED WRITTEN APPROVAL HAS FIRST BEEN OBTAINED FROM THE CITY OF BURLINGTON AND THE THE ENGINEER.
18. THE APPROVAL OF THIS PLAN DOES NOT EXEMPT THE OWNER'S BONDED CONTRACTOR FROM THE REQUIREMENTS TO OBTAIN THE VARIOUS PERMITS/APPROVALS NORMALLY REQUIRED TO COMPLETE A CONSTRUCTION PROJECT, SUCH AS, BUT NOT LIMITED TO THE FOLLOWING:
    - ROAD CUT PERMITS
    - SEWER PERMITS
    - APPROACH APPROVAL PERMITS
    - RELOCATION OF SERVICES
    - COMMITTEE OF ADJUSTMENT
    - ENCROACHMENT AGREEMENTS
20. PRIOR TO CONSTRUCTION THE CONTRACTOR MUST:
    i. CHECK AND VERIFIY ALL DIMENSIONS AND EXISTING ELEVATIONS WHICH INCLUDE BUT ARE NOT LIMITED TO THE BENCHMARK ELEVATIONS, EXISTING SERVICE CONNECTIONS, EXISTING INVERTS AND REPORT FINDING IN WRITING TO THE ENGINEER.
    ii. OBTAIN ALL UTILITY LOCATES AND REQUIRED PERMITS AND LICENSES.
    iii. VERIFY ALL FINISHED FLOOR ELEVATIONS AND BASEMENT FLOOR ELEVATIONS WHICH MY APPEAR ON THESE PLANS COMPLY WITH THE FINAL ARCHITECTURAL DRAWINGS.
    iv. CONFIRM ALL DRAWINGS USED FOR CONSTRUCTION ARE OF THE MOST RECENT REVISION.
    v. NOTIFY THE ENGINEER OF THE PROPOSED CONSTRUCTION SCHEDULE FOR COORDINATION OF NECESSARY INSPECTIONS.
21. **THE CONTRACTOR IS RESPONSIBLE FOR CONTACTING THE ENGINEER 48 HOURS PRIOR TO THE COMMENCING SITE WORKS TO ARRANGE FOR INSPECTION. THE ENGINEER SHALL DETERMINE THE EXTENT OF INSPECTION AND TESTING REQUIRED FOR CERTIFICATION OF THE UNDERGROUND SERVICE INSTALLATION AS MANDATED BY THE ONTARIO BUILDING CODE DIVISION C, PART 1, SECTION 1.2.2, GENERAL REVIEW. FAILURE TO MAKE SUITABLE ARRANGEMENTS FOR INSPECTION WILL LEAD TO POST CONSTRUCTION TESTING AND INSPECTION AS DETERMINED BY THE ENGINEER, THE COSTS OF WHICH INCLUDING ANY DELAYS IN CONSTRUCTION SHALL BE BOURNE BY THE CONTRACTOR. FULL PAYMENT FOR UN-INSPECTED WORKS MAY BE WITHHELD UNTIL THE COMPLETION OF THE POST CONSTRUCTION INSPECTION AND TESTING TO THE SATISFACTION OF THE ENGINEER.**
22. INSPECTION BY THE OWNER'S ENGINEER IS FOR CERTIFICATION AND GENERAL CONFORMANCE PURPOSES AND DOES NOT CERTIFY LINE AND GRADE OR IMPLY AN ASSURANCE OF QUALITY CONTROL. THE CONTRACTOR SHALL BE RESPONSIBLE TO ENSURE THE INSTALLATION OF THE WORKS TO PROPER LINE, GRADE AND QUALITY TO CURRENT INDUSTRY STANDARDS.
23. ANY UTILITY RELOCATIONS AND RESTORATIONS DUE TO THE DEVELOPMENT TO BE UNDERTAKEN AT THE EXPENSE OF THE OWNER/DEVELOPER AND SHALL BE COORDINATED BY THE CONTRACTOR.
24. ALL RESTORATIONS AND RECONSTRUCTIONS SHALL BE TO COMPLETED TO MATCH EXISTING CONDITIONS OR BETTER AND ARE TO BE PERFORMED TO THE SATISFACTION OF THE ENGINEER AND THE CITY OF BURLINGTON.
25. SERVICING CONTRACTOR TO MAINTAIN A "CONFINED TRENCH CONDITION" IN ALL SEWER AND WATERMAIN INSTALLATION TRENCHES.
26. THE SITE SERVICING CONTRACTOR SHALL TERMINATE ALL SERVICES 1.0m FROM THE BUILDING FACE.
27. NO BLASTING WILL BE PERMITTED.

ROADWORKS:

1. APPROVED FILL, FREE OF DELETERIOUS AND ORGANIC MATERIAL AND BOULDERS SHALL BE COMPACTED TO A DRY DENSITY NOT LESS THAN 95% THAN THE STANDARD PROCTOR DENSITY. AFTER COMPACTION, SOIL DENSITY TESTS SHALL BE CONDUCTED TO ENSURE ADEQUATE COMPACTION AND STABILITY OF THE FILL AND TEST RESULTS SHALL BE SUBMITTED TO THE ENGINEER.
2. SUBGRADE TO BE PROOF ROLLED PRIOR TO PLACEMENT OF SUB BASE. UNSUITABLE MATERIAL TO BE REMOVED AND REPLACED WITH SELECT FILL OR GRANULAR "B" AND COMPACTED TO 98% SPD.
3. ASPHALTIC CONCRETE TO BE COMPACTED TO 97% MARSHALL DENSITY.
4. PAVEMENT STRUCTURE FOR INTERNAL ROADS SHALL CONSIST OF COMPACTED THICKNESSES OF: 40mm HL3 SURFACE ASPHALT 60mm HL8 BASE BINDER ASPHALT 150mm GRANULAR "A" BASE COURSE 250mm GRANULAR "B" SUB-BASE COURSE
5. BOULEVARDS TO BE SODDED WITH #1 NURSERY SOD ON A MINIMUM 150mm OF SELECT TOPSOIL.
6. MANHOLE FRAMES AND COVERS AND WATER VALVE BOXES SHALL BE SET FLUSH WITH BASE COURSE ASPHALT AND ADJUSTED TO FINAL GRADE AFTER INSTALLATION OF SURFACE ASPHALT AS PER CITY OF BURLINGTON STANDARD DRAWINGS S-130.
7. TRAFFIC CONTROL SHALL BE MAINTAINED AT ALL TIMES FOR WORKS ON EXISTING ROADWAYS TO THE SATISFACTION OF THE DIRECTOR OF ENGINEERING. THE EXPENSE FOR THE ERECTION OF SIGNS, DELINEATORS AND OTHER TRAFFIC CONTROL DEVICES SHALL BE BORNE BY THE CONTRACTOR.
8. STANDARD PARKING SPACES SHALL BE 2.6mx5.6m.

GRADING NOTES

1. ALONG ADJOINING PROPERTIES GRADE TO MEET EXISTING OR PROPOSED ELEVATIONS WITH SODDED SLOPES (MIN. 3H TO 1V) AND/OR RETAINING WALLS AS SPECIFIED.
2. ALL RETAINING WALLS, WALKWAYS, CURBS, ETC., SHALL BE PLACED A MIN. OF 0.3m OFF THE PROPERTY LINE. ALL WALLS 1.0m OR HIGHER SHALL BE DESIGNED BY A P.ENG.
3. SHOULD A RETAINING WALL BE REQUIRED, THE TOP OF WALL ELEVATIONS SHALL BE SET 150mm ABOVE THE PROPOSED SIDE YARD SWALES.
4. RETAINING WALLS 0.6m IN HEIGHT OR GREATER REQUIRE CONSTRUCTION OF A FENCE OR GUARD RAIL AT THE TOP OF THE REAR OF THE WALL. GUARDS FOR RETAINING WALLS SHALL BE DESIGNED AND CONSTRUCTED IN ACCORDANCE WITH THE REQUIREMENTS OF EXTERIOR GUARDS AS CONTAINED IN THE ONTARIO BUILDING CODE.
5. TOP OF FOUNDATION WALLS FOR BUILDINGS SHALL BE 150mm (MIN) ABOVE FINISHED GRADE.
6. DRIVEWAY SLOPES SHALL NOT BE LESS THAN 2% AND NOT MORE THAN 7.0%. REVERSED SLOPED DRIVEWAYS IN NEW DEVELOPMENTS ARE NOT PERMITTED.
7. IF GRADING IS REQUIRED ON LANDS ADJACENT TO THE DEVELOPMENT WHICH ARE NOT OWNED BY THE DEVELOPER, THEN THE DEVELOPER MUST OBTAIN WRITTEN PERMISSION FROM THE ADJACENT PROPERTY OWNER TO ALLOW THE DEVELOPER TO GRADE ON THE ADJACENT LANDS, OTHERWISE RETAINING WALLS MUST BE USED.
8. THE WRITTEN PERMISSION REQUIRED FROM THE ADJACENT LANDOWNER SHALL BE OBTAINED PRIOR TO ENTERING THE LANDS. SHOULD PERMISSION NOT BE OBTAINED OR IS WITHDRAWN PRIOR TO COMMENCING THE WORK, THEN THE DEVELOPER SHALL LIMIT HIS ACTIVITIES TO THE LIMITS OF THE DEVELOPMENT SITE.
9. DRIVEWAY AND DRIVEWAY APPROACHES SHALL BE LOCATED SUCH THAT HYDRO VAULTS AND OTHER STREET FURNITURE ARE A MIN. OF 1.2m FROM THE DRIVEWAY ENTRANCE CURB RADII.
10. ANY CHANGES IN GRADES AND CATCH BASINS REQUIRE THE APPROVAL OF THE CITY'S MANAGER OF DEVELOPMENT ENGINEERING.
11. ALL DRIVEWAYS FROM PROPERTY LINES FOR THE FIRST 7.5m SHALL BE WITHIN 5% MAXIMUM GRADE, THEREAFTER, ALL DRIVEWAYS SHALL BE WITHIN 10% MAXIMUM GRADES.

SILTATION AND EROSION CONTROL

1. SILTATION CONTROL BARRIERS SHALL BE PLACED AS DETAILED.
2. ALL SILTATION CONTROL MEASURES SHALL BE CLEANED AND MAINTAINED AFTER EACH RAINFALL AS DIRECTED AND TO THE SATISFACTION OF THE CITY OF BURLINGTON AND/OR THE HALTON CONSERVATION AUTHORITY.
3. ADDITIONAL SILT CONTROL LOCATIONS MAY BE REQUIRED AS DETERMINED BY THE ENGINEER, THE CITY OF BURLINGTON AND/OR THE HALTON CONSERVATION AUTHORITY.

SANITARY SEWERS:

1. SANITARY SEWERS SHALL BE PVC. PVC PIPE IS TO BE BELL AND SPIGOT AND COMPLY TO ASTM D-3034 WITH MINIMUM SDR 35.
2. MINIMUM BEDDING REQUIREMENTS FOR ALL SANITARY SEWER MAINS AND RELATED CONNECTIONS IN A SINGLE TRENCH SHALL BE CLASS B GRANULAR BEDDING AS PER OPSD 802.010 UNLESS OTHERWISE NOTED.
3. SANITARY SEWER MANHOLES FRAME AND COVER AS PER OPSD 401.010.
4. TAPPING AT EXISTING SANITARY SEWERS SHALL BE UNDERTAKEN IN ACCORDANCE WITH REGION OF HALTON REQUIREMENTS.
5. ALL SEWERS TO BE VIDEO INSPECTED.
6. ALL SEWERS TO BE FLUSHED PRIOR TO VIDEO INSPECTION.
7. ALL PVC SEWERS ARE TO BE TESTED FOR DEFLECTION (MANDREL PASSAGE) AFTER INSTALLATION. SANITARY SEWERS SHALL ALSO BE TESTED FOR LEAKAGE (LOW AIR PRESSURE). PRIOR TO ASSUMPTION BY THE CITY, PIPE DEFLECTION TESTING SHALL BE REPEATED.

STORM SEWERS:

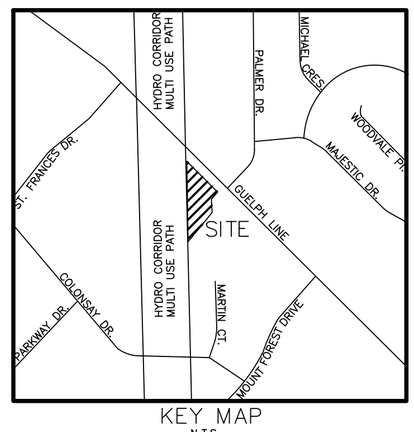
1. 300mm-450mm STORM SEWERS SHALL BE PVC, BELL AND SPIGOT AND SHALL COMPLY TO ASTM D-3034 WITH MINIMUM SDR 35.
2. MINIMUM BEDDING REQUIREMENTS FOR ALL SINGLE STORM SEWER MAINS AND ALL RELATED CONNECTIONS SHALL BE HIGH PERFORMANCE CLEAR STONE (HL-8 GRADED) AS PER CITY OF BURLINGTON STANDARD DRAWINGS S-188.
3. STORM SEWER MANHOLES SHALL BE IN ACCORDANCE WITH OPSD 701.010. AND 703.010. FRAME AND COVER AS PER OPSD 401.01 TYPE A. FRAMES TO BE STAMPED "DANGER" AND "STORM".
4. CATCHBASINS SHALL BE IN ACCORDANCE WITH OPSD 705.010. CATCHBASIN MANHOLES SHALL BE IN ACCORDANCE WITH OPSD 701.010 AND 701.030 UNLESS OTHERWISE SPECIFIED. CATCHBASINS TO LOCATED WITHIN LANDSCAPED AREAS TO BE SUMPLESS. FRAME AND COVER FOR CATCHBASINS AND CATCHBASIN MANHOLES SHALL BE AS PER OPSD 400.100 (ROADS) AND PER CITY OF BURLINGTON STANDARD DRAWING S-176 (REAR YARDS).
5. DOUBLE CATCH BASINS SHALL BE IN ACCORDANCE WITH OPSD 705.020 WITH 250mm DIA. LEAD. FRAMES AND COVERS TO BE OPSD 400.11 (ROADS) AND CITY OF BURLINGTON STD. S-176 (REAR YARDS). LEADS TO BE PVC SDR 35.
6. CATCH BASIN AND MANHOLE TOPS SHALL BE INITIALLY SET TO BASE COURSE ASPHALT ELEVATION AND ADJUSTED TO GRADE PRIOR TO PLACEMENT OF TOP LIFT OF ASPHALT.
7. ALL TRENCH EXCAVATIONS ARE TO BE BACKFILLED WITH SELECT NATIVE MATERIAL PLACED IN MAXIMUM 200mm LIFT THICKNESSES WITHIN 3% OF THE OPTIMUM MOISTURE CONTENT AND COMPACTED TO A MINIMUM OF 95% SPD, UNLESS OTHERWISE SPECIFIED.
8. INVERTS OF ALL SWALES TO BE SODDED TO A MINIMUM WIDTH OF 3.0m. ALL OTHER DISTURBED AREAS TO BE TOPSOILED AND SEEDED. SOD SHALL BE #1 NURSERY LAID ON A MINIMUM OF 150mm OF TOPSOIL.
9. ALL SEWERS TO BE VIDEO INSPECTED.
10. ALL SEWERS TO BE FLUSHED PRIOR TO VIDEO INSPECTION.
11. ALL PVC SEWERS (SANITARY AND STORM) ARE TO BE TESTED FOR DEFLECTION (MANDREL PASSAGE) AFTER INSTALLATION. PRIOR TO ASSUMPTION BY THE CITY, PIPE DEFLECTION TESTING SHALL BE REPEATED.

RESTORATIONS:

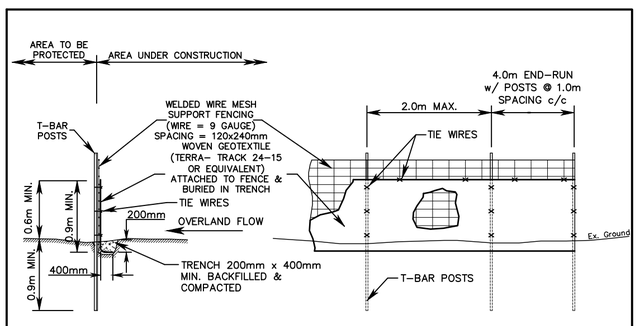
1. ALL TRENCH EXCAVATIONS WITHIN EXISTING ROAD ALLOWANCES SHALL BE AS BACKFILLED AS PER CITY OF BURLINGTON STANDARD DRAWING S-114 AND S-114A, OR S-115 AND S-115A WHERE CONCRETE ROAD BASE IS PRESENT.
2. EXISTING PRIVATE FENCING IS TO BE MAINTAINED THROUGHOUT CONSTRUCTION. WHERE REMOVAL OR RELOCATION OF FENCING IS NECESSARY IT SHALL BE RESTORED OR REPLACED TO ORIGINAL CONDITIONS OR BETTER UNDER THE DIRECTION OF THE ENGINEER.
3. DAMAGED CURB, GUTTER AND SIDEWALK TO BE REPLACED WITH 28 MPa CONCRETE TO EXISTING CONDITIONS OR BETTER.
4. PAVEMENT SURFACE ON EXISTING PLAINS ROAD EAST TO BE REPAIRED BY CONTRACTOR AT THEIR EXPENSE IF DAMAGED BY CONSTRUCTION TRAFFIC.

WATERMAINS:

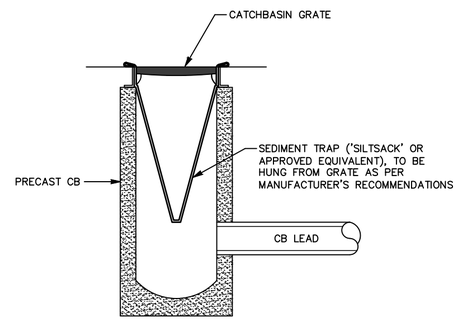
1. FLEXIBLE WATERMAIN PIPE UP TO 300mm DIAMETER TO BE P.V.C. DR-18 AND CONFORM TO A.W.W.A. C-900 WITH MECHANICAL JOINTS AS PER A.W.W.A. C-110, AND TO BE INSTALLED WITH A 10 GAUGE TRACER WIRE.
2. FLEXIBLE PIPE BEDDING TO BE OPSD 802.010 WITH COMPACTED GRANULAR B MATERIAL.
3. MINIMUM COVER TO BE 1.7m TO TOP OF PIPE.
4. DEFLECTION AT JOINTS NOT TO EXCEED 2.5 DEGREES AND SHALL BE EQUAL AT ALL JOINTS.
5. GATE VALVES AND BOXES FOR 150mm DIAMETER WATERMAINS AS PER A.W.W.A. STANDARD C-500 AND ARE TO OPEN TO THE LEFT (COUNTER CLOCKWISE).
6. HYDRANTS SHALL MEET THE REQUIREMENTS OF A.W.W.A. STANDARD C-502 AND SHALL BE SET IN ACCORDANCE WITH REGION OF HALTON, AND CITY OF BURLINGTON BUILDING DEPARTMENT STANDARDS, COMPLETE WITH STEAMER CONNECTIONS. THE 100mm STEAMER PORT SHALL FACE THE FIRE ROUTE AND SHALL BE UNOBSTRUCTED BY ANY PROPOSED LANDSCAPING.
7. ALL FITTINGS TO HAVE MECHANICAL RESTRAINTS THAT MEET UNI-B-13-92.
8. ALL TEMPORARY AND PERMANENT WATERMAIN PLUGS ARE TO BE CONSTRUCTED IN ACCORDANCE WITH OPSD 1103.01.
9. TAPPING AT EXISTING WATERMAINS SHALL BE UNDERTAKEN IN ACCORDANCE WITH REGION OF HALTON REQUIREMENTS.
10. ALL WATER CUSTOMERS SUPPLIED BY A WATERMAIN TO BE SHUT DOWN SHALL BE NOTIFIED BY THE CONTRACTOR AT LEAST 48 HOURS IN ADVANCE OF THE SHUT DOWN AS PER REGION OF HALTON SPECIFICATIONS. NOTIFICATION SHALL TAKE PLACE UNDER THE ENGINEER'S DIRECTION.
11. MINIMUM HORIZONTAL SEPERATION BETWEEN WATERMAINS (INCLUDING PRIVATE SERVICES) AND STORM AND SANITARY SEWERS SHALL BE 2.5m. WATERMAINS MUST HAVE A MINIMUM VERTICAL CLEARANCE OF 500mm BETWEEN ALL OTHER UTILITIES WHEN CROSSING.



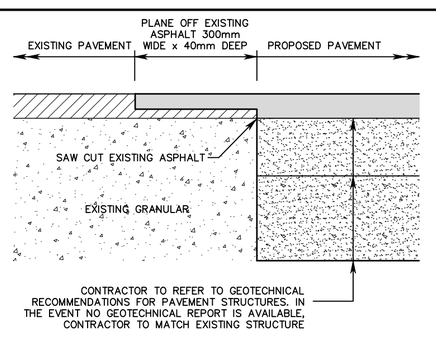
KEY MAP
N.T.S.



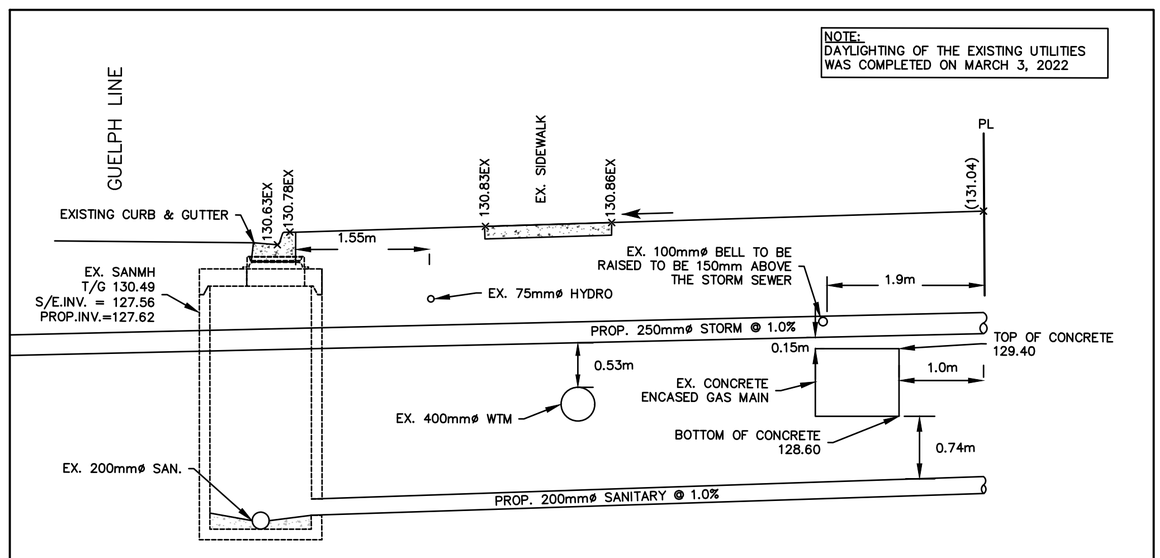
DETAIL 2 — HEAVY-DUTY SILT FENCE (PER OPSD 219.130)
SCALE: N.T.S.



DETAIL 3 — CATCH BASIN SEDIMENT TRAP
SCALE: N.T.S.



DETAIL 4 — ASPHALT LAP JOINT
SCALE: N.T.S.



DETAIL 1 — SECTION A-A
SCALE: 1:50

DETAIL 5 — STORMWATER STORAGE VAULT (DESIGN BY OTHERS)
SCALE: N.T.S.

BENCH MARK NOTE:
CITY OF BURLINGTON BENCHMARK NO.397

BRASS PLAQUE ON THE EASTERLY FACE OF POSTAL STATION "B" ON THE WEST SIDE GUELPH LINE OPPOSITE PALMER DRIVE. PLAQUE IS LOCATED ,.25M SOUTH WESTERLY FROM THE SOUTHEAST CORNER AND 0.45 M ABOVE GRADE.

ELEVATION = 131.500M (DATUM CGVD 1928:1978)

NO.	DATE	BY	REVISIONS

NOTES TO CONTRACTOR:

1. CONTRACTORS AND SUBCONTRACTORS SHALL NOT SCALE FROM THIS DRAWING.
2. ANY INCONSISTENCIES AND OMISSIONS FOUND ON THE DRAWINGS MUST BE REPORTED TO THE ENGINEER FOR CLARIFICATION BEFORE COMMENCING THE WORK.
3. PRIOR TO THE START OF CONSTRUCTION, THE CONTRACTOR MUST CHECK AND VERIFY ALL DIMENSIONS AND ELEVATIONS AND REPORT ALL FINDINGS TO THE ENGINEER. ONCE CONSTRUCTION HAS COMMENCED, THE CONTRACTOR ACCEPTS RESPONSIBILITY FOR ALL DIMENSIONS, ELEVATIONS, AND SITE CONDITIONS.
4. THE POSITIONS OF POLE LINES, CONDUITS, WATERMAINS, SEWERS AND OTHER UNDERGROUND AND OVER-GROUND UTILITIES AND STRUCTURES ARE NOT NECESSARILY SHOWN ON THE DRAWINGS. WHERE SHOWN ON THE DRAWING, THE ACCURACY OF THE POSITION OF SUCH UTILITIES AND STRUCTURES IS NOT GUARANTEED. BEFORE STARTING WORK, THE CONTRACTOR SHALL INFORM THEMSELVES OF THE EXACT LOCATION OF ALL SUCH UTILITIES AND STRUCTURES AND ASSUME ALL LIABILITY FOR DAMAGE TO THEM.
5. ALL DRAWINGS REMAIN THE PROPERTY OF THE ENGINEER AND SHALL NOT BE REPRODUCED, REUSED, OR REVISED WITHOUT THE WRITTEN CONSENT OF S. LLEWELLYN AND ASSOCIATES LIMITED.

DESIGN	YM	CHK'D	SN	DATE MAR. 8, 22
DRAWN	YM	CHK'D	SN	

SCALE 1:200 (0, 5, 10, 20)

APPROVALS

STAMP

S. LLEWELLYN & ASSOCIATES LIMITED
CONSULTING ENGINEERS
Tel. (905) 631-6978
Website: www.sla.on.ca
email: info@sla.on.ca
3228 South Service Road, Suite #105 East Wing, Burlington, Ont., L7N 3H8

CLIENTS

INFINITY DEVELOPMENT INC.
101-2275 UPPER MIDDLE ROAD,
OAKVILLE, ON L6H 0C3

PROJECT NAME

1396 GUELPH LINE
BURLINGTON, ON

TITLE

PRELIMINARY NOTES & DETAILS

PROJECT No.	DRAWING No.
22024	C103

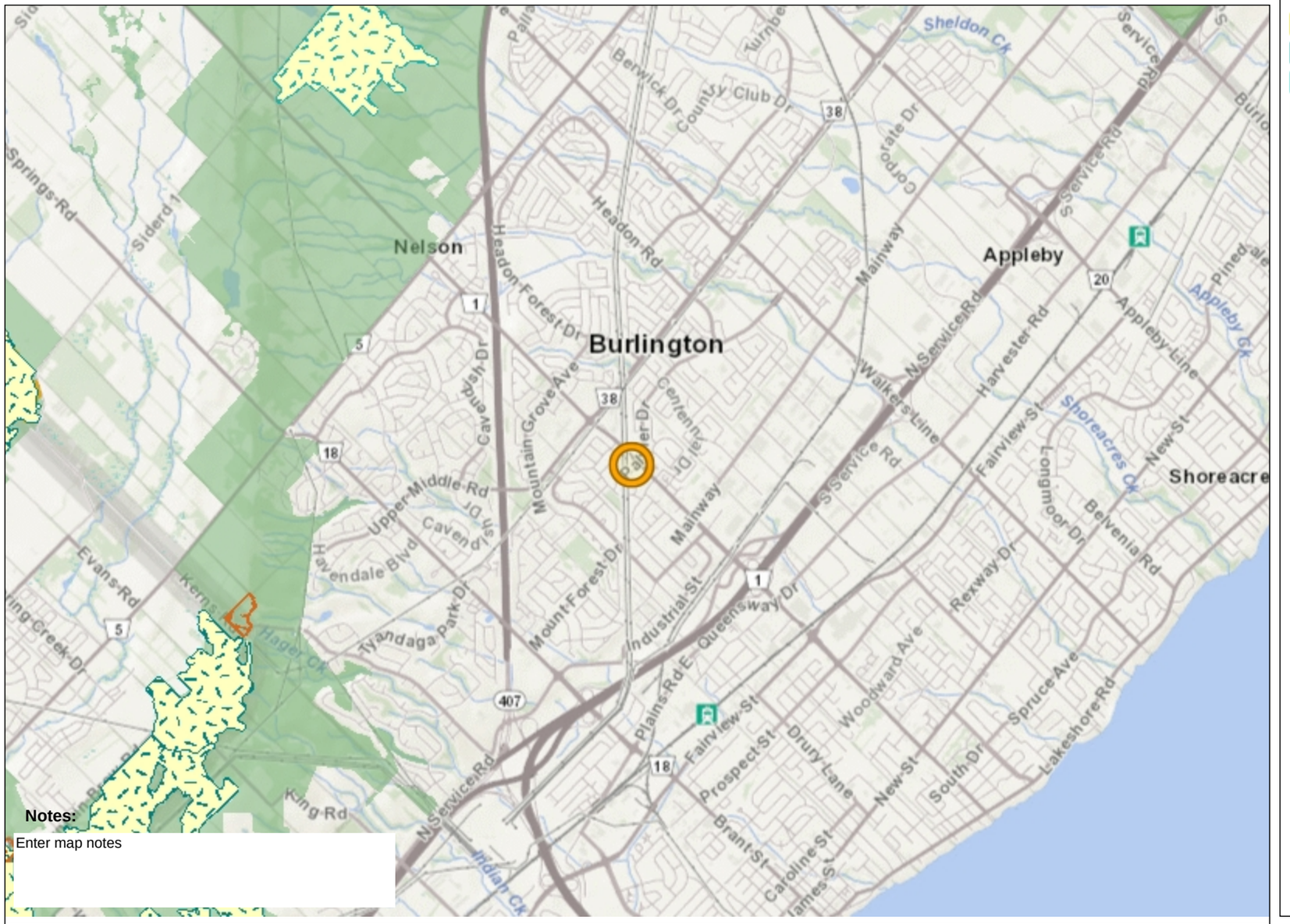
Ontario

Ministry of Natural Resources and Forestry

Make-a-Map: Natural Heritage Areas

Natural Heritage Map

Map created:3/9/2022



Notes:

Enter map notes

Legend

ANSI

- Earth Science Provincially Significant/sciences de la terre d'importance provinciale
- Earth Science Regionally Significant/sciences de la terre d'importance régionale
- Life Science Provincially Significant/sciences de la vie d'importance provinciale
- Life Science Regionally Significant/sciences de la vie d'importance régionale
- Conservation Reserve
- Provincial Park
- Natural Heritage System

2.7 0 1.33 2.7 Kilometres

Absence of a feature in the map does not mean they do not exist in this area.

This map should not be relied on as a precise indicator of routes or locations, nor as a guide to navigation. The Ontario Ministry of Natural Resources and Forestry(OMNRF) shall not be liable in any way for the use of, or reliance upon, this map or any information on this map.

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APPENDIX B – LOG OF BOREHOLES

FISHER ENGINEERING

LOG OF BOREHOLE

NO. BH1(MW) SHEET. 1 of 2

PROJECT NO.: FE-P 22-11966/67

PROJECT NAME: Geotechnical & Hydrogeological Investigations

LOCATION: 1396 Guelph Line, Burlington

DRILLING METHOD: Truck D-50, Solid Stem

DRILLING DATE: March 2, 2022

DEPTH (feet)	DEPTH (metres)	DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	LAB ID	Type NO.	"N" VALUE
		GROUND SURFACE (m asl)		131.11			
0	0	2" ASPHALT GRANULAR MATERIAL		130.60/ 0.51		SS-1	56
2	1	FILL: Dark grey to black clayey silt, trace gravel & organics, moist, stiff		130.20/ 0.91		SS-2	11
4		SANDY SILT TILL: Grey, trace clay & gravel, moist, compact			22-8059-1	SS-3	24
6	2	SILT TO CLAYEY SILT TILL: Reddish brown, trace sand, pieces of shale/cobbles, slightly moist to dry, hard to very stiff		129.13/ 1.98		SS-4	31
8					22-8059-2	SS-5	42
10	3						
12	4						
14					22-8059-3	SS-6	23
16	5						
18				125.32/ 5.79			
20	6	WEATHERED SHALE: Red with grey seams/layers, slightly moist to dry, hard				SS-7	100+
22	7						
24							
26	8					SS-8	100+
28							
30	9					SS-9	100+
32	10						

PENETRATION TESTING (SPT) ▲ 20 40 60 80

SHEAR STRENGTH (Kpa) ✚ 40 80 120 160

VAPOUR READING (ppm) □ 20 40 60 80

MOISTURE CONTENT (%) ● 10 20 30 40

13.7

12.5

10.8

PIEZOMETER OR WELL CONSTRUCTION

Concrete

1.39m

2" blank PVC

Bentonite Pellets

2" Slotted Pipe

Silica Sand

Groundwater Depth (m): on completion: dry; on March 9, 2022: 1.39m

DRAWN: DC LOGGED: BS CHECKED: CW

FISHER ENGINEERING

LOG OF BOREHOLE

NO. BH1(MW) SHEET. 2 of 2

PROJECT NO.: FE-P 22-11966/67

PROJECT NAME: Geotechnical & Hydrogeological Investigations

LOCATION: 1396 Guelph Line, Burlington

DRILLING METHOD: Truck D-50, Solid Stem

DRILLING DATE: March 2, 2022

DEPTH (feet)	DEPTH (metres)	DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	SAMPLES: LAB ID	SAMPLES: Type NO.	SAMPLES: "N" VALUE
32	10	WEATHERED SHALE: Red with grey seams/layers, slightly moist to dry, hard					
				120.36/ 10.75			
34		Refusal to auger at 10.75m				SS-10	100+
36	11	End of Borehole at 10.75m					
38							
40	12						
42							
44	13						
46							
48	14						
50							
52	15						
54							
56	16						
58							
60	17						
62							
64	18						
	19						

PENETRATION TESTING (SPT) ▲ 20 40 60 80

SHEAR STRENGTH (Kpa) ✚ 40 80 120 160

VAPOUR READING (ppm) □ 20 40 60 80

MOISTURE CONTENT (%) ● 10 20 30 40

PIEZOMETER OR WELL CONSTRUCTION

2" Slotted Pipe

Silica Sand

10.67m bgs

Groundwater Depth (m): on completion: dry; on March 9, 2022: 1.39m

DRAWN: DC LOGGED: BS CHECKED: CW

FISHER ENGINEERING

LOG OF BOREHOLE

NO. BH2(MW) SHEET. 1 of 2

PROJECT NO.: FE-P 22-11966/67

PROJECT NAME: Geotechnical & Hydrogeological Investigations

LOCATION: 1396 Guelph Line, Burlington

DRILLING METHOD: Truck D-50, Solid Stem

DRILLING DATE: March 2, 2022

DEPTH (feet)	DEPTH (metres)	DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	LAB ID	Type NO.	"N" VALUE
		GROUND SURFACE (m asl)		131.27			
0	0	1½" ASPHALT		130.93/ 0.34		SS-1	31
2		GRANULAR FILL: Grey gravelly sand, moist, dense					
4	1	SANDY SILT TILL: Grey to brown, trace clay, trace gravel, moist, compact Signs of oxidation @ 1.52m				SS-2	24
6	2					SS-3	25
8		SILT TO CLAYEY SILT TILL: Reddish brown, trace sand, pieces of shale/cobbles, slightly moist to dry, hard		129.14/ 2.13		SS-4	38
10	3					SS-5	59
12	4						
14							
16	5					SS-6	32
18							
20	6	WEATHERED SHALE: Red with grey layers/seams, slightly moist to dry, hard		125.17/ 6.10		SS-7	100+
22	7						
24							
26	8					SS-8	100+
28							
30	9					SS-9	100+
32	10						

PENETRATION TESTING (SPT) ▲ 20 40 60 80

SHEAR STRENGTH (Kpa) ✚ 40 80 120 160

VAPOUR READING (ppm) □ 20 40 60 80

MOISTURE CONTENT (%) ● 10 20 30 40

PIEZOMETER OR WELL CONSTRUCTION

Concrete

1.05m

2" blank PVC

Bentonite Pellets

2" Slotted Pipe

Silica Sand

Groundwater Depth (m): on completion: 5.18m; on March 9, 2022: 1.05m

DRAWN: DC LOGGED: BS CHECKED: CW

FISHER ENGINEERING

LOG OF BOREHOLE

NO. BH2(MW) SHEET. 2 of 2

PROJECT NO.: FE-P 22-11966/67

PROJECT NAME: Geotechnical & Hydrogeological Investigations

LOCATION: 1396 Guelph Line, Burlington

DRILLING METHOD: Truck D-50, Solid Stem

DRILLING DATE: March 2, 2022

DEPTH (feet)	DEPTH (metres)	DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	SAMPLES: LAB ID	SAMPLES: Type NO.	SAMPLES: "N" VALUE
32	10	WEATHERED SHALE: Red with grey layers/seams, slightly moist to dry, hard Grey shale at the bottom		120.91/ 10.36			
34		Refusal to auger at 10.36m					
36	11	End of Borehole at 10.36m					
38							
40	12						
42							
44	13						
46							
48	14						
50							
52	15						
54							
56	16						
58							
60	17						
62							
64	18						
	19						

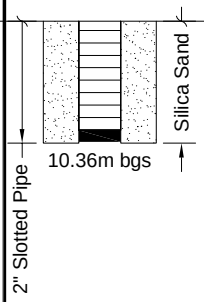
PENETRATION TESTING (SPT) ▲ 20 40 60 80

SHEAR STRENGTH (Kpa) ✚ 40 80 120 160

VAPOUR READING (ppm) □ 20 40 60 80

MOISTURE CONTENT (%) ● 10 20 30 40

PIEZOMETER OR WELL CONSTRUCTION



Groundwater Depth (m): on completion: 5.18m; on March 9, 2022: 1.05m

DRAWN: DC LOGGED: BS CHECKED: CW

FISHER ENGINEERING

LOG OF BOREHOLE

NO. BH3(MW) SHEET. 1 of 2

PROJECT NO.: FE-P 22-11966/67

PROJECT NAME: Geotechnical & Hydrogeological Investigations

LOCATION: 1396 Guelph Line, Burlington

DRILLING METHOD: Truck D-50, Solid Stem

DRILLING DATE: March 1, 2022

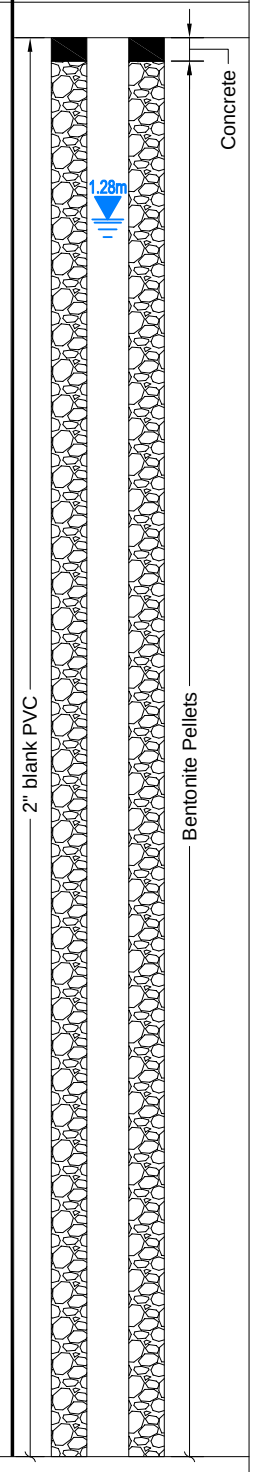
DEPTH (feet)	DEPTH (metres)	DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	LAB ID	Type NO.	"N" VALUE
		GROUND SURFACE (m asl)		130.96			
0	0	1½" ASPHALT				SS-1	37
2		GRANULAR MATERIAL: Sand & gravel, brown, moist, very dense		130.50/ 0.46			
4	1	FILL: Dark grey clayey silt, trace gravel, brick, organics & rootlets, moist, loose				SS-2	8
6	2	CLAYEY SILT TILL: Grey, trace gravel, moist, firm to stiff		129.28/ 1.68	22-8059-4	SS-3	8
8		SILTY SAND: Light brown, trace gravel, wet, compact		128.52/ 2.44		SS-4	11
10	3	SANDY TO CLAYEY SILT TILL: Reddish brown, with pieces of shale, moist, compact to very dense (very stiff to hard)		127.91/ 3.05	22-8059-5	SS-5	26
12	4						
14							
16	5				22-8059-6	SS-6	29
18		Mixed with weathered red shale @ 5.33m				SS-7	100+
20	6	WEATHERED SHALE: Red with grey layers/seams, slightly moist to dry, hard		124.86/ 6.10		SS-8	100+
22	7						
24							
26	8					SS-9	100+
28							
30	9					SS-10	100+
32	10						

PENETRATION TESTING (SPT) ▲ 20 40 60 80

SHEAR STRENGTH (Kpa) ✚ 40 80 120 160

VAPOUR READING (ppm) □ 20 40 60 80

MOISTURE CONTENT (%) ● 10 20 30 40



Groundwater Depth (m): on completion: dry; on March 2, 2022: 12.64m; on March 9, 2022: 1.28m

DRAWN: DC LOGGED: BS CHECKED: CW

FISHER ENGINEERING

LOG OF BOREHOLE

NO. BH3(MW) SHEET. 2 of 2

PROJECT NO.: FE-P 22-11966/67

PROJECT NAME: Geotechnical & Hydrogeological Investigations

LOCATION: 1396 Guelph Line, Burlington

DRILLING METHOD: Truck D-50, Solid Stem

DRILLING DATE: March 1, 2022

DEPTH (feet)	DEPTH (metres)	DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	LAB ID	SAMPLES Type NO.	"N" VALUE
32	10	WEATHERED SHALE: Red with grey layers/seams, slightly moist to dry, hard					
34							
36	11					SS-11	100+
38							
40	12					SS-12	100+
42	13						
44							
46	14					SS-13	100+
48							
50	15	Augered to 15.24m		115.59/ 15.37		SS-14	100+
		End of Borehole at 15.37m					
52	16						
54							
56	17						
58							
60	18						
62	19						
64							

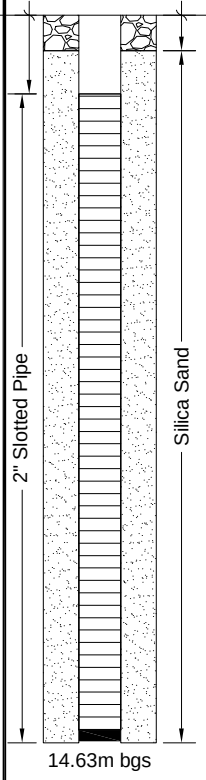
PENETRATION TESTING (SPT) ▲ 20 40 60 80

SHEAR STRENGTH (Kpa) ✚ 40 80 120 160

VAPOUR READING (ppm) □ 20 40 60 80

MOISTURE CONTENT (%) ● 10 20 30 40

PIEZOMETER OR WELL CONSTRUCTION



Groundwater Depth (m): on completion: dry; on March 2, 2022: 12.64m; on March 9, 2022: 1.28m

DRAWN: DC LOGGED: BS CHECKED: CW

FISHER ENGINEERING

LOG OF BOREHOLE

NO. BH4(MW) SHEET. 1 of 2

PROJECT NO.: FE-P 22-11966/67

PROJECT NAME: Geotechnical & Hydrogeological Investigations

LOCATION: 1396 Guelph Line, Burlington

DRILLING METHOD: Truck D-50, Solid Stem

DRILLING DATE: March 2, 2022

DEPTH (feet)	DEPTH (metres)	DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	LAB ID	Type NO.	"N" VALUE
		GROUND SURFACE (m asl)		130.64			
0	0	2" ASPHALT				SS-1	20
2	1	FILL: Granular fill, gravelly sand, moist Dark brown to black, brown stones, fill material mixed of asphalt, wooden pieces				SS-2	4
4				129.12/ 1.52			
6	2	FILL: Dark brown clayey silt, moist, firm				SS-3	8
8		SANDY SILT TILL: Grey, trace gravel, moist, dense		128.35/ 2.29		SS-4	40
10	3	CLAYEY SILT TILL: Reddish brown, some sand, moist to dry, hard		127.59/ 3.05		SS-5	44
12	4						
14							
16	5					SS-6	47
18							
20	6	WEATHERED SHALE: Red with grey layers/seams, slightly moist to dry, hard		124.54/ 6.10		SS-7	100+
22	7						
24							
26	8					SS-8	100+
28							
30	9					SS-9	100+
32	10						

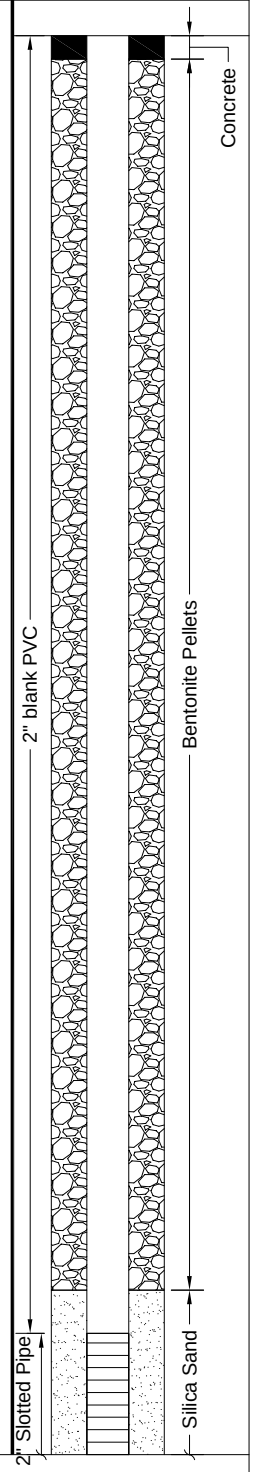
PENETRATION TESTING (SPT) ▲ 20 40 60 80

SHEAR STRENGTH (Kpa) ✚ 40 80 120 160

VAPOUR READING (ppm) □ 20 40 60 80

MOISTURE CONTENT (%) ● 10 20 30 40

PIEZOMETER OR WELL CONSTRUCTION



Groundwater Depth (m): on completion: 5.18m; on March 2, 2022: 11.17m

DRAWN: DC LOGGED: BS CHECKED: CW

FISHER ENGINEERING

LOG OF BOREHOLE

NO. BH4(MW) SHEET. 2 of 2

PROJECT NO.: FE-P 22-11966/67

PROJECT NAME: Geotechnical & Hydrogeological Investigations

LOCATION: 1396 Guelph Line, Burlington

DRILLING METHOD: Truck D-50, Solid Stem

DRILLING DATE: March 2, 2022

DEPTH (feet)	DEPTH (metres)	DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	LAB ID	Type NO.	"N" VALUE
32	10	WEATHERED SHALE: Red with grey layers/seams, slightly moist to dry, hard					
34							
36	11					SS-10	100+
38							
40	12					SS-11	100+
42	13						
44							
46	14					SS-12	100+
48							
50	15	Augered to 15.24m		115.40/ 15.24			
		End of Borehole at 15.24m				SS-13	100+
52	16						
54							
56	17						
58							
60	18						
62	19						
64							

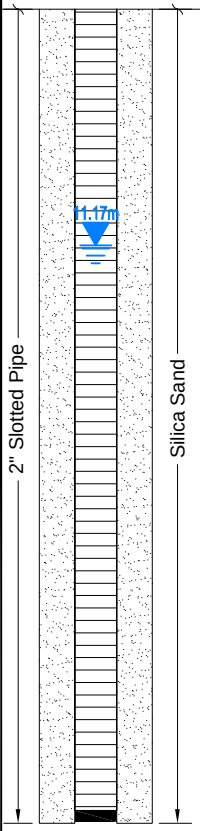
PENETRATION TESTING (SPT) ▲ 20 40 60 80

SHEAR STRENGTH (Kpa) ✚ 40 80 120 160

VAPOUR READING (ppm) □ 20 40 60 80

MOISTURE CONTENT (%) ● 10 20 30 40

PIEZOMETER OR WELL CONSTRUCTION



Groundwater Depth (m): on completion: 5.18m; on March 2, 2022: 11.17m

DRAWN: DC LOGGED: BS CHECKED: CW

FISHER ENGINEERING

LOG OF BOREHOLE

NO. BH5(MW) SHEET. 1 of 2

PROJECT NO.: FE-P 22-11966/67

PROJECT NAME: Geotechnical & Hydrogeological Investigations

LOCATION: 1396 Guelph Line, Burlington

DRILLING METHOD: Truck D-50, Solid Stem

DRILLING DATE: March 2, 2022

DEPTH (feet)	DEPTH (metres)	DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	LAB ID	Type NO.	"N" VALUE
		GROUND SURFACE (m asl)		129.92			
0	0	1½" ASPHALT		129.62/ 0.30		SS-1	15
2		GRANULAR MATERIAL: Sand & gravel, brown, moist, very dense		129.31/ 0.61			
4	1	FILL: Brown sandy silt, trace clay & gravel, moist, compact				SS-2	25
6	2	SANDY SILT TILL: Grey, trace gravel, moist, compact				SS-3	29
8						SS-4	28
10	3	CLAYEY SILT TILL: Reddish brown, some sand, moist to dry, hard to very stiff		126.87/ 3.05		SS-5	38
12	4						
14							
16	5			124.74/ 5.18		SS-6	27
18		WEATHERED SHALE: Red with grey layers/seams, slightly moist to dry, hard					
20	6					SS-7	100+
22	7						
24							
26	8					SS-8	100+
28							
30	9					SS-9	100+
32	10						

PENETRATION TESTING (SPT) ▲ 20 40 60 80

SHEAR STRENGTH (Kpa) ✚ 40 80 120 160

VAPOUR READING (ppm) □ 20 40 60 80

MOISTURE CONTENT (%) ● 10 20 30 40

PIEZOMETER OR WELL CONSTRUCTION

Concrete

2" blank PVC

Bentonite Pellets

Groundwater Depth (m): on completion: dry

DRAWN: DC LOGGED: BS CHECKED: CW

FISHER ENGINEERING

LOG OF BOREHOLE

NO. BH5(MW) SHEET. 2 of 2

PROJECT NO.: FE-P 22-11966/67

PROJECT NAME: Geotechnical & Hydrogeological Investigations

LOCATION: 1396 Guelph Line, Burlington

DRILLING METHOD: Truck D-50, Solid Stem

DRILLING DATE: March 2, 2022

DEPTH (feet)	DEPTH (metres)	DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	SAMPLES: LAB ID	SAMPLES: Type NO.	SAMPLES: "N" VALUE
32	10	WEATHERED SHALE: Red with grey layers/seams, slightly moist to dry, hard					
34							
36	11					SS-10	100+
38							
40	12					SS-11	100+
42	13						
44				116.12/ 13.80			
46	14	Refusal to auger at 13.80m End of Borehole at 13.80m				SS-12	100+
48							
50	15						
52	16						
54							
56	17						
58							
60	18						
62							
64	19						

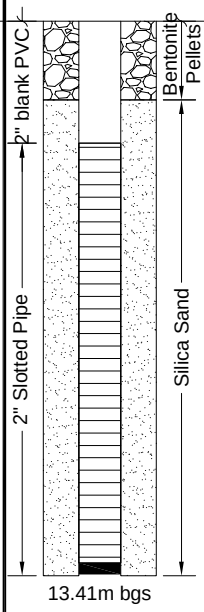
PENETRATION TESTING (SPT) ▲ 20 40 60 80

SHEAR STRENGTH (Kpa) ✚ 40 80 120 160

VAPOUR READING (ppm) □ 20 40 60 80

MOISTURE CONTENT (%) ● 10 20 30 40

PIEZOMETER OR WELL CONSTRUCTION



Groundwater Depth (m): on completion: dry

DRAWN: DC LOGGED: BS CHECKED: CW

FISHER ENGINEERING

LOG OF BOREHOLE

NO. BH6(MW) SHEET. 1 of 1

PROJECT NO.: FE-P 22-11966/67

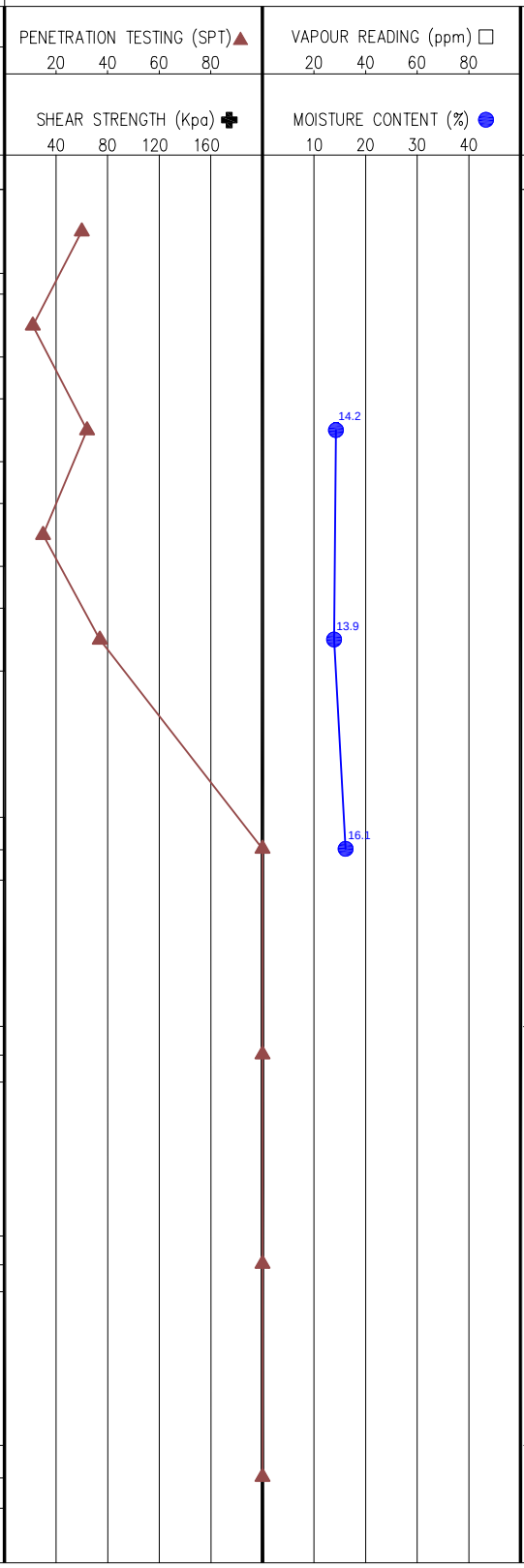
PROJECT NAME: Geotechnical & Hydrogeological Investigations

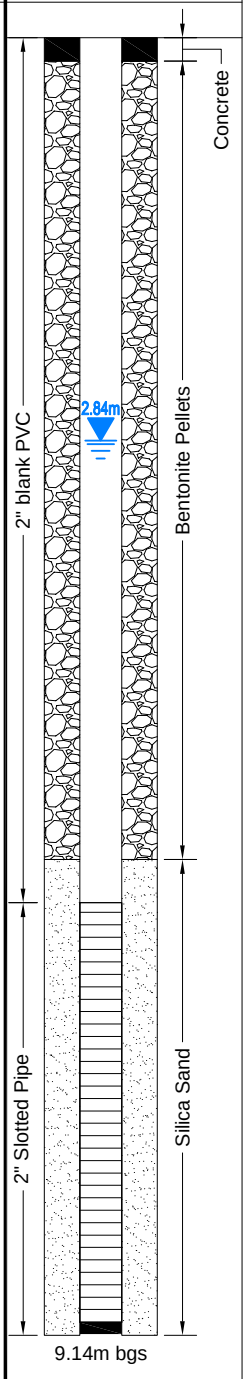
LOCATION: 1396 Guelph Line, Burlington

DRILLING METHOD: Truck D-50, Solid Stem

DRILLING DATE: March 1, 2022

DEPTH (feet)	DEPTH (metres)	DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	LAB ID	Type NO.	"N" VALUE
		GROUND SURFACE (m asl)		130.12			
0	0	3" ASPHALT					
		GRANULAR MATERIAL: Sand & gravel, brown, moist, very dense		129.76/ 0.36		SS-1	30
2	1	FILL: Black sandy silt, trace clay, gravel, topsoil & organics, moist, compact		129.21/ 0.91		SS-2	11
4		FILL: Grey silty sand, trace gravel & rootlet, moist, loose		128.75/ 1.37			
6	2	SANDY SILT TILL: Grey, trace gravel, moist, compact to dense			22-8059-7	SS-3	32
8						SS-4	15
10	3	CLAYEY SILT TILL: Reddish brown, some sand, moist to dry, hard		126.77/ 3.35	22-8059-8	SS-5	37
12	4						
14							
16	5	Wet @ 4.57m			22-8059-9	SS-6	100+
18		WEATHERED SHALE: Red with grey layers/seams, slightly moist to dry, hard		124.63/ 5.49			
20	6					SS-7	100+
22	7						
24							
26	8					SS-8	100+
28							
30	9	End of Borehole at 9.25m		120.87/ 9.25		SS-9	100+
32	10						





Groundwater Depth (m): on completion: 4.57m; on March 2, 2022: 2.84m

DRAWN: DC LOGGED: BS CHECKED: CW

APPENDIX C – MOISTURE CONTENT AND GRAIN SIZE DISTRIBUTION ANALYSES

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Client: Infinity Development Group
Address: 101-2275 Upper Middle Road
Oakville, ON
L6H 0C3
Tel.:
Email:
Attn.:

F.E. Job #: 22-8059
Project Name: Geotechnical
Project ID: FE-P 22-11966
Date Sampled: N/A
Date Received: 3-Mar-2022
Date Reported: 4-Mar-2022
Location: 1396 Guelph Line
Burlington, ON

Certificate of Analysis

Analyses	Matrix	Quantity	Date Extracted	Date Analyzed	Lab SOP	Method Reference
pH	Soil	2	4-Mar-22	4-Mar-22	pH-EC-SAR F-16	SW-846, 9045D
Chloride	Soil	2	N/A	4-Mar-22	Chloride F-20	SM 4500-Cl-E
Sulphate	Soil	2	4-Mar-22	4-Mar-22	Sulphate F-21	SM 4500-SO_4
Moisture Content	Soil	9	N/A	4-Mar-22	Support Procedures F-99	Carter (1993)
Grain Size	Soil	3	N/A	4-Mar-22	Grain Size F-28	ASTM D6913-04

Fisher Environmental Laboratories is accredited by CALA (the Canadian Association for Laboratory Accreditation Inc.) for specific parameters as required by Ontario Regulation 153/04. All analytical testing has been performed in accordance with ISO 17025 and the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act published by Ontario Ministry of the Environment.

Authorized by:

Roger Lin, Ph. D., C. Chem.
Laboratory Manager

ASSOCIATION OF THE CHEMICAL PROFESSION OF ONTARIO
CHARTERED
Ronggen (Roger) Lin
CHEMIST

Results related only to the items tested

Certificate of Analysis

Analysis Requested:	pH, Sulphate, Chloride, Moisture Content, Grain Size
Sample Description:	9 Soil Sample(s) (***Rush***)

Parameter	***22-8059-1*** BH1 SS3 1.52-1.98m	***22-8059-4*** BH3 SS3 1.52-1.98m				**Soil Standards** *
pH *(pH unit)*	8.60	6.59				(5-11) 5-9

* Surface soil pH value from 5 - 9, Sub-surface soil pH value from 5-11.

QA/QC Report

Parameter	**LCS**	**AR**	**Duplicate**	**AR**		
	Absolute Difference *(pH Unit)*					
pH *(pH unit)*	7.21	7.00-7.40	0.04	<0.3		

LEGEND:
LCS - Laboratory Control Sample
AR - Acceptable Range

Results related only to the items tested

Certificate of Analysis

Analysis Requested:	pH, Sulphate, Chloride, Moisture Content, Grain Size
Sample Description:	9 Soil Sample(s) (Rush)

Parameter	***22-8059-1*** BH1 SS3 1.52-1.98m	***22-8059-4*** BH3 SS3 1.52-1.98m				
	Concentration (µg/g)					
Chloride in Soil	160.97	795.54				

< result obtained was below RL (Reporting Limit).

QA/QC Report

Parameter	**Blank**	**RL**	**LCS**	**AR**	**MS**	**AR**
	(µg/g)		**Recovery (%)**		**Recovery (%)**	
Chloride in Soil	<10	10	96	70-130	87	70-130

Parameter	**Duplicate**	**AR**				
	RPD (%)					
Chloride in Soil	8.7	0-20				

LEGEND:

RL - Reporting Limit
LCS - Laboratory Control Sample
MS - Matrix Spike
AR - Acceptable Range
RPD - Relative Percent Difference

Results related only to the items tested

Certificate of Analysis

Analysis Requested:	pH, Sulphate, Chloride, Moisture Content, Grain Size
Sample Description:	9 Soil Sample(s) (Rush)

Parameter	***22-8059-1*** BH1 SS3 1.52-1.98m	***22-8059-4*** BH3 SS3 1.52-1.98m				
Sulphate *(mg/kg)*	25.5	122.4				

QA/QC Report

Parameter	**Blank**	**RL**	**LCS/Spike**	**AR**	**Duplicate**	**AR**
	(mg/kg)		**Recovery (%)**		**RPD (%)**	
Sulphate	<1	1	100	70-130	4	0-30

LEGEND:

RL - Reporting Limit
LCS - Laboratory Control Sample
AR - Acceptable Range
RPD - Relative Percent Difference

Results related only to the items tested

Certificate of Analysis

Analysis Requested:	pH, Sulphate, Chloride, Moisture Content, Grain Size
Sample Description:	9 Soil Sample(s) (Rush)

Parameter	***22-8059-1*** BH1 SS3 1.52-1.98m	***22-8059-2*** BH1 SS5 3.05-3.51m	***22-8059-3*** BH1 SS6 4.57-5.03m	***22-8059-4*** BH3 SS3 1.52-1.98m	***22-8059-5*** BH3 SS5 3.05-3.51m	***22-8059-6*** BH3 SS6 4.57-5.03m
Geo Moisture Content (%)	13.7	12.5	10.8	20.1	13.5	10.2

Parameter	***22-8059-7*** BH6 SS3 1.52-1.98m	***22-8059-8*** BH6 SS5 3.05-3.51m	***22-8059-9*** BH6 SS6 4.57-5.03m			
Geo Moisture Content (%)	14.2	13.9	16.1			

QA/QC Report

Parameter	**Blank**	**RL**	**LCS**	**AR**	**Duplicate**	**AR**
			Recovery (%)		**RPD (%)**	
Geo Moisture Content (%)	<0.1	0.1	100	70-130	14.5	0-20

LEGEND:

RL - Reporting Limit
LCS - Laboratory Control Sample
AR - Acceptable Range
RPD - Relative Percent Difference

Results related only to the items tested

Certificate of Analysis

Analysis Requested:	pH, Sulphate, Chloride, Moisture Content, Grain Size
Sample Description:	9 Soil Sample(s) (Rush)

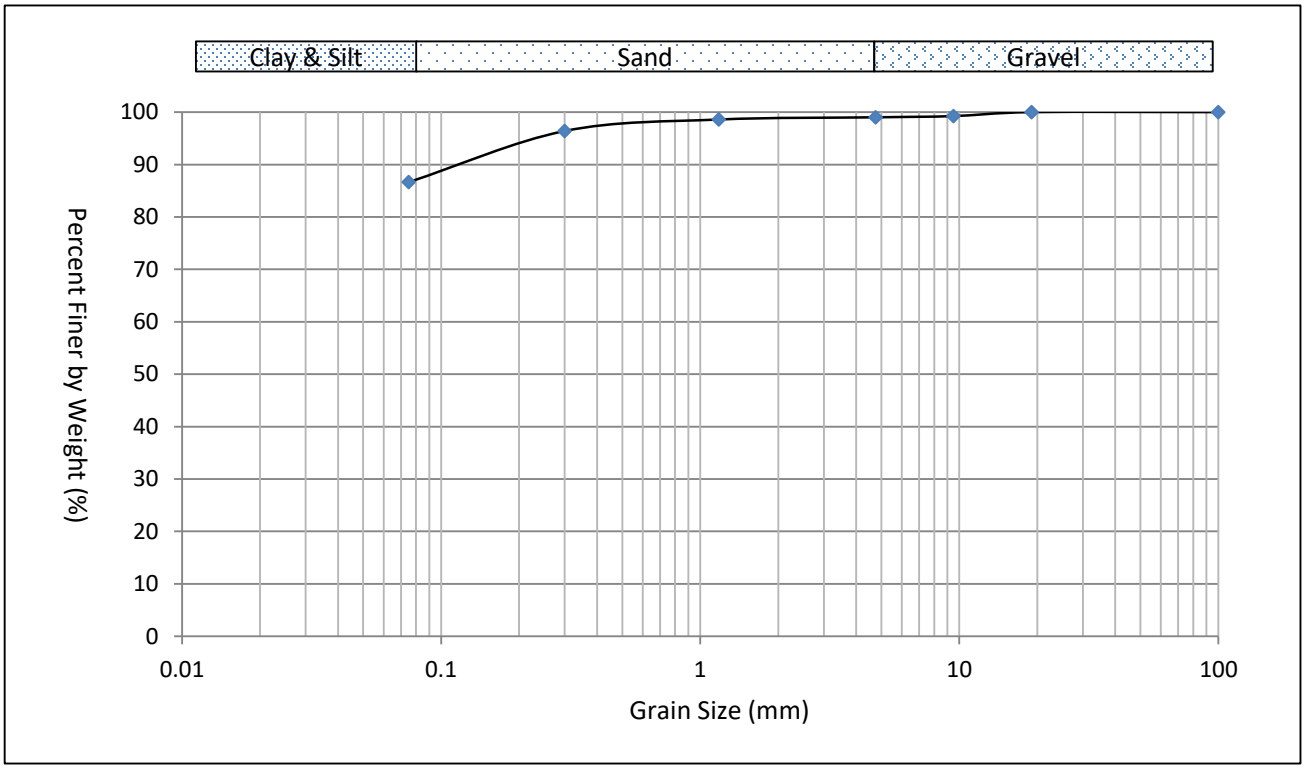
Parameter	***22-8059-4*** BH3 SS3 1.52-1.98m	***22-8059-5*** BH3 SS5 3.05-3.51m	***22-8059-6*** BH3 SS6 4.57-5.03m			
Grain Size (%)						
>19mm	0.0	0.0	0.0			
9.5mm-19mm	0.8	0.0	0.0			
4.75mm-9.5mm	0.2	4.3	4.6			
1.18m-4.75mmm	0.4	6.8	10.7			
300um-1.18mm	2.2	5.5	8.5			
75um-300um	9.8	10.2	8.5			
<75um	86.7	73.2	67.7			
Clay & Silt	**87**	**73**	**68**			
Sand	**12**	**23**	**28**			
Gravel	**1**	**4**	**5**			

Results related only to the items tested

Grain Size Distribution

Sample ID: 22-8059-4 BH3 SS3 1.52-1.98m

Clay & Silt: 87% Sand: 12% Gravel: 1%

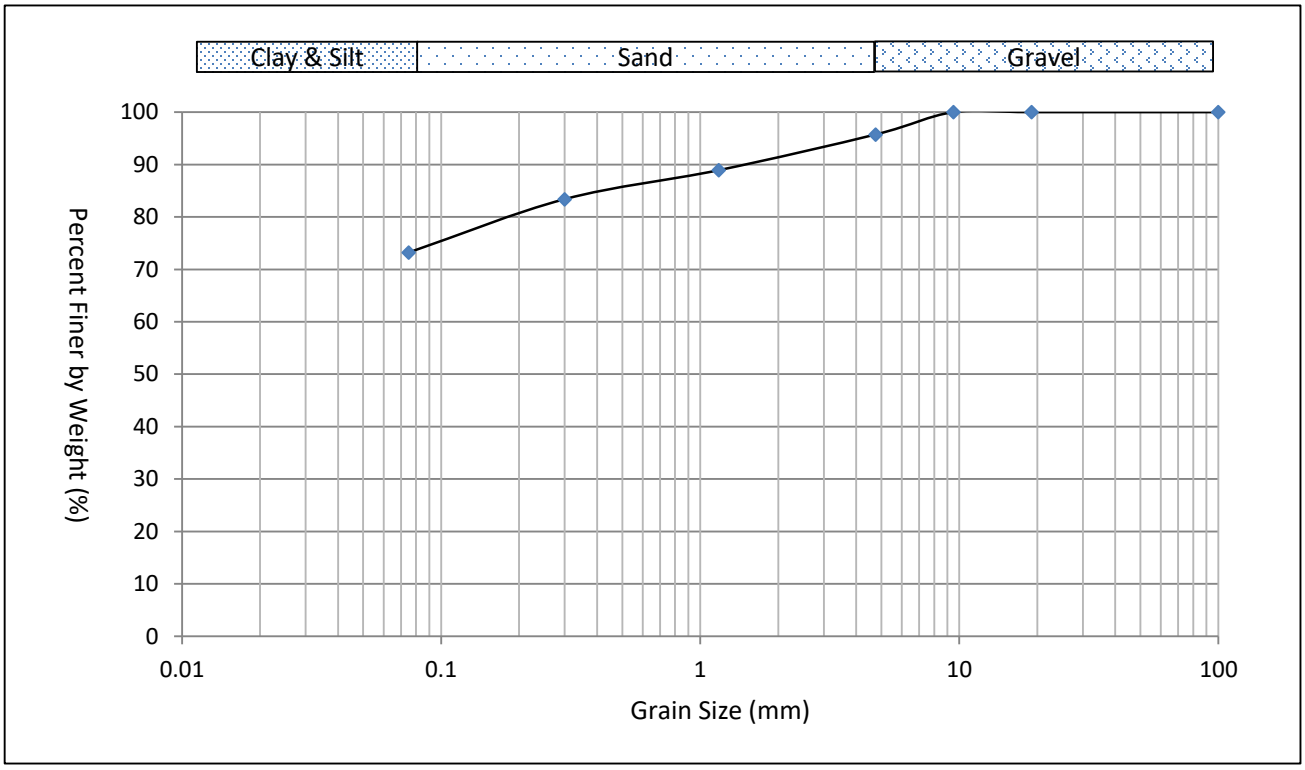


Results related only to the items tested

Grain Size Distribution

Sample ID: 22-8059-5 BH3 SS5 3.05-3.51m

Clay & Silt: 73% Sand: 23% Gravel: 4%

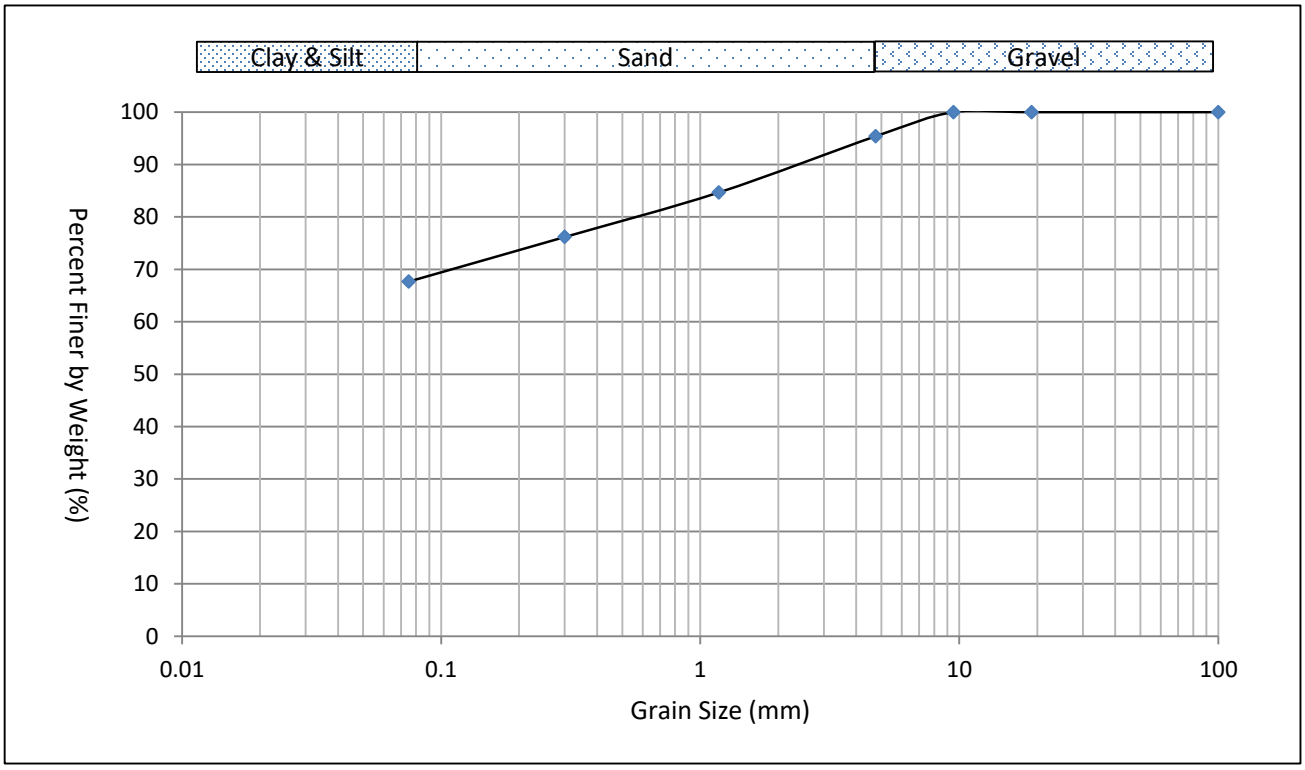


Results related only to the items tested

Grain Size Distribution

Sample ID: 22-8059-6 BH3 SS6 4.57-5.03m

Clay & Silt: 68% Sand: 28% Gravel: 5%



Results related only to the items tested

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Client:	Infinity Development Group	***F.E. Job #:***	22-8059B
Address:	101-2275 Upper Middle Road	***Project Name:***	Geotechnical
	Oakville, ON	***Project ID:***	FE-P 22-11966
	L6H 0C3	***Date Sampled:***	N/A
Tel.:		***Date Received:***	3-Mar-2022
Email:		***Date Reported:***	10-Mar-2022
Attn.:		***Location:***	1396 Guelph Line
			Burlington, ON

Certificate of Analysis

Analyses	Matrix	Quantity	Date Extracted	Date Analyzed	Lab SOP	Method Reference
Hydrometer	Soil	1	N/A	9-Mar-22	Hydrometer SOP	ASTM D7928-17

Fisher Environmental Laboratories is accredited by CALA (the Canadian Association for Laboratory Accreditation Inc.) for specific parameters as required by Ontario Regulation 153/04. All analytical testing has been performed in accordance with ISO 17025 and the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act published by Ontario Ministry of the Environment.

Authorized by:



Roger Lin, Ph. D., C. Chem.
Laboratory Manager

Client: Infinity Development Group ***F.E. Job #:*** 22-8059B

Certificate of Analysis

Analysis Requested:	Hydrometer
Sample Description:	1 Soil Sample(s)

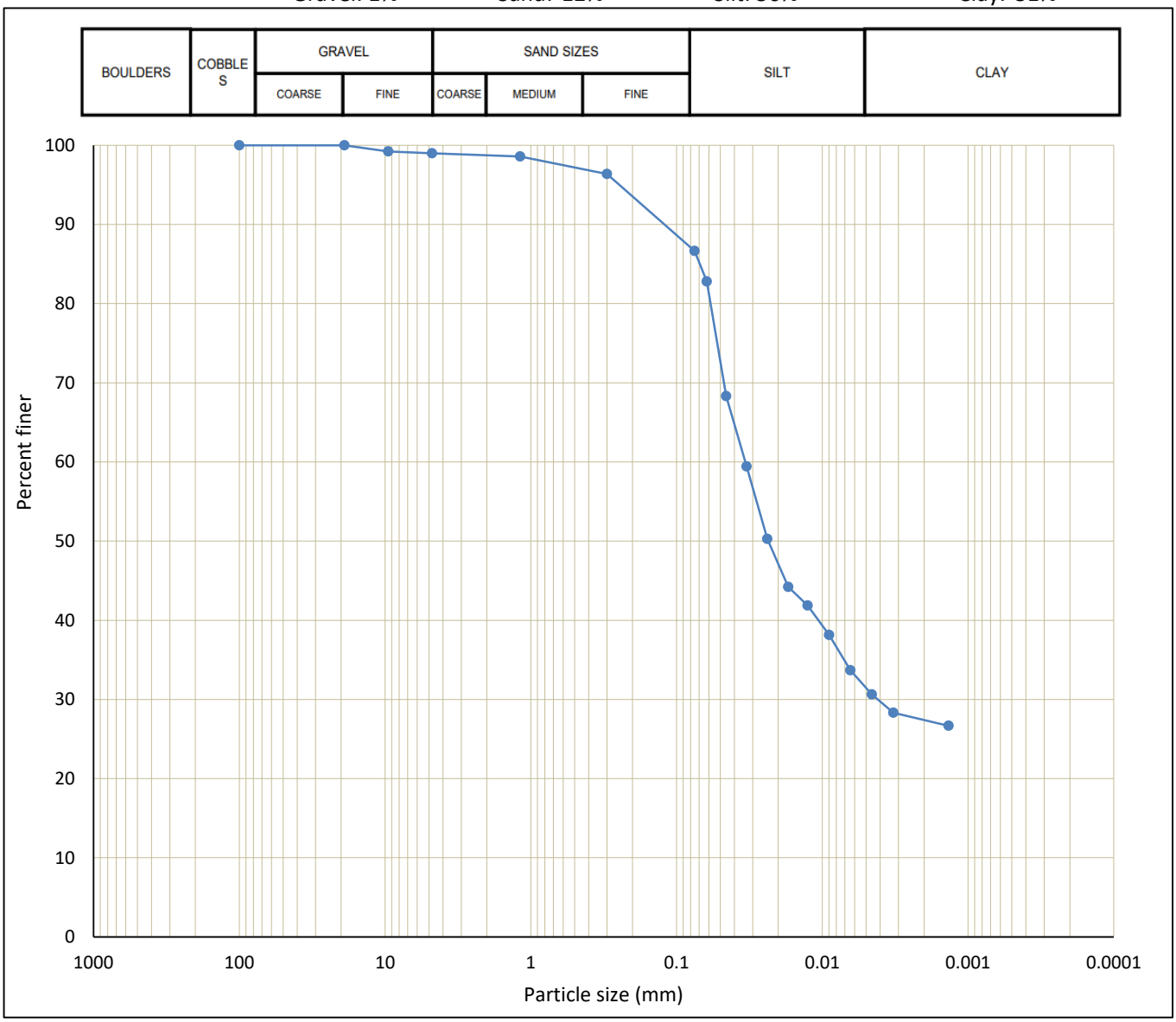
Parameter	***22-8059-4*** BH3 SS3 1.52-1.98m					
Grain Size (%)						
>19mm	0.0					
9.5mm-19mm	0.8					
4.75mm-9.5mm	0.2					
1.18mm-4.75mm	0.4					
300um-1.18mm	2.2					
75um-300um	9.8					
5um-75um	56					
2um-5um	4					
<2um	27					
Clay	**31**					
Silt	**56**					
Sand	**12**					
Gravel	**1**					

Client: Infinity Development Group ***F.E. Job #:*** 22-8059B

Grain Size Distribution

Sample ID: 22-8059-4 BH3 SS3 1.52-1.98m

Gravel: 1% Sand: 12% Silt: 56% Clay: 31%



Sample ID: 22-8059-4 BH3 SS3 1.52-1.98m		
Diameter	***Weight (%)***	***Grain Size***
>4.75mm	1.0	Gravel
1.18mm-4.75mm	0.4	Coarse Sand
300um-1.18mm	2.2	Medium Sand
75um-300um	9.8	Fine Sand
5um-75um	56	Silt
2um-5um	4	Clay
<2um	27	

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LAB JOB #: 8059

CHAIN OF CUSTODY 2588

Page ____ of ____

CLIENT INFORMATION
Company Name:
Contact: Clive 416-605-9722
Address: Rajindra 647-784-2727
Phone:
Fax: Fax results? Y/N
Email: Email results? Y/N

PROJECT INFORMATION
Project Name: 1396 Guelph Line
Project ID: 22-11966
Sampled By:

TURNAROUND TIME (TAT) REQUIRED

STD - Standard (5-7 working days) ✓		Working Time: Monday-Friday 9:00am-5:00pm
SR - Semi Rush (48 hours)	50%	Surcharges apply; Sample received after 2pm will be considered received the next business day
R - Rush (24 hours)	75%	
SD - Same Day - 100%	100%	

BILLING INFORMATION
Purchase Order #:
Verbal Authorization:
Credit Card (type):
Credit Card #:
Expiry Date:

LAB SAMPLE ID	CLIENT'S SAMPLE ID AND DESCRIPTION	SAMPLING DATE/TIME	SAMPLE MATRIX	CONTAINER # & TYPE	TAT (Above)	ANALYSIS REQUESTED (Check or Specify) Metals	PHCs	VOCs	PAHs	PCBs	Asbestos	Moist		Grain	NOTES
1	BH1 SS3 5-6.5'											✓			+ (CL, SO4, PH)
2	SS5 10-11.5'											✓			
3	SS6 15-16.5'											✓			
4	BH3 SS3 5-6.5'											✓		✓	+ (CL, SO4 + PH)
5	SS5 10-11.5'											✓		✓	
6	SS6 15-16.5'											✓		✓	
7	BH6 SS3 5-6.5'											✓			
8	SS5 10-11.5'											✓			
9	SS6 15-16.5'											✓			

Relinquished by: (Signature & Print) Behnam Sayad Pour
Date & Time: March 3, 22
Method of Shipment:

Client's Comments:

Received by: (Signature & Print) Bo
Date & Time: Mar 3. 22

Arrival Temperature (°C): 4°c
Laboratory Remarks:

Regulatory Requirements

Reg. 153
Table ____
☐ Residential / Parkland
☐ Industrial / Commercial
☐ Agricultural
Soil Texture
☐ Coarse ☐ Med/Fine

Sewer Use
☐ Sanitary
☐ Storm
Region ____

Reg. 558
☐ TCLP

Revision: 2.2

APPENDIX D – SEWER BYLAW RESULTS

FISHER ENVIRONMENTAL
ATTN: CLIVE
15-400 ESNA PARK DRIVE
MARKHAM ON L3R 3K2

Date Received: 03-MAR-22
Report Date: 09-MAR-22 15:05 (MT)
Version: FINAL

Client Phone: 905-475-7755

Certificate of Analysis

Lab Work Order #: L2689805

Project P.O. #: NOT SUBMITTED
Job Reference:
C of C Numbers: 20-893644
Legal Site Desc:

Emily Hansen
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

Summary of Guideline Exceedances

Guideline ALS ID	Client ID	Grouping	Analyte	Result	Guideline Limit	Unit
Ontario Halton Santitary Sewer By-law No. 02-03 (MAR, 2003) - Halton Sanitary Sewer By-Law No. 02-03						
(No parameter exceedances)						
Ontario Halton Santitary Sewer By-law No. 02-03 (MAR, 2003) - Halton Storm Sewer By-Law No, 02-03						
(No parameter exceedances)						

* Please refer to the Reference Information section for an explanation of any qualifiers noted.

ANALYTICAL REPORT

Physical Tests - WATER

Analyte	Unit	Guide Limits #1	Guide Limits #2	Lab ID: L2689805-1 Sample Date: 03-MAR-22 Sample ID: 1396 GUELPH LINE BURLINGTON MW6
pH	pH units	6.00-10.0	6.5-8.5	7.34
Total Suspended Solids	mg/L	350	-	5.6

Guide Limit #1: Halton Sanitary Sewer By-Law No. 02-03
Guide Limit #2: Halton Storm Sewer By-Law No, 02-03

Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.
Analytical result for this parameter exceeds Guide Limits listed. See Summary of Guideline Exceedances.

* Please refer to the Reference Information section for an explanation of any qualifiers noted.

ANALYTICAL REPORT

Anions and Nutrients - WATER

Analyte	Unit	Guide Limits #1	Guide Limits #2	Lab ID: L2689805-1 Sample Date: 03-MAR-22 Sample ID: 1396 GUELPH LINE BURLINGTON MW6
Fluoride (F)	mg/L	10	-	<0.40 DLDS
Total Kjeldahl Nitrogen	mg/L	100	-	1.41
Phosphorus, Total	mg/L	10.0	-	0.0104
Sulfate (SO4)	mg/L	1500	-	394 DLDS

Guide Limit #1: Halton Sanitary Sewer By-Law No. 02-03
Guide Limit #2: Halton Storm Sewer By-Law No, 02-03

Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.
Analytical result for this parameter exceeds Guide Limits listed. See Summary of Guideline Exceedances.

* Please refer to the Reference Information section for an explanation of any qualifiers noted.

ANALYTICAL REPORT

Cyanides - WATER

Analyte	Unit	Guide Limits #1	Guide Limits #2	Lab ID: L2689805-1 Sample Date: 03-MAR-22 Sample ID: 1396 GUELPH LINE BURLINGTON MW6
Cyanide, Total	mg/L	2	-	<0.0020

Guide Limit #1: Halton Sanitary Sewer By-Law No. 02-03
Guide Limit #2: Halton Storm Sewer By-Law No, 02-03

Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.
Analytical result for this parameter exceeds Guide Limits listed. See Summary of Guideline Exceedances.

* Please refer to the Reference Information section for an explanation of any qualifiers noted.

ANALYTICAL REPORT

Bacteriological Tests - WATER

Analyte	Unit	Guide Limits #1	Guide Limits #2	Lab ID: L2689805-1 Sample Date: 03-MAR-22 Sample ID: 1396 GUELPH LINE BURLINGTON MW6
E. Coli	CFU/100mL	-	200	0

Guide Limit #1: Halton Sanitary Sewer By-Law No. 02-03
Guide Limit #2: Halton Storm Sewer By-Law No, 02-03

Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.
Analytical result for this parameter exceeds Guide Limits listed. See Summary of Guideline Exceedances.

* Please refer to the Reference Information section for an explanation of any qualifiers noted.

ANALYTICAL REPORT

Total Metals - WATER

Analyte	Unit	Guide Limits #1	Guide Limits #2	Lab ID: L2689805-1 Sample Date: 03-MAR-22 Sample ID: 1396 GUELPH LINE BURLINGTON MW6
Aluminum (Al)-Total	mg/L	50	-	0.711 DLHC
Antimony (Sb)-Total	mg/L	5	-	<0.0010 DLHC
Arsenic (As)-Total	mg/L	1	-	0.0028 DLHC
Beryllium (Be)-Total	mg/L	5	-	<0.0010 DLHC
Cadmium (Cd)-Total	mg/L	1	-	0.000083 DLHC
Chromium (Cr)-Total	mg/L	3	-	<0.0050 DLHC
Cobalt (Co)-Total	mg/L	5	-	0.0015 DLHC
Copper (Cu)-Total	mg/L	3	-	<0.0050 DLHC
Iron (Fe)-Total	mg/L	50	-	0.46 DLHC
Lead (Pb)-Total	mg/L	3	-	<0.00050 DLHC
Manganese (Mn)-Total	mg/L	5	-	0.810 DLHC
Mercury (Hg)-Total	mg/L	0.05	-	<0.0000050
Molybdenum (Mo)-Total	mg/L	5	-	0.0163 DLHC
Nickel (Ni)-Total	mg/L	3	-	0.0237 DLHC
Selenium (Se)-Total	mg/L	5	-	<0.00050 DLHC
Silver (Ag)-Total	mg/L	5	-	<0.00050 DLHC
Tin (Sn)-Total	mg/L	5	-	0.0018 DLHC
Titanium (Ti)-Total	mg/L	5	-	<0.030 DLUI
Zinc (Zn)-Total	mg/L	3	-	<0.030 DLHC

Guide Limit #1: Halton Sanitary Sewer By-Law No. 02-03
Guide Limit #2: Halton Storm Sewer By-Law No, 02-03

Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.
Analytical result for this parameter exceeds Guide Limits listed. See Summary of Guideline Exceedances.

* Please refer to the Reference Information section for an explanation of any qualifiers noted.

ANALYTICAL REPORT

Aggregate Organics - WATER

Analyte	Unit	Guide Limits #1	Guide Limits #2	Lab ID: L2689805-1 Sample Date: 03-MAR-22 Sample ID: 1396 GUELPH LINE BURLINGTON MW6
BOD Carbonaceous	mg/L	300	-	3.2
Oil and Grease, Total	mg/L	-	-	<5.0
Animal/Veg Oil & Grease	mg/L	150	-	<5.0
Mineral Oil and Grease	mg/L	15	-	<2.5
Phenols (4AAP)	mg/L	1.0	-	0.0041

Guide Limit #1: Halton Sanitary Sewer By-Law No. 02-03
Guide Limit #2: Halton Storm Sewer By-Law No, 02-03

Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.
Analytical result for this parameter exceeds Guide Limits listed. See Summary of Guideline Exceedances.

ANALYTICAL REPORT

Volatile Organic Compounds - WATER

Analyte	Unit	Guide Limits #1	Guide Limits #2	Lab ID: L2689805-1 Sample Date: 03-MAR-22 Sample ID: 1396 GUELPH LINE BURLINGTON MW6
Benzene	ug/L	10	-	<0.50
Chloroform	ug/L	40	-	<1.0
1,4-Dichlorobenzene	ug/L	80	-	<0.50
Dichloromethane	ug/L	2000	-	<2.0
Ethylbenzene	ug/L	160	-	<0.50
Tetrachloroethylene	ug/L	1000	-	<0.50
Toluene	ug/L	16	-	1.66
Trichloroethylene	ug/L	400	-	<0.50
Surrogate: 4-Bromofluorobenzene	%	-	-	82.2
Surrogate: 1,4-Difluorobenzene	%	-	-	99.5

Guide Limit #1: Halton Sanitary Sewer By-Law No. 02-03
Guide Limit #2: Halton Storm Sewer By-Law No, 02-03

Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.
Analytical result for this parameter exceeds Guide Limits listed. See Summary of Guideline Exceedances.

* Please refer to the Reference Information section for an explanation of any qualifiers noted.

ANALYTICAL REPORT

Polycyclic Aromatic Hydrocarbons - WATER

Analyte	Unit	Guide Limits #1	Guide Limits #2	Lab ID: L2689805-1 Sample Date: 03-MAR-22 Sample ID: 1396 GUELPH LINE BURLINGTON MW6
Naphthalene	ug/L	140	-	1.62
Surrogate: d8-Naphthalene	%	-	-	107.9

Guide Limit #1: Halton Sanitary Sewer By-Law No. 02-03
Guide Limit #2: Halton Storm Sewer By-Law No, 02-03

Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.
Analytical result for this parameter exceeds Guide Limits listed. See Summary of Guideline Exceedances.

* Please refer to the Reference Information section for an explanation of any qualifiers noted.

Reference Information

Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLDS	Detection Limit Raised: Dilution required due to high Dissolved Solids / Electrical Conductivity.
DLUI	Detection Limit Raised: Unknown Interference generated an apparent false positive test result.
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).

Methods Listed (if applicable):

ALS Test Code	Matrix	Test Description	Method Reference**
BOD-C-WT	Water	BOD Carbonaceous	APHA 5210 B (CBOD)

This analysis is carried out using procedures adapted from APHA Method 5210B - "Biochemical Oxygen Demand (BOD)". All forms of biochemical oxygen demand (BOD) are determined by diluting and incubating a sample for a specified time period, and measuring the oxygen depletion using a dissolved oxygen meter. Dissolved BOD (SOLUBLE) is determined by filtering the sample through a glass fibre filter prior to dilution. Carbonaceous BOD (CBOD) is determined by adding a nitrification inhibitor to the diluted sample prior to incubation.

CN-TOT-WT	Water	Cyanide, Total	ISO 14403-2

Total cyanide is determined by the combination of UV digestion and distillation. Cyanide is converted to cyanogen chloride by reacting with chloramine-T, the cyanogen chloride then reacts with a combination of barbituric acid and isonicotinic acid to form a highly colored complex.

When using this method, high levels of thiocyanate in samples can cause false positives at ~1-2% of the thiocyanate concentration. For samples with detectable cyanide analyzed by this method, ALS recommends analysis for thiocyanate to check for this potential interference

EC-SCREEN-WT	Water	Conductivity Screen (Internal Use Only)	APHA 2510

Qualitative analysis of conductivity where required during preparation of other tests - e.g. TDS, metals, etc.

EC-WW-MF-WT	Water	E. Coli	SM 9222D

A 100 mL volume of sample is filtered through a membrane, the membrane is placed on mFC-BCIG agar and incubated at 44.5 –0 .2 °C for 24 – 2 h. Method ID: WT-TM-1200

F-IC-N-WT	Water	Fluoride in Water by IC	EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

HG-T-CVAA-WT	Water	Total Mercury in Water by CVAAS	EPA 1631E (mod)

Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.

MET-T-CCMS-WT	Water	Total Metals in Water by CRC ICPMS	EPA 200.2/6020A (mod)

Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).

OGG-SPEC-CALC-WT	Water	Speciated Oil and Grease A/V Calc	CALCULATION

Sample is extracted with hexane, sample speciation into mineral and animal/vegetable fractions is achieved via silica gel separation and is then determined gravimetrically.

OGG-SPEC-WT	Water	Speciated Oil and Grease-Gravimetric	APHA 5520 B

The procedure involves an extraction of the entire water sample with hexane. Sample speciation into mineral and animal/vegetable fractions is achieved via silica gel separation and is then

Reference Information

Methods Listed (if applicable):

ALS Test Code	Matrix	Test Description	Method Reference**
		determined gravimetrically.	
P-T-COL-WT	Water	Total P in Water by Colour	APHA 4500-P PHOSPHORUS
		This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is deteremined colourimetrically after persulphate digestion of the sample.	
PAH-NAPHTHALENE-WT	Water	Polyaromatic Hydrocarbons (PAHs)	SW846 8270
		Sample is extracted at neutral pH using separate aliquots of dichloromethane with a modified separatory funnel technique, extracts are then concentrated and analyzed by GC/MSD.	
PH-WT	Water	pH	APHA 4500 H-Electrode
		Water samples are analyzed directly by a calibrated pH meter.	
		Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011). Holdtime for samples under this regulation is 28 days	
PHENOLS-4AAP-WT	Water	Phenol (4AAP)	EPA 9066
		An automated method is used to distill the sample. The distillate is then buffered to pH 9.4 which reacts with 4AAP and potassium ferricyanide to form a red complex which is measured colorimetrically.	
SO4-IC-N-WT	Water	Sulfate in Water by IC	EPA 300.1 (mod)
		Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.	
SOLIDS-TSS-WT	Water	Suspended solids	APHA 2540 D-Gravimetric
		A well-mixed sample is filtered through a weighed standard glass fibre filter and the residue retained is dried in an oven at 104–1°C for a minimum of four hours or until a constant weight is achieved.	
TKN-F-WT	Water	TKN in Water by Fluorescence	J. ENVIRON. MONIT., 2005,7,37-42,RSC
		Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection	
VOC-ROU-HS-WT	Water	Volatile Organic Compounds	SW846 8260
		Aqueous samples are analyzed by headspace-GC/MS.	

**ALS test methods may incorporate modifications from specified reference methods to improve performance.

Chain of Custody Numbers:

20-893644

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
WT	ALS ENVIRONMENTAL - WATERLOO, ONTARIO, CANADA

Reference Information

GLOSSARY OF REPORT TERMS

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.
mg/kg - milligrams per kilogram based on dry weight of sample
mg/kg wwt - milligrams per kilogram based on wet weight of sample
mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight
mg/L - unit of concentration based on volume, parts per million.
< - Less than.
D.L. - The reporting limit.
N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.
UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.
Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.

Application of guidelines is provided "as is" without warranty of any kind, either expressed or implied, including, but not limited to, fitness for a particular purpose, or non-infringement. ALS assumes no responsibility for errors or omissions in the information. Guideline limits are not adjusted for the hardness, pH or temperature of the sample (the most conservative values are used). Measurement uncertainty is not applied to test results prior to comparison with specified criteria values.

Quality Control Report

Workorder: L2689805 Report Date: 09-MAR-22

Client: FISHER ENVIRONMENTAL
15-400 ESNA PARK DRIVE
MARKHAM ON L3R 3K2

Contact: CLIVE

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
BOD-C-WT	**Water**							
Batch R5735981								
WG3702180-2 DUP		**L2689805-1**						
BOD Carbonaceous		3.2	<3.0	RPD-NA	mg/L	N/A	30	03-MAR-22
WG3702180-3 LCS								
BOD Carbonaceous			97.5		%		85-115	03-MAR-22
WG3702180-1 MB								
BOD Carbonaceous			<2.0		mg/L		2	03-MAR-22
CN-TOT-WT	**Water**							
Batch R5733125								
WG3702332-8 DUP		**WG3702332-10**						
Cyanide, Total		<0.0020	<0.0020	RPD-NA	mg/L	N/A	20	03-MAR-22
WG3702332-7 LCS								
Cyanide, Total			104.9		%		80-120	03-MAR-22
WG3702332-6 MB								
Cyanide, Total			<0.0020		mg/L		0.002	03-MAR-22
WG3702332-9 MS		**WG3702332-10**						
Cyanide, Total			98.4		%		70-130	03-MAR-22
EC-WW-MF-WT	**Water**							
Batch R5733258								
WG3702171-3 DUP		**L2689643-1**						
E. Coli		3	2		CFU/100mL	40	65	03-MAR-22
WG3702171-1 MB								
E. Coli			0		CFU/100mL		1	03-MAR-22
F-IC-N-WT	**Water**							
Batch R5734456								
WG3702569-9 DUP		**WG3702569-8**						
Fluoride (F)		0.058	0.059		mg/L	0.6	20	04-MAR-22
WG3702569-7 LCS								
Fluoride (F)			101.2		%		90-110	04-MAR-22
WG3702569-6 MB								
Fluoride (F)			<0.020		mg/L		0.02	04-MAR-22
WG3702569-10 MS		**WG3702569-8**						
Fluoride (F)			98.4		%		75-125	04-MAR-22
HG-T-CVAA-WT	**Water**							
Batch R5733076								
WG3702480-3 DUP		**WG3702480-5**						
Mercury (Hg)-Total		<0.0000050	<0.000005(	RPD-NA	mg/L	N/A	20	04-MAR-22
WG3702480-2 LCS								

Quality Control Report

Client: FISHER ENVIRONMENTAL
15-400 ESNA PARK DRIVE
MARKHAM ON L3R 3K2
Contact: CLIVE

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
HG-T-CVAA-WT	**Water**							
Batch R5733076								
WG3702480-2 LCS								
Mercury (Hg)-Total			94.9		%		80-120	04-MAR-22
WG3702480-1 MB								
Mercury (Hg)-Total			<0.000005(		mg/L		0.000005	04-MAR-22
WG3702480-4 MS		**WG3702480-6**						
Mercury (Hg)-Total			95.4		%		70-130	04-MAR-22
MET-T-CCMS-WT	**Water**							
Batch R5732369								
WG3702279-4 DUP		**WG3702279-3**						
Aluminum (Al)-Total		0.711	0.716		mg/L	0.7	20	03-MAR-22
Antimony (Sb)-Total		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	03-MAR-22
Arsenic (As)-Total		0.0028	0.0027		mg/L	1.5	20	03-MAR-22
Beryllium (Be)-Total		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	03-MAR-22
Cadmium (Cd)-Total		0.000083	0.000090		mg/L	7.5	20	03-MAR-22
Chromium (Cr)-Total		<0.0050	<0.0050	RPD-NA	mg/L	N/A	20	03-MAR-22
Cobalt (Co)-Total		0.0015	0.0015		mg/L	4.3	20	03-MAR-22
Copper (Cu)-Total		<0.0050	<0.0050	RPD-NA	mg/L	N/A	20	03-MAR-22
Iron (Fe)-Total		0.46	0.48		mg/L	2.8	20	03-MAR-22
Lead (Pb)-Total		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	03-MAR-22
Manganese (Mn)-Total		0.810	0.820		mg/L	1.3	20	03-MAR-22
Molybdenum (Mo)-Total		0.0163	0.0168		mg/L	3.0	20	03-MAR-22
Nickel (Ni)-Total		0.0237	0.0236		mg/L	0.5	20	03-MAR-22
Selenium (Se)-Total		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	03-MAR-22
Silver (Ag)-Total		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	03-MAR-22
Tin (Sn)-Total		0.0018	0.0018		mg/L	0.5	20	03-MAR-22
Titanium (Ti)-Total		0.0206	0.0191		mg/L	7.6	20	03-MAR-22
Zinc (Zn)-Total		<0.030	<0.030	RPD-NA	mg/L	N/A	20	03-MAR-22
WG3702279-2 LCS								
Aluminum (Al)-Total			101.7		%		80-120	03-MAR-22
Antimony (Sb)-Total			104.4		%		80-120	03-MAR-22
Arsenic (As)-Total			101.8		%		80-120	03-MAR-22
Beryllium (Be)-Total			95.4		%		80-120	03-MAR-22
Cadmium (Cd)-Total			100.7		%		80-120	03-MAR-22
Chromium (Cr)-Total			97.2		%		80-120	03-MAR-22
Cobalt (Co)-Total			91.9		%		80-120	03-MAR-22

Quality Control Report

Client: FISHER ENVIRONMENTAL
15-400 ESNA PARK DRIVE
MARKHAM ON L3R 3K2
Contact: CLIVE

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-WT	**Water**							
Batch R5732369								
WG3702279-2 LCS								
Copper (Cu)-Total			94.0		%		80-120	03-MAR-22
Iron (Fe)-Total			96.5		%		80-120	03-MAR-22
Lead (Pb)-Total			101.8		%		80-120	03-MAR-22
Manganese (Mn)-Total			99.3		%		80-120	03-MAR-22
Molybdenum (Mo)-Total			95.8		%		80-120	03-MAR-22
Nickel (Ni)-Total			96.2		%		80-120	03-MAR-22
Selenium (Se)-Total			97.1		%		80-120	03-MAR-22
Silver (Ag)-Total			91.4		%		80-120	03-MAR-22
Tin (Sn)-Total			97.3		%		80-120	03-MAR-22
Titanium (Ti)-Total			94.8		%		80-120	03-MAR-22
Zinc (Zn)-Total			98.7		%		80-120	03-MAR-22
WG3702279-1 MB								
Aluminum (Al)-Total			<0.0050		mg/L		0.005	03-MAR-22
Antimony (Sb)-Total			<0.00010		mg/L		0.0001	03-MAR-22
Arsenic (As)-Total			<0.00010		mg/L		0.0001	03-MAR-22
Beryllium (Be)-Total			<0.00010		mg/L		0.0001	03-MAR-22
Cadmium (Cd)-Total			<0.000005(		mg/L		0.000005	03-MAR-22
Chromium (Cr)-Total			<0.00050		mg/L		0.0005	03-MAR-22
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	03-MAR-22
Copper (Cu)-Total			<0.00050		mg/L		0.0005	03-MAR-22
Iron (Fe)-Total			<0.010		mg/L		0.01	03-MAR-22
Lead (Pb)-Total			<0.000050		mg/L		0.00005	03-MAR-22
Manganese (Mn)-Total			<0.00050		mg/L		0.0005	03-MAR-22
Molybdenum (Mo)-Total			<0.000050		mg/L		0.00005	03-MAR-22
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	03-MAR-22
Selenium (Se)-Total			<0.000050		mg/L		0.00005	03-MAR-22
Silver (Ag)-Total			<0.000050		mg/L		0.00005	03-MAR-22
Tin (Sn)-Total			<0.00010		mg/L		0.0001	03-MAR-22
Titanium (Ti)-Total			<0.00030		mg/L		0.0003	03-MAR-22
Zinc (Zn)-Total			<0.0030		mg/L		0.003	03-MAR-22
WG3702279-5 MS		**WG3702279-3**						
Aluminum (Al)-Total			N/A	MS-B	%		-	03-MAR-22
Antimony (Sb)-Total			102.6		%		70-130	03-MAR-22
Arsenic (As)-Total			96.2		%		70-130	03-MAR-22

Quality Control Report

Client: FISHER ENVIRONMENTAL
15-400 ESNA PARK DRIVE
MARKHAM ON L3R 3K2

Contact: CLIVE

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-WT	**Water**							
Batch R5732369								
WG3702279-5 MS		**WG3702279-3**						
Beryllium (Be)-Total			88.4		%		70-130	03-MAR-22
Cadmium (Cd)-Total			86.4		%		70-130	03-MAR-22
Chromium (Cr)-Total			94.4		%		70-130	03-MAR-22
Cobalt (Co)-Total			83.9		%		70-130	03-MAR-22
Copper (Cu)-Total			78.4		%		70-130	03-MAR-22
Iron (Fe)-Total			N/A	MS-B	%		-	03-MAR-22
Lead (Pb)-Total			91.2		%		70-130	03-MAR-22
Manganese (Mn)-Total			N/A	MS-B	%		-	03-MAR-22
Molybdenum (Mo)-Total			N/A	MS-B	%		-	03-MAR-22
Nickel (Ni)-Total			77.5		%		70-130	03-MAR-22
Selenium (Se)-Total			90.8		%		70-130	03-MAR-22
Silver (Ag)-Total			86.7		%		70-130	03-MAR-22
Tin (Sn)-Total			97.1		%		70-130	03-MAR-22
Titanium (Ti)-Total			N/A	MS-B	%		-	03-MAR-22
Zinc (Zn)-Total			93.3		%		70-130	03-MAR-22
OGG-SPEC-WT	**Water**							
Batch R5734376								
WG3702163-2 LCS								
Oil and Grease, Total			92.5		%		70-130	03-MAR-22
Mineral Oil and Grease			86.1		%		70-130	03-MAR-22
WG3702163-1 MB								
Oil and Grease, Total			<5.0		mg/L		5	03-MAR-22
Mineral Oil and Grease			<2.5		mg/L		2.5	03-MAR-22
P-T-COL-WT	**Water**							
Batch R5733080								
WG3702170-3 DUP		**L2689250-1**						
Phosphorus, Total		0.0954	0.0953		mg/L	0.1	20	04-MAR-22
WG3702170-2 LCS								
Phosphorus, Total			96.4		%		80-120	04-MAR-22
WG3702170-1 MB								
Phosphorus, Total			<0.0030		mg/L		0.003	04-MAR-22
WG3702170-4 MS		**L2689250-1**						
Phosphorus, Total			93.4		%		70-130	04-MAR-22
PAH-NAPHTHALENE-WT	**Water**							

Quality Control Report

Client: FISHER ENVIRONMENTAL
15-400 ESNA PARK DRIVE
MARKHAM ON L3R 3K2

Contact: CLIVE

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PAH-NAPHTHALENE-WT	**Water**							
Batch R5734498								
WG3702165-2 LCS								
Naphthalene			106.2		%		50-130	07-MAR-22
WG3702165-1 MB								
Naphthalene			<0.020		ug/L		0.02	07-MAR-22
Surrogate: d8-Naphthalene			107.0		%		60-140	07-MAR-22
PH-WT	**Water**							
Batch R5732658								
WG3702231-4 DUP		**WG3702231-3**						
pH		8.00	8.00	J	pH units	0.00	0.2	03-MAR-22
WG3702231-2 LCS								
pH			7.09		pH units		6.9-7.1	03-MAR-22
PHENOLS-4AAP-WT	**Water**							
Batch R5733474								
WG3702488-3 DUP		**L2689987-1**						
Phenols (4AAP)		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	04-MAR-22
WG3702488-2 LCS								
Phenols (4AAP)			101.4		%		85-115	04-MAR-22
WG3702488-1 MB								
Phenols (4AAP)			<0.0010		mg/L		0.001	04-MAR-22
WG3702488-4 MS		**L2689987-1**						
Phenols (4AAP)			102.2		%		75-125	04-MAR-22
SO4-IC-N-WT	**Water**							
Batch R5734456								
WG3702569-9 DUP		**WG3702569-8**						
Sulfate (SO4)		17.6	17.6		mg/L	0.1	20	04-MAR-22
WG3702569-7 LCS								
Sulfate (SO4)			100.7		%		90-110	04-MAR-22
WG3702569-6 MB								
Sulfate (SO4)			<0.30		mg/L		0.3	04-MAR-22
WG3702569-10 MS		**WG3702569-8**						
Sulfate (SO4)			99.5		%		75-125	04-MAR-22
SOLIDS-TSS-WT	**Water**							
Batch R5734106								
WG3702622-3 DUP		**L2689370-1**						
Total Suspended Solids		35.2	36.0		mg/L	2.2	20	05-MAR-22
WG3702622-2 LCS								
Total Suspended Solids			99.7		%		85-115	05-MAR-22

Quality Control Report

Client: FISHER ENVIRONMENTAL
15-400 ESNA PARK DRIVE
MARKHAM ON L3R 3K2
Contact: CLIVE

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
SOLIDS-TSS-WT	**Water**							
Batch R5734106								
WG3702622-1 MB								
Total Suspended Solids			<3.0		mg/L		3	05-MAR-22
TKN-F-WT	**Water**							
Batch R5735496								
WG3702520-3 DUP		**L2690054-2**						
Total Kjeldahl Nitrogen		7.57	7.37		mg/L	2.8	20	07-MAR-22
WG3702520-2 LCS								
Total Kjeldahl Nitrogen			91.8		%		75-125	07-MAR-22
WG3702520-1 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	07-MAR-22
WG3702520-4 MS		**L2690054-2**						
Total Kjeldahl Nitrogen			N/A	MS-B	%		-	07-MAR-22
VOC-ROU-HS-WT	**Water**							
Batch R5732417								
WG3701919-4 DUP		**WG3701919-3**						
1,4-Dichlorobenzene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	04-MAR-22
Benzene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	04-MAR-22
Chloroform		<1.0	<1.0	RPD-NA	ug/L	N/A	30	04-MAR-22
Dichloromethane		<2.0	<2.0	RPD-NA	ug/L	N/A	30	04-MAR-22
Ethylbenzene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	04-MAR-22
Tetrachloroethylene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	04-MAR-22
Toluene		<0.40	<0.40	RPD-NA	ug/L	N/A	30	04-MAR-22
Trichloroethylene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	04-MAR-22
WG3701919-1 LCS								
1,4-Dichlorobenzene			86.5		%		70-130	03-MAR-22
Benzene			97.2		%		70-130	03-MAR-22
Chloroform			97.5		%		70-130	03-MAR-22
Dichloromethane			98.6		%		70-130	03-MAR-22
Ethylbenzene			90.2		%		70-130	03-MAR-22
Tetrachloroethylene			79.8		%		70-130	03-MAR-22
Toluene			94.1		%		70-130	03-MAR-22
Trichloroethylene			90.1		%		70-130	03-MAR-22
WG3701919-2 MB								
1,4-Dichlorobenzene			<0.50		ug/L		0.5	04-MAR-22
Benzene			<0.50		ug/L		0.5	04-MAR-22

Quality Control Report

Client: FISHER ENVIRONMENTAL
15-400 ESNA PARK DRIVE
MARKHAM ON L3R 3K2
Contact: CLIVE

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC-ROU-HS-WT	**Water**							
Batch R5732417								
WG3701919-2 MB								
Chloroform			<1.0		ug/L		1	04-MAR-22
Dichloromethane			<2.0		ug/L		2	04-MAR-22
Ethylbenzene			<0.50		ug/L		0.5	04-MAR-22
Tetrachloroethylene			<0.50		ug/L		0.5	04-MAR-22
Toluene			<0.40		ug/L		0.4	04-MAR-22
Trichloroethylene			<0.50		ug/L		0.5	04-MAR-22
Surrogate: 1,4-Difluorobenzene			100.0		%		70-130	04-MAR-22
Surrogate: 4-Bromofluorobenzene			84.6		%		70-130	04-MAR-22

Quality Control Report

Workorder: L2689805 Report Date: 09-MAR-22

Client: FISHER ENVIRONMENTAL
15-400 ESNA PARK DRIVE
MARKHAM ON L3R 3K2
Contact: CLIVE

Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
J	Duplicate results and limits are expressed in terms of absolute difference.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

Hold Time Exceedances:

All test results reported with this submission were conducted within ALS recommended hold times.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

Chain of Custody (COC) / Analy

Canada Toll Free: 1 800

L2689805-COFC

nber: 20 - 893644

Page of

www.alsglobal.com

Report To	Contact and company name below will appear on the final report
Company:	Fisher Environmental
Contact:	CWE
Phone:	416-605-9722
Company address below will appear on the final report	
Street:	15-400 Esna Park Dr.
City/Province:	Markham, ON
Postal Code:	L3R 3K2
Invoice To	Same as Report To ☐ YES ☐ NO
	Copy of Invoice with Report ☐ YES ☐ NO
Company:	Fisher Environmental
Contact:	CWE

Reports / Recipients	
Select Report Format:	☒ PDF ☐ EXCEL ☐ EDD (DIGITAL)
Merge QC/QCI Reports with COA	☐ YES ☐ NO ☐ N/A
☐ Compare Results to Criteria on Report - provide details below if box checked	
Select Distribution:	☒ EMAIL ☐ MAIL ☐ FAX
Email 1 or Fax	CWE@FE
Email 2	
Email 3	

Invoice Recipients	
Select Invoice Distribution:	☐ EMAIL ☐ MAIL ☐ FAX
Email 1 or Fax	
Email 2	

Turnaround Time (TAT) Requested
☐ Routine [R] if received by 3pm M-F - no surcharges apply
☐ 4 day [P4] if received by 3pm M-F - 20% rush surcharge minimum
☐ 3 day [P3] if received by 3pm M-F - 25% rush surcharge minimum
☒ 2 day [P2] if received by 3pm M-F - 50% rush surcharge minimum
☐ 1 day [E] if received by 3pm M-F - 100% rush surcharge minimum
☐ Same day [E2] if received by 10am M-S - 200% rush surcharge. Additional fees may apply to rush requests on weekends, statutory holidays and non-routine tests
Date and Time Required for all E&P TATs:
For all tests with rush TATs requested, please contact your AM to confirm availability.

AFFIX ALS BARCODE LABEL HERE (ALS use only)

Project Information	Oil and Gas Required Fields (client use)	
ALS Account # / Quote #:	AFE/Cost Center:	PO#
Job #:	Major/Minor Code:	Routing Code:
PO / AFE:	Requisitioner:	
LSD:	Location:	
ALS Lab Work Order # (ALS use only): L2689805	ALS Contact:	Sampler:

Analysis Request

Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below

ALS Sample # (ALS use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	NUMBER OF CONTAINERS	Halton Sewer discharge bylaws MW6 (Unfiltered)	- RUSH WORK -	SAMPLES ON HOLD	EXTENDED STORAGE REQUIRED	SUSPECTED HAZARD (see notes)
	1396 Guelph Line Burlington Halton Sewer discharge bylaws MW6 (Unfiltered) - RUSH WORK -	02/03/22		Water						

Drinking Water (DW) Samples[1] (client use)	Notes / Specify Limits for result evaluation by selecting from drop-down below (Excel COC only)
Are samples taken from a Regulated DW System? ☐ YES ☒ NO	
Are samples for human consumption/ use? ☐ YES ☒ NO	

SAMPLE RECEIPT DETAILS (ALS use only)

Cooling Method: ☐ NONE ☐ ICE ☒ ICE PACKS ☐ FROZEN ☐ COOLING INITIATED

Submission Comments identified on Sample Receipt Notification: ☐ YES ☐ NO

Cooler Custody Seals Intact: ☐ YES ☐ N/A Sample Custody Seals Intact: ☐ YES ☐ N/A

INITIAL COOLER TEMPERATURES °C	FINAL COOLER TEMPERATURES °C
	6.1

SHIPMENT RELEASE (client use)			INITIAL SHIPMENT RECEPTION (ALS use only)			FINAL SHIPMENT RECEPTION (ALS use only)		
Released by: Nramali	Date: 02/03/22	Time:	Received by:	Date:	Time:	Received by:	Date: 03/22	Time: 1050

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

AUG 2020 FRONT

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY. By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

1. If any water samples are taken from a Regulated Drinking Water (DW) System, please submit using an Authorized DW COC form.

APPENDIX E – HYDRAULIC CONDUCTIVITY ANALYSES

HYDRAULIC CONDUCTIVITY ANALYSIS

Location: *1396 Guelph Line, Burlington*
Project: *FE-P-22-11967H*
Test Date: *3/2/2022*
Tested By: *CAW*
Well No. *MW3*

Equilibrium Water level (from top of pipe) HE	*1264*	*cm*
Initial Water level (from top of pipe) Ho	*1440*	*cm*
Monitoring well inner diameter d	*0.05*	*m*
Initial Time offset To	*5*	*second*
Reverse of Luthin's reference system Ru = Ho - HE	*176.00*	*cm*
Slope of Log((ho-he)/(ht-he)) / T	*2.00E-05*	
G = Ru / (HT - HE)		

Hydraulic conductivity computed k =

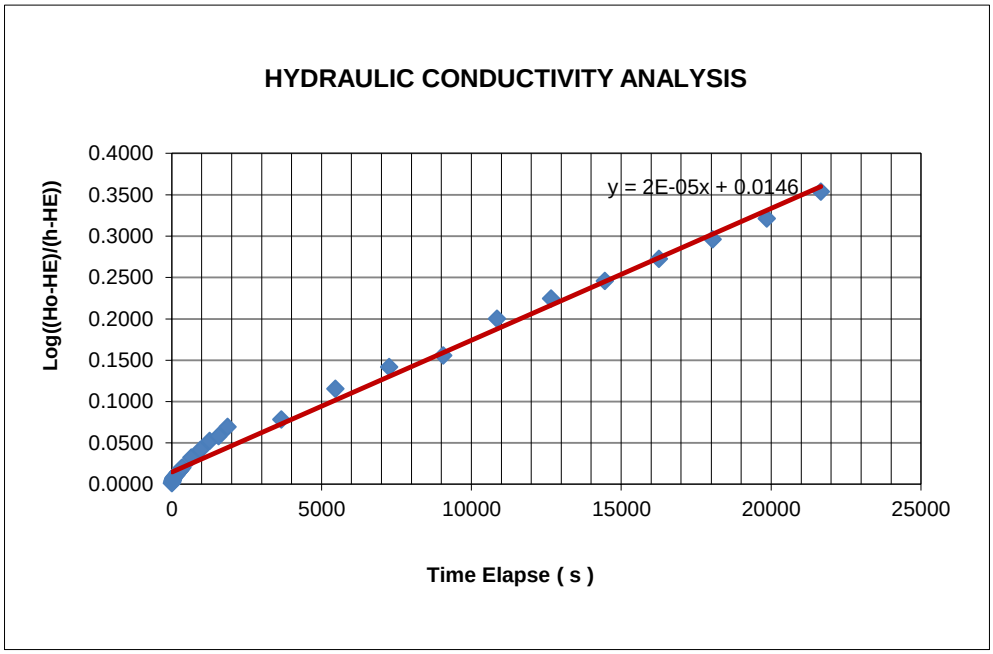
0.0000303	**cm/s**
3.03E-07	**m/s**
0.026	**m/day**

Time		HT (Water Drop)		G	LOG (G)
(Interval s)	(Elapsed s)	(m)	(cm)		
	0	14.400			
10	10	14.395	1439.50	1.0028	0.0012
10	20	14.390	1439.00	1.0057	0.0025
10	30	14.385	1438.50	1.0086	0.0037
10	40	14.380	1438.00	1.0115	0.0050
10	50	14.375	1437.50	1.0144	0.0062
10	60	14.370	1437.00	1.0173	0.0075
30	90	14.365	1436.50	1.0203	0.0087
30	120	14.360	1436.00	1.0233	0.0100
30	150	14.355	1435.50	1.0262	0.0112
30	180	14.350	1435.00	1.0292	0.0125
30	210	14.345	1434.50	1.0323	0.0138
30	240	14.340	1434.00	1.0353	0.0151
30	270	14.335	1433.50	1.0383	0.0163
30	300	14.330	1433.00	1.0414	0.0176
30	330	14.325	1432.50	1.0445	0.0189
30	360	14.320	1432.00	1.0476	0.0202
300	660	14.275	1427.50	1.0765	0.0320
300	960	14.240	1424.00	1.1000	0.0414
300	1260	14.200	1420.00	1.1282	0.0524
300	1560	14.180	1418.00	1.1429	0.0580
300	1860	14.140	1414.00	1.1733	0.0694
1800	3660	14.110	1411.000	1.197	0.078
1800	5460	13.990	1399.000	1.304	0.115
1800	7260	13.910	1391.000	1.386	0.142
1800	9060	13.870	1387.000	1.431	0.156
1800	10860	13.750	1375.000	1.586	0.200
1800	12660	13.690	1369.000	1.676	0.224
1800	14460	13.640	1364.000	1.760	0.246
1800	16260	13.580	1358.000	1.872	0.272
1800	18060	13.530	1353.000	1.978	0.296
1800	19860	13.480	1348.000	2.095	0.321
1800	21660	13.420	1342.000	2.256	0.353

FISHER ENGINEERING

HYDRAULIC CONDUCTIVITY ANALYSIS

Location: *1396 Guelph Line, Burlington*
Project: *FE-P-22-11967H*
Test Date: *3/2/2022*
Tested By: *CAW*
Well No. *MW3*



FISHER ENGINEERING

HYDRAULIC CONDUCTIVITY ANALYSIS

Location: *1396 Guelph Line, Burlington*
Project: *FE-P-22-11967H*
Test Date: *3/2/2022*
Tested By: *CAW*
Well No. *MW4*

Equilibrium Water level (from top of pipe) HE	*1117*	*cm*
Initial Water level (from top of pipe) Ho	*1335*	*cm*
Monitoring well inner diameter d	*0.05*	*m*
Initial Time offset To	*5*	*second*
Reverse of Luthin's reference system Ru = Ho - HE	*218.00*	*cm*
Slope of Log((ho-he)/(ht-he)) / T	*7.00E-06*	
G = Ru / (HT - HE)		

Hydraulic conductivity computed k =

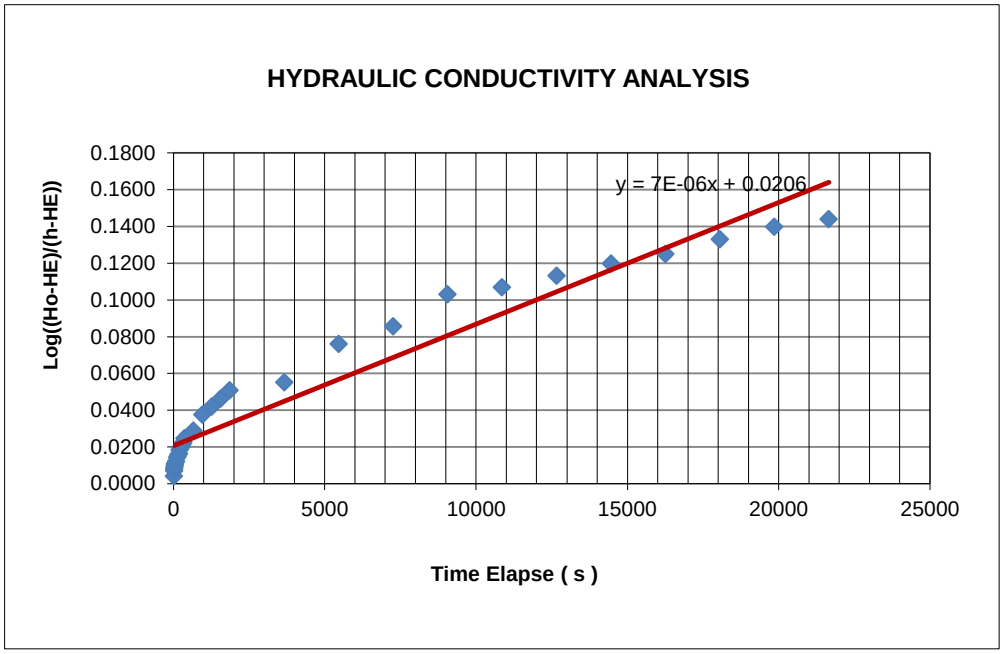
0.0000106	**cm/s**
1.06E-07	**m/s**
0.009	**m/day**

Time		HT (Water Drop)		G	LOG (G)
(Interval s)	(Elapsed s)	(m)	(cm)		
	0	13.350			
10	10	13.330	1333.00	1.0093	0.0040
10	20	13.315	1331.50	1.0163	0.0070
10	30	13.310	1331.00	1.0187	0.0080
10	40	13.305	1330.50	1.0211	0.0091
10	50	13.300	1330.00	1.0235	0.0101
10	60	13.295	1329.50	1.0259	0.0111
30	90	13.290	1329.00	1.0283	0.0121
30	120	13.280	1328.00	1.0332	0.0142
30	150	13.275	1327.50	1.0356	0.0152
30	180	13.270	1327.00	1.0381	0.0162
30	210	13.260	1326.00	1.0431	0.0183
30	240	13.255	1325.50	1.0456	0.0194
30	270	13.250	1325.00	1.0481	0.0204
30	300	13.245	1324.50	1.0506	0.0214
30	330	13.240	1324.00	1.0531	0.0225
30	360	13.230	1323.00	1.0583	0.0246
300	660	13.210	1321.00	1.0686	0.0288
300	960	13.170	1317.00	1.0900	0.0374
300	1260	13.150	1315.00	1.1010	0.0418
300	1560	13.130	1313.00	1.1122	0.0462
300	1860	13.110	1311.00	1.1237	0.0507
1800	3660	13.090	1309.00	1.1354	0.0552
1800	5460	13.000	1300.00	1.1913	0.0760
1800	7260	12.960	1296.00	1.2179	0.0856
1800	9060	12.890	1289.00	1.2674	0.1029
1800	10860	12.875	1287.50	1.2786	0.1067
1800	12660	12.850	1285.00	1.2976	0.1131
1800	14460	12.825	1282.50	1.3172	0.1197
1800	16260	12.805	1280.50	1.3333	0.1249
1800	18060	12.775	1277.50	1.3583	0.1330
1800	19860	12.750	1275.00	1.3797	0.1398
1800	21660	12.735	1273.50	1.3930	0.1439

FISHER ENGINEERING

HYDRAULIC CONDUCTIVITY ANALYSIS

Location: *1396 Guelph Line, Burlington*
Project: *FE-P-22-11967H*
Test Date: *3/2/2022*
Tested By: *CAW*
Well No. *MW4*



FISHER ENGINEERING

HYDRAULIC CONDUCTIVITY ANALYSIS

Location: *1396 Guelph Line, Burlington*
Project: *FE-P-22-11967H*
Test Date: *3/2/2022*
Tested By: *CAW*
Well No. *MW6*

Equilibrium Water level (from top of pipe) HE	*284*	*cm*
Initial Water level (from top of pipe) Ho	*894*	*cm*
Monitoring well inner diameter d	*0.05*	*m*
Initial Time offset To	*5*	*second*
Reverse of Luthin's reference system Ru = Ho - HE	*610.00*	*cm*
Slope of Log((ho-he)/(ht-he)) / T	*2.00E-05*	
G = Ru / (HT - HE)		

Hydraulic conductivity computed k =

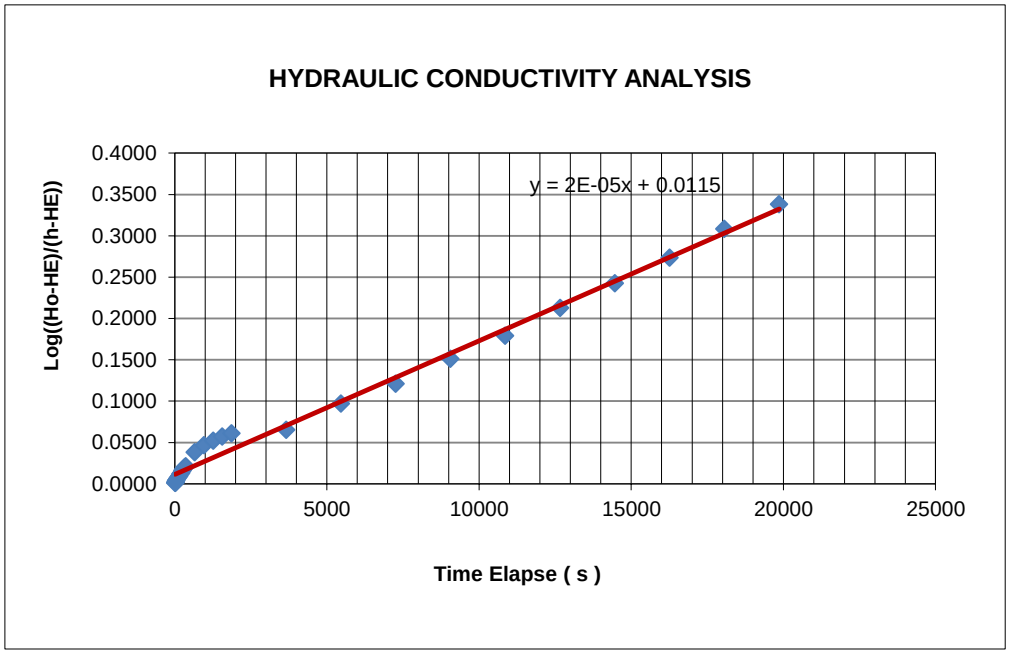
0.0000303	**cm/s**
3.03E-07	**m/s**
0.026	**m/day**

Time		HT (Water Drop)		G	LOG (G)
(Interval s)	(Elapsed s)	(m)	(cm)		
	0	8.940			
10	10	8.930	893.00	1.0016	0.0007
10	20	8.920	892.00	1.0033	0.0014
10	30	8.910	891.00	1.0049	0.0021
10	40	8.900	890.00	1.0066	0.0029
10	50	8.890	889.00	1.0083	0.0036
10	60	8.880	888.00	1.0099	0.0043
30	90	8.850	885.00	1.0150	0.0065
30	120	8.830	883.00	1.0184	0.0079
30	150	8.810	881.00	1.0218	0.0094
30	180	8.780	878.00	1.0269	0.0115
30	210	8.760	876.00	1.0304	0.0130
30	240	8.730	873.00	1.0357	0.0152
30	270	8.710	871.00	1.0392	0.0167
30	300	8.690	869.00	1.0427	0.0182
30	330	8.670	867.00	1.0463	0.0197
30	360	8.650	865.00	1.0499	0.0212
300	660	8.430	843.00	1.0912	0.0379
300	960	8.320	832.00	1.1131	0.0465
300	1260	8.250	825.00	1.1275	0.0521
300	1560	8.190	819.00	1.1402	0.0570
300	1860	8.140	814.00	1.1509	0.0611
1800	3660	8.090	809.00	1.1619	0.0652
1800	5460	7.720	772.00	1.2500	0.0969
1800	7260	7.460	746.00	1.3203	0.1207
1800	9060	7.150	715.00	1.4153	0.1509
1800	10860	6.880	688.00	1.5099	0.1789
1800	12660	6.580	658.00	1.6310	0.2125
1800	14460	6.330	633.00	1.7479	0.2425
1800	16260	6.090	609.00	1.8769	0.2734
1800	18060	5.840	584.00	2.0333	0.3082
1800	19860	5.640	564.00	2.1786	0.3382

FISHER ENGINEERING

HYDRAULIC CONDUCTIVITY ANALYSIS

Location: *1396 Guelph Line, Burlington*
Project: *FE-P-22-11967H*
Test Date: *3/2/2022*
Tested By: *CAW*
Well No. *MW6*



APPENDIX F – CONSTRUCTION DEWATERING AND PERMANENT DRAINAGE

Construction Dewatering Calculation

Location: *1396 Guelph Line, Burlington*
Project: *FE-P-22-11967H*
Date: *3/9/2022*

Dupuit Forcheimer for Radial Flow to a Closely Welled System or Excavation

Construction Units	P3 TOS (m asl)	FFE (m asl)	Average Footing Elevation (m asl)	Required Dewatering Elevation (m asl)	Static water level		Well base elevation	H (m)	h_w (m)	H-h_w (m)	R_0 (m)		r_w	ab (m^2)	K (m/s)	H^2-h_w^2	lnR_0	lnr_w	Q_s (m^3/s)	Q_s (m^3/day)
					BGS (m)	Elevation (m asl)	(m)				Model	Adjusted								
Building with 3 UG levels	121.70	131.45	120.50	119.50	2.77	127.35	119.20	8.15	0.3	7.85	7.64	40.18	32.54	3326	2.37E-07	66.33	3.69	3.48	2.34E-04	20.23

Dupuit Forcheimer Equation

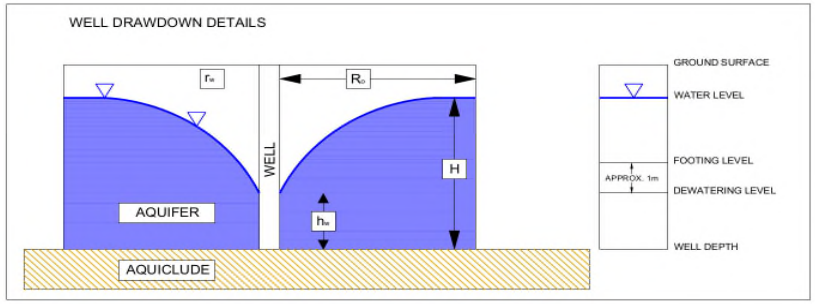
$$Q = \frac{\pi K(H^2 - h_w{}^2)}{lnR_0 - lnr_w}$$

Equivalent radius of well, r_w

$$r_w = \sqrt{\frac{ab}{\pi}}$$

Radius of influence in m, calculated from Sichardt's equation

$$R_0 = 2000(H - h_w)\sqrt{k}$$



Where:

r_w = equivalent radius of the well in m,
H = hydraulic head of the original water table (total saturated aquifer thickness) in m,
h_w = hydraulic head at maximum dewatering (proposed drawdown) in m,
R_0 = radius of influence in m, calculated from Sichardt's equation, and
K = hydraulic conductivity, in m/s
a = length of excavation area in m
b = width of excavation area in m

Permanent Drainage Rates

Location: *1396 Guelph Line, Burlington*
Project: *FE-P-22-11967H*
Date: *3/9/2022*

Dupuit Forcheimer for Radial Flow to a Closely Welled System or Excavation

Construction Units	P3 TOS (m asl)	FFE (m asl)	Lowest Footing Elevation (m asl)	Required Dewatering Elevation (m asl)	Static water level		Well base elevation	H (m)	h_w (m)	H-h_w (m)	R_0 (m)		r_w	ab (m^2)	K (m/s)	H^2-h_w^2	lnR_0	lnr_w	Q, (m^3/s)	Q, (m^3/day)
					BGS (m)	Elevation (m asl)	(m)				Model	Adjusted								
Building with 3 UG levels	121.70	131.45	120.50	121.40	1.70	128.42	121.15	7.27	0.3	7.02	6.84	39.37	32.54	3326	2.37E-07	52.79	3.67	3.48	2.06E-04	17.81
						129.12														
														83.15						

Dupuit Forcheimer Equation

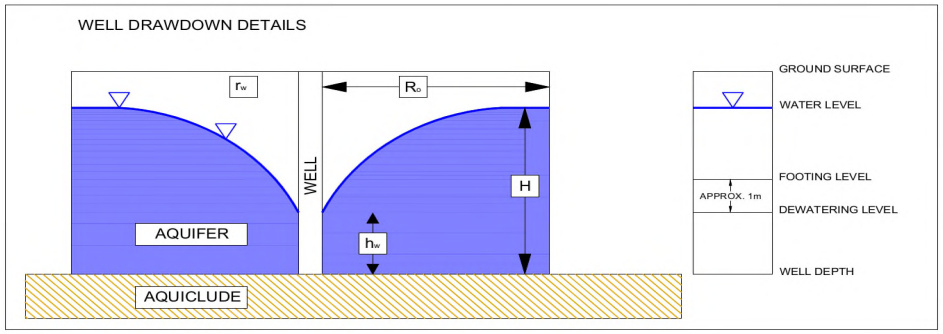
$$Q = \frac{\pi K(H^2 - h_w{}^2)}{lnR_0 - lnr_w}$$

Equivalent radius of well, r_w

$$r_w = \sqrt{\frac{ab}{\pi}}$$

Radius of influence in m, calculated from Sichardt's equation

$$R_0 = 2000(H - h_w)\sqrt{k}$$

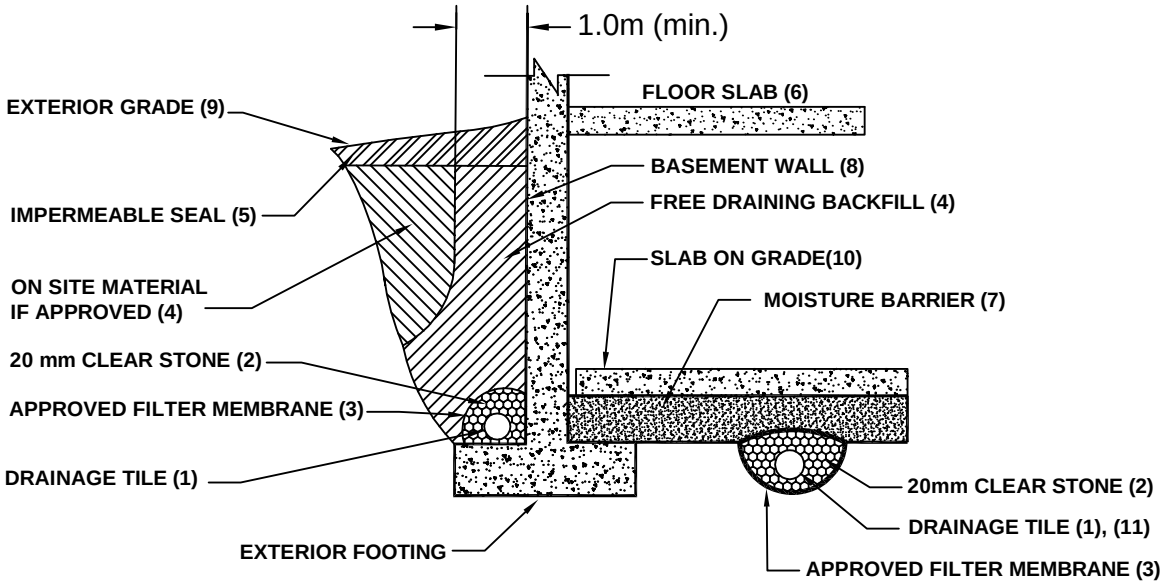


Where:

r_w = equivalent radius of the well in m,
H = hydraulic head of the original water table (total saturated aquifer thickness) in m,
h_w = hydraulic head at maximum dewatering (proposed drawdown) in m,
R_0 = radius of influence in m, calculated from Sichardt's equation, and
K = hydraulic conductivity, in m/s
a = length of excavation area in m
b = width of excavation area in m

APPENDIX G – BACKFILL AND DRAINAGE DESIGN

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NOTES:

(1) DRAINAGE TILE TO CONSIST OF 100mm (4") DIAMETER WEEPING TILE OR EQUIVALENT PERFORATED PIPE LEADING TO A POSITIVE SUMP OR OUTLET.

(2) 20mm (3/4") CLEAR STONE - 150mm (6") TOP AND SIDE OF DRAIN. IF DRAIN IS NOT ON FOOTING, PLACE 100mm (4") OF STONE BELOW DRAIN.

(3) WRAP THE CLEAR STONE WITH AN APPROVED FILTER MEMBRANE (TERRAFIX 279R OR EQUIVALENT).

(4) FREE DRAINING BACKFILL - OPSS GRANULAR B OR EQUIVALENT COMPACTED TO THE SPECIFIED DENSITY. DO NOT USE HEAVY COMPACTION EQUIPMENT WITHIN 1.8m (6') OF WALL.

(5) IMPERMEABLE BACKFILL SEAL - COMPACTED CLAY, CLAYEY SILT OR EQUIVALENT. IF ORIGINAL SOIL IS FREE-DRAINING, SEAL MAY BE OMITTED. MAXIMUM THICKNESS OF SEAL TO BE 0.5m.

(6) DO NOT BACKFILL UNTIL WALL IS SUPPORTED BY BASEMENT AND FLOOR SLABS OR ADEQUATE BRACING.

(7) MOISTURE BARRIER TO BE AT LEAST 200mm (8") OF COMPACTED CLEAR 20mm (3/4") STONE OR EQUIVALENT FREE DRAINING MATERIAL. A VAPOUR BARRIER MAY BE REQUIRED FOR SPECIALTY FLOORS.

(8) BASEMENT WALL TO BE DAMP PROOFED.

(9) EXTERIOR GRADE TO SLOPE AWAY FROM BUILDING.

(10) SLAB ON GRADE SHOULD NOT BE STRUCTURALLY CONNECTED TO THE WALL OR FOOTING

(11) UNDERFLOOR DRAIN INVERT TO BE AT LEAST 300mm (12") BELOW UNDERSIDE OF FLOOR SLAB. DRAINAGE TILE PLACED IN PARALLEL ROWS 6 TO 8m (20-25') CENTERS ONE WAY. PLACE DRAIN ON 100mm (4") CLEAR STONE WITH 150mm (6") OF CLEAR STONE ON TOP AND SIDES. ENCLOSE STONE WITH FILTER FABRIC AS NOTED IN (3)

(12) THE ENTIRE SUBGRADE TO BE SEALED WITH APPROVED FILER FABRIC (TERRAFIX 270R OR EQUIVALENT) IF NON-COHESIVE(SANDY) SOILS BELOW GROUND WATER TABLE ENCOUNTERED.

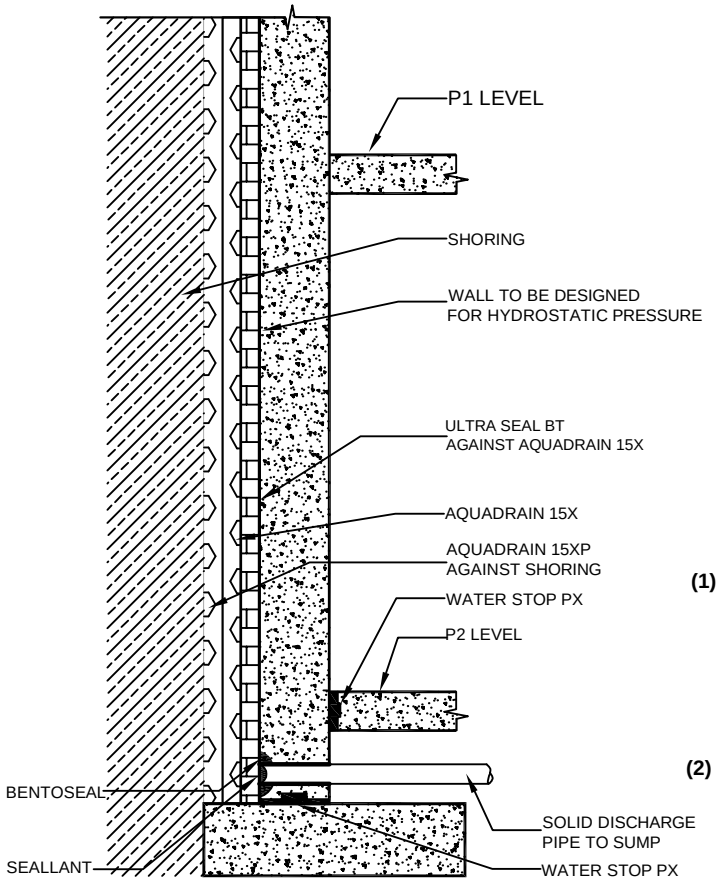
(13) DO NOT CONNECT THE UNDERFLOOR DRAINS TO PERIMETER DRAINS.

(14) REVIEW THE GEOTECHNICAL REPORT FOR SPECIFIC DETAILS.

DRAINAGE AND BACKFILL RECOMMENDATIONS

BASEMENT WITH UNDERFLOOR DRAINAGE

(NOT TO SCALE)



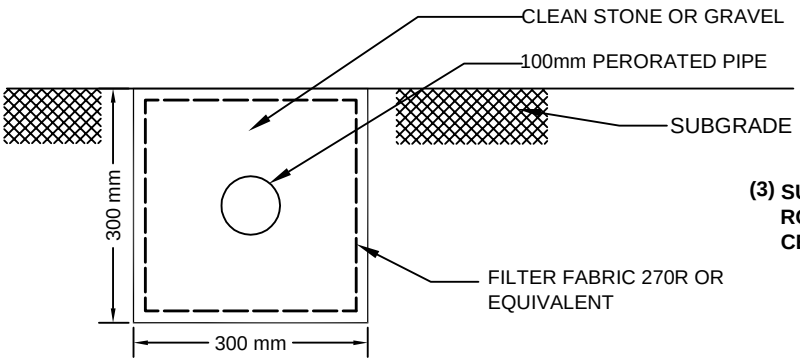
NOTES:

(1) ALL PERMANENT DRAINAGE PIPES MUST HAVE GEOTEXTILE FILTER SLEEVE TO PREVENT LONG TERM SILTING. TO FURTHER MINIMIZE SILTATION OF THE DRAINAGE SYSTEM, ALL DRAINAGE PIPE CONNECTION MUST BE SOLID PVC ELBOWS AND Ts. NO "BUTT" END CONNECTIONS SHOULD BE PERMITTED.

(2) PERIMETER COLLECTION PIPE TO BE SOLID PIPE,

SUGGESTED EXTERIOR DRAINAGE AGAINST SHORING

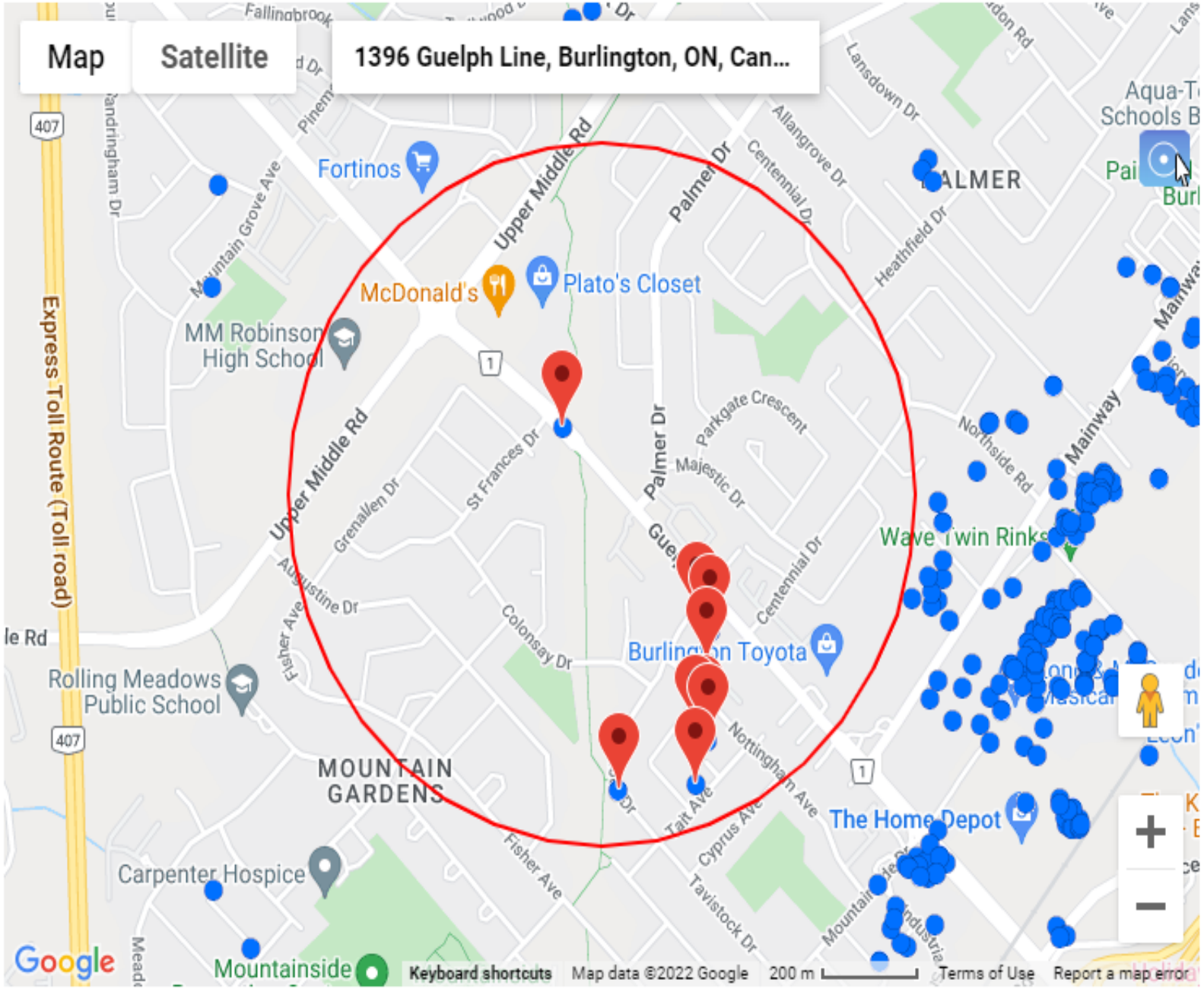
(NOT TO SCALE)



(3) SUBGRADE DRAIN TO BE PLACED IN PARALLEL ROWS 6-8 m (20'-25'), FROM CENTERLINE TO CENTERLINE.

DETAIL OF SUBGRADE DRAIN

(NOT TO SCALE)



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L3R 3K2
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NORTH

LEGEND

SITE BOUNDARY

PROJECT NAME AND ADDRESS

HYDROGEOLOGICAL INVESTIGATION

1396 Guelph Line
BURLINGTON, ONTARIO

FIGURE 1:

WELLS WITHIN 500M RADIUS

SHEET NO.

H1

PROJECT NO.
FE-P22-11967H

DATE
MARCH 2022

SCALE
AS SHOWN