Application for a Permit to Construct or Demolish

This form is authorized under subsection 8(1.1) of the *Building Code Act, 1992*

For use by Principal Authority	
Application number:	Permit number (if different):
Date received:	Roll number:

Application submitted to: OTTAWA SEPTIC SYSTEM OFFICE
(Name of municipality, upper-tier municipality, board of health or conservation authority)

A. Project information

Building number, street name		Unit number	Lot/con.
363 ENTREPRENEUR CRESCENT			
Municipality	**Postal code**	**Plan number/other description**	
NAVAN (CITY OF OTTAWA)	K4B 1T8		
Project value est. $		**Area of work (m^2)**	
28,000.00		68.04 m^2	

B. Purpose of application

X New construction	Addition to an existing building	Alteration/repair	Demolition	Conditional Permit

Proposed use of building	Current use of building
WAREHOUSE w/ OFFICE SPACE	VACANT LOT

Description of proposed work

NEW ELJEN SYSTEM FOR WAREHOUSE + OFFICE SPACE.

C. Applicant

Applicant is: Owner or X Authorized agent of owner

Last name	First name	Corporation or partnership		
DECOEUR	MARC-ANDRÉ	ABSOLUTE DRAFTING + DESIGN INC.		
Street address			**Unit number**	**Lot/con.**
1257 MONTÉE DROUIN				
Municipality	**Postal code**	**Province**	**E-mail**	
THE NATION (CASSELMAN)	K0A 1M0	ONTARIO	INFO@ADND.CA	
Telephone number	**Fax**		**Cell number**	
(613) 434-2844	( )		(613) 229-0869	

D. Owner (if different from applicant)

Last name	First name	Corporation or partnership		
WILSON	DUSTIN	ENTREPRENEUR HOLDING CORPORATION		
Street address			**Unit number**	**Lot/con.**
310 SANCTUARY PVT				
Municipality	**Postal code**	**Province**	**E-mail**	
OTTAWA	K1S 5W1	ONTARIO	justdustinwilson@gmail.com	
Telephone number	**Fax**		**Cell number**	
( )	( )		(613) 700-5262	

E. Builder (optional)

Last name	First name	Corporation or partnership (if applicable)	
UNKNOWN @ TIME OF APPLICATION.			
Street address		Unit number	Lot/con.
Municipality	Postal code	Province	E-mail
Telephone number ( )	Fax ( )	Cell number ( )	

F. Tarion Warranty Corporation (Ontario New Home Warranty Program)

i. Is proposed construction for a new home as defined in the *Ontario New Home Warranties Plan Act*? If no, go to section G.	Yes	No ✓
ii. Is registration required under the *Ontario New Home Warranties Plan Act*?	Yes	No ✓

iii. If yes to (ii) provide registration number(s): _____

G. Required Schedules

i) Attach Schedule 1 for each individual who reviews and takes responsibility for design activities.

ii) Attach Schedule 2 where application is to construct on-site, install or repair a sewage system.

H. Completeness and compliance with applicable law

i) This application meets all the requirements of clauses 1.3.1.3 (5) (a) to (d) of Division C of the Building Code (the application is made in the correct form and by the owner or authorized agent, all applicable fields have been completed on the application and required schedules, and all required schedules are submitted).	Yes ✓	No
Payment has been made of all fees that are required, under the applicable by-law, resolution or regulation made under clause 7(1)(c) of the *Building Code Act, 1992*, to be paid when the application is made.	Yes ✓	No
ii) This application is accompanied by the plans and specifications prescribed by the applicable by-law, resolution or regulation made under clause 7(1)(b) of the *Building Code Act, 1992.*	Yes ✓	No
iii) This application is accompanied by the information and documents prescribed by the applicable by-law, resolution or regulation made under clause 7(1)(b) of the *Building Code Act, 1992* which enable the chief building official to determine whether the proposed building, construction or demolition will contravene any applicable law.	Yes ✓	No
iv) The proposed building, construction or demolition will not contravene any applicable law.	Yes ✓	No

I. Declaration of applicant

I MARC-ANDRÉ DECOELHO [ABSOLUTE DRAFTING + DESIGN INC.] declare that:
(print name)

1. The information contained in this application, attached schedules, attached plans and specifications, and other attached documentation is true to the best of my knowledge.
2. If the owner is a corporation or partnership, I have the authority to bind the corporation or partnership.

Date April 19, 2023

Signature of applicant

Personal information contained in this form and schedules is collected under the authority of subsection 8(1.1) of the *Building Code Act, 1992*, and will be used in the administration and enforcement of the *Building Code Act, 1992*. Questions about the collection of personal information may be addressed to: a) the Chief Building Official of the municipality or upper-tier municipality to which this application is being made, or, b) the inspector having the powers and duties of a chief building official in relation to sewage systems or plumbing for an upper-tier municipality, board of health or conservation authority to whom this application is made, or, c) Director, Building and Development Branch, Ministry of Municipal Affairs and Housing 777 Bay St., 2nd Floor. Toronto, M5G 2E5 (416) 585-6666.

Schedule 1: Designer Information

Use one form for each individual who reviews and takes responsibility for design activities with respect to the project.

A. Project Information

Building number, street name		Unit no.	Lot/con.
363 ENTREPRENEUR CRESCENT			
Municipality	**Postal code**	**Plan number/ other description**	
NAVAN [OTTAWA]	K4B 1T8		

B. Individual who reviews and takes responsibility for design activities

Name		Firm	
MARC-ANDRE DECOEUR		ABSOLUTE DRAFTING + DESIGN INC	
Street address		**Unit no.**	**Lot/con.**
1257 MONTEE DROUIN			
Municipality	**Postal code**	**Province**	**E-mail**
THE NATION	K0A 1M0	ONTARIO	INFO@ADND.CA
Telephone number	**Fax number**		**Cell number**
613-434-2844 EXT. 1001			613-229-0869

C. Design activities undertaken by individual identified in Section B. [Building Code Table 3.5.2.1. of Division C]

☑ House	☑ HVAC – House	☑ Building Structural
☑ Small Buildings	☑ Building Services	☑ Plumbing – House
☑ Large Buildings	☑ Detection, Lighting and Power	☑ Plumbing – All Buildings
☑ Complex Buildings	☐ Fire Protection	☑ On-site Sewage Systems

Description of designer's work

NEW ELSEN SYSTEM FOR WAREHOUSE + OFFICE SPACE.

D. Declaration of Designer

I MARC-ANDRE DECOEUR (ABSOLUTE DRAFTING + DESIGN INC.) declare that (choose one as appropriate):
(print name)

I review and take responsibility for the design work on behalf of a firm registered under subsection 3.2.4.of Division C, of the Building Code. I am qualified, and the firm is registered, in the appropriate classes/categories.

Individual BCIN: 44555

Firm BCIN: 45254

I review and take responsibility for the design and am qualified in the appropriate category as an "other designer" under subsection 3.2.5.of Division C, of the Building Code.

Individual BCIN: _____

Basis for exemption from registration: _____

The design work is exempt from the registration and qualification requirements of the Building Code.

Basis for exemption from registration and qualification: _____

I certify that:

1. The information contained in this schedule is true to the best of my knowledge.
2. I have submitted this application with the knowledge and consent of the firm.

April 19, 2023
Date

Signature of Designer

NOTE:

1. For the purposes of this form, "individual" means the "person" referred to in Clause 3.2.4.7(1) (c).of Division C, Article 3.2.5.1. of Division C, and all other persons who are exempt from qualification under Subsections 3.2.4. and 3.2.5. of Division C.
2. Schedule 1 is not required to be completed by a holder of a license, temporary license, or a certificate of practice, issued by the Ontario Association of Architects. Schedule 1 is also not required to be completed by a holder of a license to practise, a limited license to practise, or a certificate of authorization, issued by the Association of Professional Engineers of Ontario.

Schedule 2: Sewage System Installer Information

A. Project Information			
Building number, street name: 363 ENTREPRENEUR CRESCENT		Unit number	Lot/con.
Municipality: NAVAN [OTTAWA]	Postal code: K4B 1T8	Plan number/ other description	

B. Sewage system installer

Is the installer of the sewage system engaged in the business of constructing on-site, installing, repairing, servicing, cleaning or emptying sewage systems, in accordance with Building Code Article 3.3.1.1, Division C?

Yes (Continue to Section C) | No (Continue to Section E) | ✓ Installer unknown at time of application (Continue to Section E)

C. Registered installer information (where answer to B is "Yes")

Name			BCIN	
Street address			Unit number	Lot/con.
Municipality	Postal code	Province	E-mail	
Telephone number ( )	Fax ( )		Cell number ( )	

D. Qualified supervisor information (where answer to section B is "Yes")

Name of qualified supervisor(s)	Building Code Identification Number (BCIN)

E. Declaration of Applicant:

I MARC-ANDRÉ DÉCOEUR [ABSOLUTE DRAFTING + DESIGN INC.] declare that:
(print name)

✓ I am the applicant for the permit to construct the sewage system. If the installer is unknown at time of application, I shall submit a new Schedule 2 prior to construction when the installer is known;

OR

I am the holder of the permit to construct the sewage system, and am submitting a new Schedule 2, now that the installer is known.

I certify that:

1. The information contained in this schedule is true to the best of my knowledge.
2. If the owner is a corporation or partnership, I have the authority to bind the corporation or partnership.

Date April 19, 2023 Signature of applicant

Ottawa Septic System Office / Bureau des systèmes septiques d'Ottawa

Do Not Complete
Permit # _____
Revision # _____
Date _____

Schedule 4
Proposed Services
Complete Sections 1 thru 7

1. **Engineered**
- ☐ Yes
- ☑ No

2. **Water supply**
- ☑ Proposed
- ☐ Existing

3. **Type of work proposed**
- ☑ New Installation
- ☐ Replacement
- ☐ Alteration

4. **Type of Well**
- ☐ Dug/bored/Sandpoint well
- ☑ Drilled well
- ☐ Municipal
- ☐ Other

5. **Residential** Sewage Design Flow Info.

Bedrooms _____
House (floor area) _____ **m²**
People _____
Total Fixture Units _____ **(Schedule 8)**
Residential Flow _____ **L/day**

6. Sewage Design Flow **Other Occupancies**

Design Flow 1310 L/day
Detailed sewage flow calculations:
SEE "FLOW CALCULATION" DRAWING.

- ☑ Class 4 – BMEC Area Bed **(Schedule 11)**

→ ELJEN
- ☐ Fully raised
- ☑ Partially raised
- ☐ In-ground

- ☐ Class 4 – "Type A" Dispersal **(Schedule 13)**
  - ☐ Fully raised
  - ☐ Partially raised
  - ☐ In-ground
- ☐ Class 4 – "Type B" Dispersal **(Schedule 14)**
  - ☐ Fully raised
  - ☐ Partially raised
  - ☐ In-ground

7. **Type of System**
- ☐ Treatment Unit _____
- ☐ Class 2 – Leaching Pit
- ☐ Class 3 – Cesspool
- ☐ Class 4 – Shallow Buried Trench

_____

- ☐ Class 4 – Trench **(Schedule 9)**
  - ☐ Fully raised
  - ☐ Partially raised
  - ☐ In-ground
- ☐ Class 4 – Filter Media **(Schedule 10)**
  - ☐ Fully raised
  - ☐ Partially raised
  - ☐ In-ground

- ☐ Class 5 – Holding Tank (9000L min)
- ☐ Tank/TreatmentUnit/PumpChamber ONLY
- ☐ Effluent Filter/Risers ONLY

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Do Not Complete
Permit No _____
Revision No _____
Date _____

Schedule 5
Sewage System Details

Type of System ELJEN SYSTEM (Schedule 4)
Septic/Holding Tank Size: 5509 Litres Make: LON-BOY CONCRETE (PROPOSED)
Septic Tank Effluent Filter Make: POLYLOK Model: PL 525 OR EQUIVALENT.

Treatment Unit – Make & Model ELJEN GSF A42 MODULES
Number of Units: 14 Other: _____
Refer to Typical Drawing # FLOW CALCULATIONS. Pump(s) required YES.
Mantle Information: Pump Rate _____ L/15min
Native or imported =15m in _____ direction(s)

Note: Alarm required for all pumping systems

Slope subgrade 2% MIN. % slope
NORTH. direction(s)

8 DOSING PER DAY @ 163.8 LITER PER DOSING
* SEE SEPTIC SECTION FOR CALCULATION.

Site to be Scarified (If clay) YES / NO "SILTY SAND."
Clay Seal Required (If bedrock) YES / NO ↳ AS PER LRL "GEOTECH REPORT."

☐ **Trench**
- Distribution Pipe Length _____ m
- Loading Area _____ m^2
- Type of Chamber _____
- Length of Chamber _____ m

☐ **Dispersal Bed** $L = \frac{QT}{400}$

☑ **BMEC** ☐ **Type A** ☐ **Type B**
- Stone _____ m^2
- Sand 65.5 m^2 MIN ∴ 68.04 m^2 PROVIDED
- Pipe ↳ SEE "FLOW CALCULATION"
- Linear Loading _____ L/m^2

☐ **Shallow Buried Trench**
- Pipe Length _____ m

☐ **Filter Media Bed**
- Stone _____ m^2
- Extended Base _____ m^2
- Pipe _____ m
- Weight of Filter Media _____ Kg
- Loading Area _____ m

☐ **Tank/Treatment Unit/Pump Chamber Replacement** ONLY
☐ **Effluent Filter & Riser** ONLY

Construction Notes:

Ottawa Septic System Office | Bureau des systèmes septiques d'Ottawa

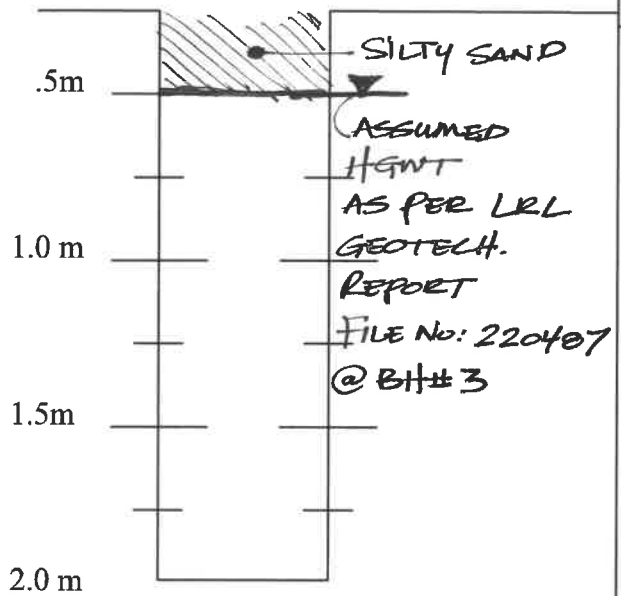
Do Not Complete
Permit # _____
Revision # _____
Date _____

Schedule 6
Soil and Water Table Information
(Minimum depth of test pit: 2 metres)

Name of Applicant/Agent: MARC-ANDRÉ DÉGREUR
Date: April 19, 2023 Time: _____
Applicant/Agent Signature: _____

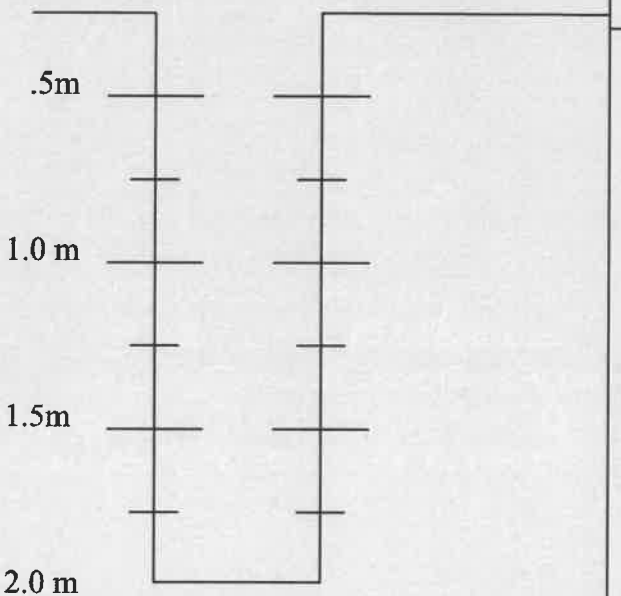
Inspector: _____
Date: _____ Time: _____
Inspector Signature: _____

EG (76.94) | Soil Description | T

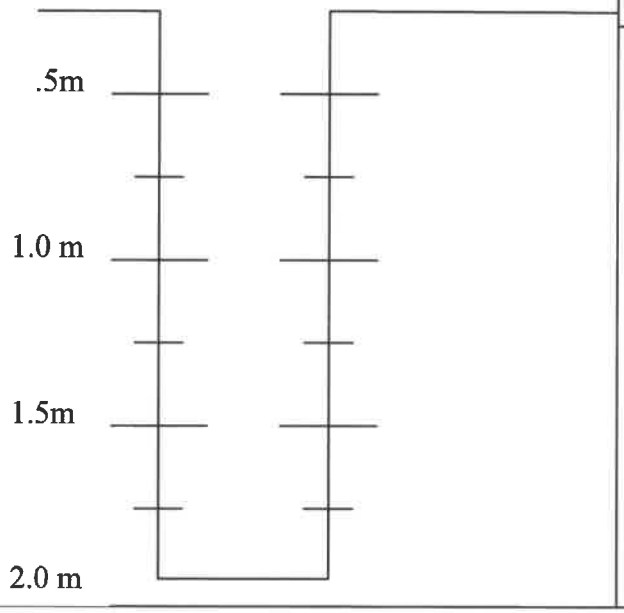


@ 20 for SILTY SAND [SB-6]

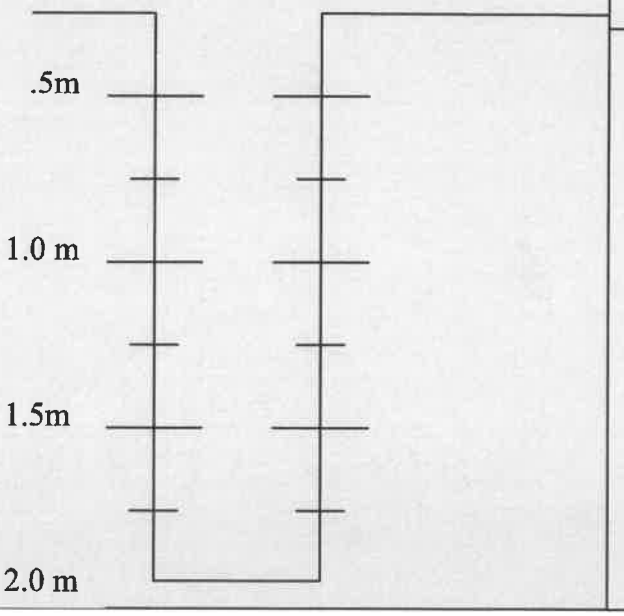
EG (……..) | Soil Description



EG (……..) | Soil Description | T



EG (……..) | Soil Description | T



LEGEND

BR = Bedrock	HGWT = High ground water table	EG = Existing grade
GWT = Ground water table	M = metres	T = percolation rate

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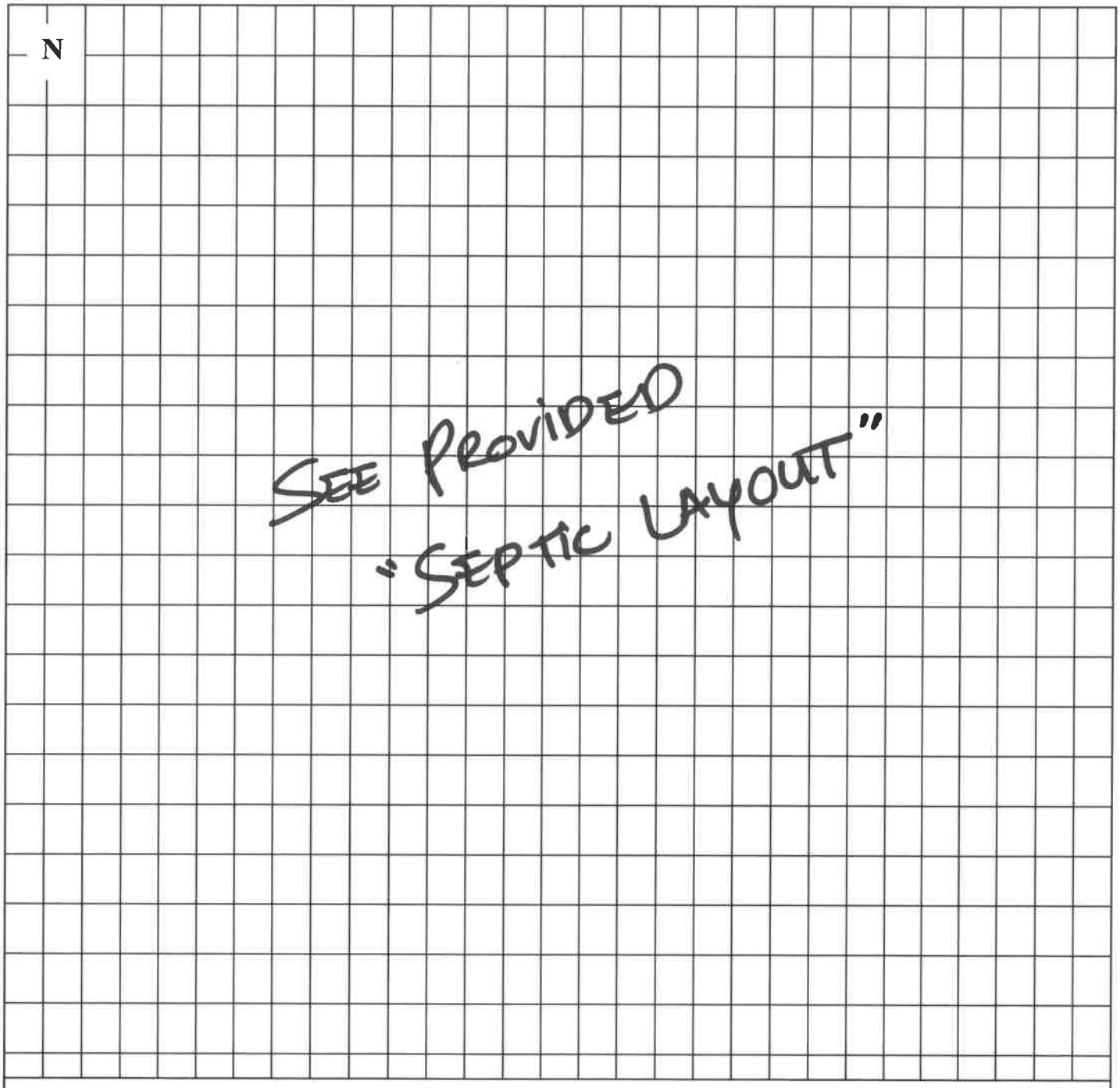
Do Not Complete
Permit # _____
Revision # _____
Date _____

Scale: 1Block = _____

Schedule 7
Layout Section



○Dug Well ●Drilled Well ▲Neighbouring Homes ◊Benchmark ---Tile Drainage —Property Line

Elevations (metric only)
B.M. _____ m
B.M.Description _____
_____
Exact Location _____

Min. of 5 elevations in proposed system area (in X pattern)
X_1 _____ X_2 _____
X_3 _____ X_4 _____
X_5 _____ $X_{6\ (toe)}$ _____
X_7 X_8

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Do Not Complete
Permit # _____
Revision # _____
Date _____

Schedule 8
Fixture unit count

Fixtures	# Existing	+	# Proposed	X	unit count	=	Fixture Count
Bathroom Bathroom group (toilet, sink and tub **or** shower) installed in the **same** room		+		X	6	=	
Bathtub with/without overhead shower		+		X	1.5	=	
Shower stall		+	4	X	1.5	=	6
Wash basin (SINK) (1½inch trap)		+	5	X	1.5	=	7.5
Watercloset (TOILET) tank operated		+	5	X	4	=	20
Bidet / URINAL		+	3	X	1	=	3
Kitchen Dishwasher		+	1	X	1	=	1
Sink with/without garbage grinder(s), domestic and other small type single, double or 2 single with a common trap		+	1	X	1.5	=	1.5
Other Domestic washing machine		+	1	X	1.5	=	1.5
Combination sink and laundry tray single or double (Installed on 1½ trap)		+	1	X	1.5	=	1.5

***Total:** 42

***Insert the TOTAL in section 5 of Schedule 4** (0.Reg 151/13 Table 7.4.9.3)

1. **Sump pumps and floor drains are not to be connected to the sewage system.** Connection of such fixtures to a sewage system may lead to a hydraulic failure of the said system. The above mentioned fixtures should be discharged separately to an approved Class 2 (leaching pit) sewage system.
2. Where laundry waste is not more than 20% of the total daily design sanitary sewage flow, it may discharge to a sewage system (Part 8, OBC, 8.1.3.1(2)).

_____ April 19, 2023

Agent/Owner signature **Date**

Do Not Complete
Permit # _____
Revision # _____
Date _____

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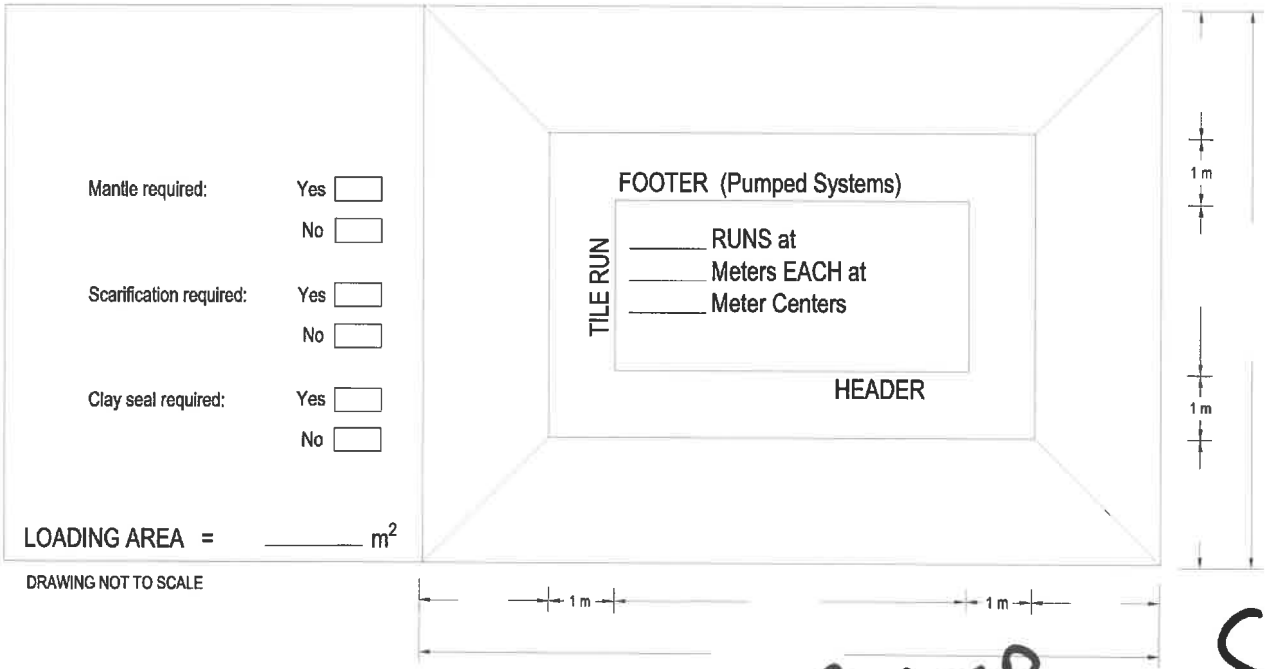
TYPICAL DRAWING C

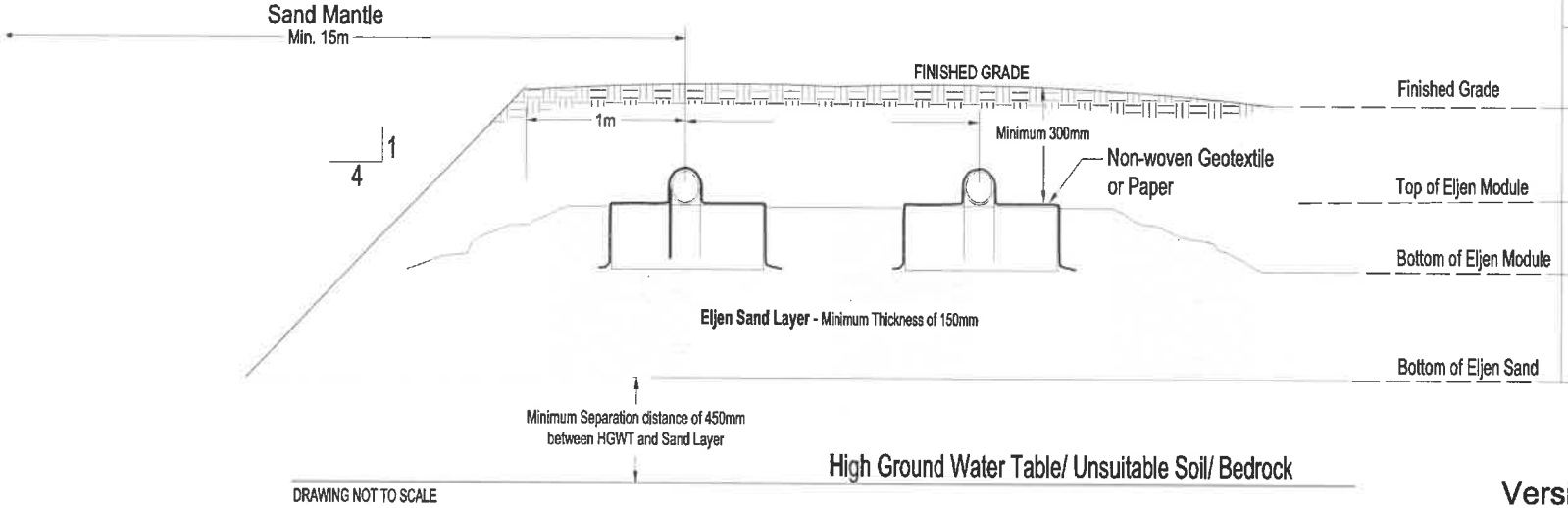
BURIED OR RAISED BED - BMEC ELJEN System

Plan View



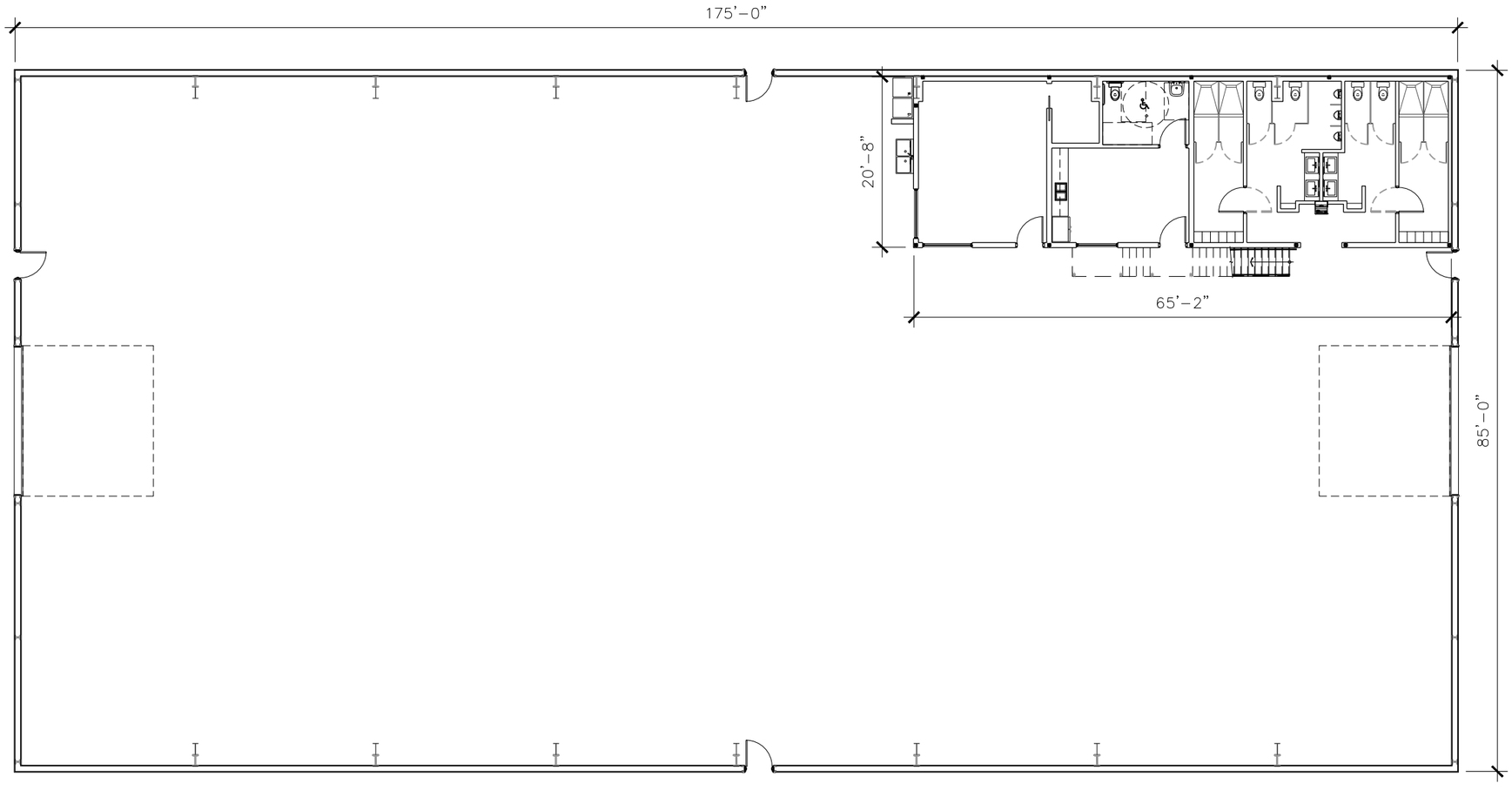
See Provided "Septic Section"

Cross-Section Profile



	Proposed Installation Grades	Approved Installation Grades	Existing Grade
Finished Grade			
Top of Eljen Module			
Bottom of Eljen Module			
Bottom of Eljen Sand			

LRJ
ENGINEERING | INGÉNIERIE
5430 Canotek Road | Ottawa, ON, K1J 9G2
www.lrl.ca | (613) 842-3434



GROUND FLOOR PLAN

SCALE: 1/16" = 1'–0"

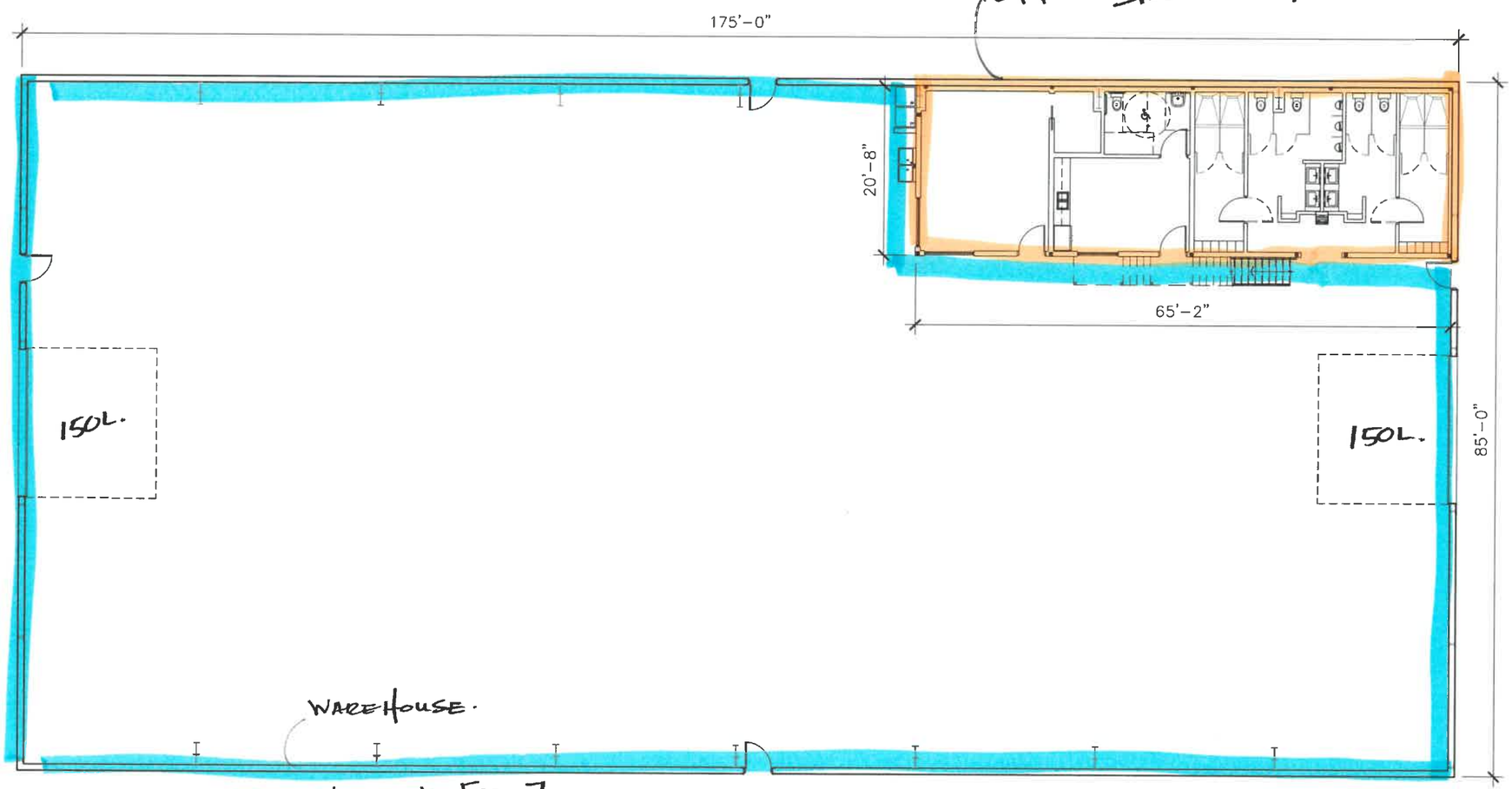
LRL
ENGINEERING | INGÉNIERIE
5430 Canotek Road | Ottawa, ON, K1J 9G2
www.lrl.ca | (613) 842-3434

- WAREHOUSE = 2x Loading Bay = 2x150L = 300L.
- OFFICE AREA = 75L/9.3m² = 1347 sq.ft. = 125.12m²/9.3m² = 13.46 x 75L = 1010L

300L + 1010L = 1310L/D.
↳ Design Flow/Day.

or
75L/9.3m²/PERSON
↳ AS PER T.3.1.17 OBC.

OFFICE SPACE 75L/9.3m²



@TEST PIT "BH3"

* HGWT @ 0.5m BELOW EXISTING GRADE [SEE LRL REPORT]

SILTY SAND [SB-6]

GROUND FLOOR PLAN

SCALE: 1/16" = 1'-0"

LOADING AREA.
= Q/I = 1310 x 20 / 400
= 65.5m² MIN.
PROVIDED = 4.2m x 16.2m
= 68.04m²

ELJEN SYSTEM.
↳ L/D / 95
= 1310/95 = 13.79
= 14 MODULES REQ'D.
2 RUNS OF 7 MODULES.

SEPTIC TANK = L/D x 3
= 1310 x 3
= 3930 L MIN. TANK.
↳ PROPOSED 5,509L TANK.

Geotechnical Investigation

Proposed Warehouse
363 Entrepreneur Crescent
Navan, Ontario

Prepared for:

Entrepreneur Holding Corporation
363 Entrepreneur Crescent
Navan, Ontario
K4B 1T8

LRL File No.: 220487

February 2023

5430 Canotek Road | Ottawa, ON, K1J 9G2 | info@lrl.ca | www.lrl.ca | (613) 842-3434

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APPENDICES

1 INTRODUCTION

LRL Associates Ltd. (LRL) was retained by Dustin Wilson of Entrepreneur Holding Corporation to perform a geotechnical investigation for a proposed warehouse, to be located at 363 Entrepreneur Crescent, Navan, Ontario.

The purpose of the investigation was to identify the subsurface conditions across the site by the completion of a limited borehole drilling program. Based on the visual and factual information obtained, this report will provide guidelines on the geotechnical engineering aspects of the design of the project, including construction considerations.

This report has been prepared in consideration of the terms and conditions noted above. Should there be any changes in the design features, which may relate to the geotechnical recommendations provided in the report, LRL should be advised in order to review the report recommendations.

2 SITE AND PROJECT DESCRIPTION

The site under investigation is civically located at 363 Entrepreneur Crescent, in Navan, Ontario. Currently the site is vacant of any structures, but is currently being used as a storage yard by the adjacent property for construction equipment and vehicles. The approximate location is presented in Figure 1 included in **Appendix A**. The lot is approximately rectangular in shape, having about 35 m of frontage, and a depth of about 80 m. The site is bound by 357 Entrepreneur Crescent to the east, Entrepreneur Crescent to the south, 371 Entrepreneur Crescent to the west, and 5425 Boundary Road to the north. At the time of carrying out the field work, the site was covered by a thin layer of snow. The topography of the site is considered to be relatively flat. Access to the site will come by way of Entrepreneur Crescent.

It is understood that development on this site will consist of construction of a 15,000 ft^2 warehouse, with no basement. The structure will be a pre-engineered building, supported by a conventional shallow foundation. The building will be serviced with a well and septic system.

3 PROCEDURE

The fieldwork for this investigation was carried out on November 17, 2022. Prior to the fieldwork, the site was cleared for the presence of any underground services and utilities. A total of four (4) boreholes, labelled BH1 through BH4, were drilled across the site to get a general understanding of the site's soil conditions. The approximate locations of the boreholes are shown in Figure 2 included in **Appendix A**.

The boreholes were advanced using a track mount CME 75 drill rig equipped with 200 mm diameter continuous flight hollow stem auger supplied and operated by CCC Geotechnical and Environmental Drilling Ltd. A "two man" crew experienced with geotechnical drilling operated the drill rig and equipment.

Sampling of the overburden materials encountered in the boreholes was carried out at regular depth intervals using a 50.8 mm diameter drive open conventional spoon sampler in conjunction with standard penetration testing (SPT) "N" values. The SPT were conducted following the method **ASTM D1586** and the results of SPT, in terms of the

number of blows per 0.3 m of split-spoon sampler penetration after first 0.15 m designated as “N” value.

In-situ field vane shear testing using a tapered vane was carried out in the soft to very soft cohesive soils. The undrained shear strength values were calculated following **ASTM D 2573.**

The boreholes were augered and sampled to a depth of 7.00 m below ground surface (bgs). A Dynamic Cone Penetration (DCP) test was carried out in BH2 until refusal (24.50 m bgs) to determine the overburden thickness. Upon completion, the boreholes were backfilled using the overburden cuttings.

The fieldwork was supervised throughout by a member of our engineering staff who oversaw the drilling activities, cared for the samples obtained and logged the subsurface conditions encountered within each of the boreholes. All soil samples collected from the boreholes were placed and sealed in plastic bags to prevent moisture loss. The recovered soil samples collected from the boreholes were classified based on visual examination of the materials recovered and the results of the in-situ testing.

Furthermore, all boreholes were located using a Garmin Etrex Legend GPS (Global Positioning System) receiver using NAD 83 datum (North American Datum). An elevation survey was carried out onsite to determine the borehole locations’ elevation. A Temporary Benchmark (TBM) was assigned using the top of the culvert located at the southwest of driveway entrance, and given an elevation of 100.00 m. Ground surface elevations of the boring locations are shown on their respective borehole logs, attached in **Appendix B.**

4 SUBSURFACE SOIL AND GROUNDWATER CONDITIONS

4.1 General

A review of local surficial geology maps provided by the Department of Energy, Mines and Resources Canada suggest that this site consists of a “Champlain Sea Deposits” consisting of blue-grey clay, silt, and silty clay.

The subsurface conditions encountered in the boreholes were classified based on visual and tactile examination of the materials recovered from the boreholes and the results of in-situ laboratory testing. The soil descriptions presented in this report are based on commonly accepted methods of classification and identification employed in geotechnical practice. Classification and identification of soil were conducted according to the procedure **ASTM D2487** and judgement, and LRL does not guarantee descriptions as exact, but infers accuracy to the extent that is common in current geotechnical practice.

The subsurface soil conditions encountered at the boreholes are given in their respective logs presented in **Appendix B**. A greater explanation of the information presented in the borehole logs can be found in **Appendix C** of this report. These logs indicate the subsurface conditions encountered at a specific test location only. Boundaries between zones on the logs are often not distinct, but are rather transitional and have been interpreted as such.

4.2 Fill Material

Fill material consisting of a crushed stone granular material was encountered at the surface of all boring locations, and extended to depths ranging between 0.60 and 1.07 m bgs. The recorded SPT “N” values of this deposit varied from 30 to 36, indicating the deposit is dense. The natural moisture contents were found to be 9 and 11%.

4.3 Silty Sand

Underlying the fill material at all boring locations, a layer of brown silty sand was encountered and extended to a depth of 1.45 m bgs. The recorded SPT "N" values of this deposit varied from 14 to 19, indicating the deposit is compact. The natural moisture contents were found to be 22 and 24%.

4.4 Clayey Silt

Below the silty sand in all boring locations, a layer of clayey silty was encountered and extended to a depth of 4.12 m bgs. This material contained trace sand, grey and wet. The SPT "N" values were found to range between 0 (weight of hammer (WH)) and 4, indicating the material is soft to very soft. The natural moisture contents were determined to range between 37 and 87%.

4.5 Silty Clay

Underlying the clayey silt in all boring locations, a layer of silty clay was encountered and extended to the end of sampling at a depth of 7.00 m bgs. This was found to be grey, and wet. The SPT "N" values of this layer were WH, indicating the material is very soft. The natural moisture contents were determined to be 76 and 90%.

4.6 Inferred Glacial Till

Inferred glacial till was encountered in BH2 by way of the DCP test. This was found to be in a compact to very dense state of packing.

4.7 Refusal

Refusal using the DCP test was encountered in BH2 at a depth of 24.50 m bgs. This was encountered over a large boulder within the till material or possible bedrock.

4.8 Laboratory Analysis

Two (2) soil samples were collected for laboratory gradation analyses. The gradation analyses comprised of sieve and hydrometer were conducted following the procedure **ASTM D422.** Details of laboratory analyses are reflected in **Table 1**.

Table 1: Gradation Analysis Summary

Sample Location	Depth (m)	Percent for Each Soil Gradation					Estimated Hydraulic Conductivity K (m/s)
		Sand			Silt (%)	Clay (%)	
		Coarse (%)	Medium (%)	Fine (%)			
BH1	1.52 – 2.13	0.4	0.8	4.1	59.3	35.4	5×10^{-8}
BH2	6.10 – 6.71	0.0	0.0	0.6	31.0	68.4	5×10^{-8}

Atterberg limits and moisture contents were conducted on two (2) split spoon soil samples. A summary of these values are provided below in **Table 2**.

Table 2: Summary of Atterberg Limits and Water Contents

Sample Location	Parameter					
	Depth (m)	Liquid Limit (%)	Plastic Limit (%)	Plasticity Index (%)	Water Content (%)	USCS Group Symbol
BH3	4.57 – 5.18	61	23	38	90	CH
BH4	1.52 – 2.13	67	25	42	77	CH

The laboratory reports can be found in **Appendix D** of this report.

4.9 Groundwater Conditions

A piezometer was installed in BH3 to measure the static groundwater level. The piezometer consisted of a 19 mm diameter PVC pipe with a slotted bottom to allow for groundwater infiltration, backfilled with silica sand, and sealed with bentonite. The water was measured on December 6, 2022 and found to be at 0.5 m bgs. This is expected to be perched water, and not the true groundwater level of the site.

It should be noted that groundwater levels could fluctuate with seasonal weather conditions, (i.e.: rainfall, droughts, spring thawing) and due to construction activities at or in the vicinity of the site.

5 GEOTECHNICAL CONSIDERATIONS

This section of the report provides general geotechnical recommendations for the design aspect of the project based on our interpretation of the information gathered from the boreholes performed at this site and from the project requirements.

This section will detail the specific requirements and limitations with regard to allowable foundation bearing pressure and depth, grade raise and size of the footings.

5.1 Foundations

Based on the subsurface soil conditions established at this site, it is expected that the footings for the proposed warehouse will be founded below the frost penetration depth, overlying the native silty sand and/or clayey silt. Therefore, all fill material including incompetent native soil should be removed from the proposed footprint down to the required founding depth.

5.2 Shallow Foundation

Conventional strip and column footings founded over the undisturbed native silty sand and/or clayey silt may be designed using a maximum allowable bearing pressure of **50 kPa** for serviceability limit state **(SLS)** and **75 kPa** for ultimate limit state **(ULS)** factored bearing resistance. The factored ULS value includes the geotechnical resistance factor of 0.5. This bearing capacity limits the allowable earth grade raise to 1.0 m and a strip footing maximum width of 2.0 m, and a pad footing maximum width of 4.0 m on any side. If a greater earth fill grade raise or larger footings are required, the bearing capacity would need to be reduced.

In-situ field testing is required to check the strength and stability of the footings subgrade. Any incompetent subgrade areas as identified from in-situ testing must be sub-excavated

and backfilled with approved structural fill. Similarly, any soft or wet areas should also be sub-excavated and backfilled with approved structural fill only. Prior to placing any approved structural fill, the subgrade should be inspected and approved by geotechnical engineer or qualified geotechnical personnel. The bearing pressure is contingent on the water level being 0.3 m below the underside footing elevation in order to have a stable and dry subgrade during construction.

Prior to pouring footings concrete, the subgrade should be inspected and approved by a geotechnical engineer or a representative of geotechnical engineer. If the footings are founded on clayey silt, it may be prudent to place a 50 mm thick mudslab consisting of a lean concrete mix in order to protect the subgrade prior to placement of the footing formwork. This can be discussed further at the time of the excavation for the foundation.

5.3 Structural Fill

For foundations set over undisturbed native soil and where excavation below the underside of the footings is performed in order to reach a suitable founding stratum, consideration should also be given to support the footings on structural fill. The structural fill should be placed over undisturbed native soils in layers not exceeding 300 mm and compacted to 98% of its Standard Proctor Maximum Dry Density (SPMDD) within ±2% of its optimum moisture content. In order to allow the spread of load beneath the footings and to prevent undermining during construction, the structural fill should extend minimum 1.0 m beyond the outside edges of the footings and then outward and downward at 1 horizontal to 1 vertical profile (or flatter) over a distance equal to the depth of the structural fill below the footing. Furthermore, the structural fill must be tested to ensure that the specified compaction level is achieved.

5.4 Lateral Earth Pressure

The following equation should be used to estimate the intensity of the lateral earth pressure against any earth retaining structure/foundation walls.

$$P = K (\gamma h + q)$$

Where;

P = Earth pressure at depth h;

K = Appropriate coefficient of earth pressure;

γ = Unit weight of compacted backfill, adjacent to the wall;

h = Depth (below adjacent to the highest grade) at which P is calculated;

q = Intensity of any surcharge distributed uniformly over the backfill surface (usually surcharge from traffic, equipment or soil stockpiled and typically considered 10 kPa).

The coefficient of earth pressure at rest (K_0) should be used in the calculation of the earth pressure on the storm water manhole/basement walls, which are expected to be rather rigid and not to deflect.

The above expression assumes that perimeter drainage system prevents the build-up of any hydrostatic pressure behind the foundation wall.

Table 3 below provides various material types and their respective earth pressure properties.

Table 3: Material and Earth Pressure Properties

Type of Material	Bulk Density (kN/m^3)	Friction Angle (Φ)	Pressure Coefficient		
			At Rest (K_0)	Active (K_A)	Passive (K_P)
Granular A	23.0	34	0.44	0.28	3.53
Granular B Type I	20.0	31	0.49	0.32	3.12
Granular B Type II	23.0	32	0.47	0.31	3.25
Silty Sand	17.5	30	0.50	0.33	3.00
Clayey Silt to Silty Clay	18.5	25	0.52	0.41	2.46

5.5 Settlement

The estimated total settlement of the shallow foundations, designed using the recommended serviceability limit state capacity value, as well as other recommendations given above, will be less than 25 mm. The differential settlement between adjacent column footings is anticipated to be 15 mm or less.

5.6 Seismic

Based on the information of this geotechnical investigation and in accordance with the Ontario Building Code 2015 (Table 4.1.8.4.A.) and Canadian Foundation Engineering Manual (4th edition), the site can be classified for Seismic Site Response Site Class D. This classification is based on the $N_{60,average}$ exceeding 15.

The above classifications were recommended based on conventional method exercised for Site Classification for Seismic Site Response and in accordance with the generally accepted geotechnical engineering practice.

5.7 Liquefaction Potential

As recommended in Canadian Foundation Engineering Manual 4th edition (*Bray et al. 2004)*, the following criteria can be used to determine liquefaction susceptibility of fine grained soils.

- $w/w_L \geq 0.85$ and $I_p \leq 12$: Susceptible to liquefaction or cyclic mobility
- $w/w_L \geq 0.8$ and $12 \leq I_p \leq 20$: Moderately susceptible to liquefaction or cyclic mobility
- $w/w_L < 0.8$ and $I_p \leq 20$: No liquefaction or cyclic mobility, but may undergo significant deformations if cyclic shear stress > static undrained shear strength.

Based on the above criteria, liquefaction is not a concern for this site.

5.8 Frost Protection

All exterior footings for any heated structure exposed to frost conditions should have a minimum of 1.5 m of earth cover. Footings for any unheated structures, signage or lighting, and where snow will be cleared, 1.8 m of earth cover is required. Alternatively, the required frost protection could be provided using a combination of earth cover and extruded polystyrene insulation. Detailed guidelines for footing insulation frost protection can be provided upon request.

In the event that foundations are to be constructed during winter months, the foundation soils are required to be protected from freezing temperatures using suitable construction techniques. The base of all excavations should be insulated from freezing temperatures immediately upon exposure, until heat can be supplied to the building interior and the footings have sufficient soil cover to prevent freezing of the subgrade soils.

5.9 Foundation Drainage

Permanent perimeter drainage is only required for buildings where basements or whenever any open spaces located below the finish ground are being considered. It is our understanding that no basement construction is included as part of this development and hence no perimeter drainage is required. However, in order to minimize ponding of water adjacent to the foundation walls, roof water should be controlled by a roof drainage system that directs water away from the building to prevent ponding of water adjacent to the foundation wall.

5.10 Foundation Walls Backfill (Shallow Foundations)

To prevent possible foundation frost jacking and lateral loading, the backfill material against any foundation walls, grade beams, isolated walls, or piers should consist of free draining, non-frost susceptible material such as sand or sand and gravel meeting OPSS Granular B Type II or I, or a Select Subgrade Material (SSM).

The foundation wall backfill should be compacted to minimum 95% of its SPMDD using light compaction equipment, where no loads will be set over top. The compaction shall be increased to 98% of its SPMDD under walkways, slabs or paved areas close to the foundation or retaining walls. Backfilling against foundation walls should be carried out on both sides of the wall at the same time where applicable.

5.11 Slab-on-grade Construction

Concrete slab-on-grade should rest over compacted, free draining and well graded structural fill only. Therefore, all fill, or otherwise deleterious material shall be removed from the proposed building's footprint. The exposed undisturbed native subgrade should then be inspected and approved by a qualified geotechnical personnel.

Any underfloor fill needed to raise the general floor grade shall consist of OPSS Granular B Type II or I or SSM material or an approved equivalent, compacted to 95% of its SPMDD. The final lift shall be compacted to 98% of its SPMDD. A minimum 200 mm Granular A layer meeting the **OPSS 1010** shall be placed underneath the slab and compacted to 98% of its SPMDD.

It is also recommended that the area of extensive exterior slab-on-grade (sidewalks, ramp etc.) shall be constructed using Granular A base of thickness 150 mm with incorporating subdrain facilities. The modulus of subgrade reaction (ks) for the design of the slabs set over competent native soil/structural fill is **22 MPa/m.**

In order to further minimize and control cracking, the floor slab shall be provided with wire or fibre mesh reinforcement and construction or control joints. The construction or control joints should be spaced equal distance in both directions and should not exceed 4.5 m. The wire or fibre mesh reinforcement shall be carried out through the joints.

If any areas of the proposed building area are to remain unheated during the winter period, thermal protection of the slab on grade may be required. The "Guide for Concrete Floor and Slab Construction", **ACI 302.1R-04** is recommended to follow for the design and

construction of vapour retarders below the floor slab. Further details on the insulation requirements could be provided, if necessary.

5.12 Corrosion Potential and Cement Type

A soil sample was submitted to Paracel Laboratories Ltd. for chemical testing. The following **Table 4** below summarizes the results.

Table 4: Results of Chemical Analysis

Sample Location	Depth (m)	pH	Sulphate (µg/g)	Chloride (µg/g)	Resistivity (Ohm.cm)
BH4	1.5 – 2.1	7.44	78	101	2,120.0

The above results revealed a measured sulphate concentration of 78 µg/g. Based on the CAN/CSA-A23.1 standards (Concrete Materials and Methods of Concrete Construction), a sulphate concentration of less than 1000 µg/g falls within the negligible category for sulphate attack on buried concrete. The test results from soil sample is below the noted threshold. As such, buried concrete for footings and foundations walls will not require any special additive to resist sulphate attack and the use of normal Portland cement is acceptable.

The pH, resistivity and chloride concentration provide an indication of the degree of corrosiveness of the sub-surface environment. The soil resistivity was measured to be 2,120.0 ohm.cm, which falls between the “highly corrosive” range for soil resistivity.

5.13 Other Considerations

As noted above in **Section 4.7**, the Atterberg Limits results indicate the moisture content is higher than the liquid limit. This indicates that a loss of moisture from the material could result in shrinkage of the soil and subsequent excessive settlements may occur. To help maintain the groundwater level, it is recommended to install clay dykes within any service trench, downstream from each of the manholes. These dykes should extend from the base of the service trench to the subgrade level, having minimum width of 1.0 m.

In addition to clay dykes, any trees planted onsite should respect the City of Ottawa “Tree Planting in Sensitive Marine Clay Soils – 2017 Guidelines”.

6 EXCAVATION AND BACKFILLING REQUIREMENTS

6.1 Excavation

It is anticipated that the depth of excavation for the building will not be extended below 1.5 - 1.8 m bgs. Most of the excavation being carried out will be through native silty sand and clayey silt. Excavation must be carried out in accordance with Occupational Health and Safety Act and Regulations for construction Projects.

According to the Ontario’s Occupational Health and Safety Act (OHSA), O. Reg. 213/91 and its amendments, the surficial overburden expected to be excavated into at this site can be classified as Type 3. Therefore, shallow temporary excavations can be cut at 1 horizontal to 1 vertical (1H: 1V) for a fully drained excavation starting at the base of the excavation and as per requirements of the OHSA regulations.

Any excavated material stockpiled near an excavation or trench should be stored at a distance equal to or greater than the depth of the excavation/trench and construction equipment, traffic should be limited near open excavation.

6.2 Groundwater Control

Based on the subsurface conditions encountered at this site, groundwater seepage or infiltration from the native soils into the shallow temporary excavations during construction is expected. However, it is anticipated that pumping from open sumps should be sufficient to control groundwater inflow. Any groundwater seepage or infiltration entering the excavation should be removed from the excavation by pumping from sumps within the excavations. Surface water runoff into the excavation should be minimized and diverted away from the excavation if possible.

A permit to take water (PTTW) is required from Ministry of Environment and Climate Change (MOECC), Ontario Reg. 387/04, if more than 400,000 litres per day of groundwater will be pumped during a construction period less than 30 days. Registration in the Environmental Activity and Sector Registry (EASR) is required when the takings of ground water and storm water for the purpose of dewatering construction projects range between 50,000 and 400,000 litres per day.

Based on the field investigation through localized borings, it is anticipated that pumping of groundwater will not exceed 50,000 litres per day. As such, no PTTW nor registration in the EASR is anticipated to be required for the construction of the proposed warehouse at this site.

6.3 Pipe Bedding Requirements

It is anticipated that any underground services required as part of this project will be founded over clayey silt. Alternately, underground services may be founded over properly prepared and approved structural fill, where excavation below the invert is required. Consequently all organic material should be removed down to a suitable bearing layer. Any sub-excavation of disturbed soil should be removed and replaced with a Granular B Type II or I or approved equivalent, laid in loose lifts of thickness not exceeding 300 mm and compacted to 95% of its SPMDD. Bedding, thickness of cover material and compaction requirements for any pipes should conform to the manufacturers design requirements and to the detailed installations outlined in the Ontario Provincial Standard Specifications (OPSS) and any applicable standards or requirements.

If services are required to be founded below the groundwater table the native materials may be sensitive to disturbances and may also be susceptible to piping and scouring from water pressure at the base of the excavation. Therefore, special precautions should be taken in these areas to stabilize and confine the base of the excavation such as using recompression (thicker bedding) and/or dewatering methods (pre-pumping). In order to properly compact the bedding, the water table should be kept at least 300 mm below the base of the excavation at all time during the installation of any sewers and structures.

As an alternative to Granular A bedding and only where wet conditions are encountered, the use of “clear stone” bedding, such as 19 mm clear stone, **OPSS 1004**, may be considered only in conjunction with a suitable geotextile filter (such as terrafix 270R or approved equivalent). Without proper filtering, there may be entry of fines from native soils and trench backfill into the bedding, which could result in loss of support to the pipes and possible surface settlements. The sub-bedding, bedding and cover materials should be

compacted in maximum 200 mm thick lifts to at least 95% of its SPMDD within ±2% of its optimum moisture content using suitable vibratory compaction equipment.

6.4 Trench Backfill

All service trenches should be backfilled using compactable material, free of organics, debris and large cobbles or boulders. Acceptable native materials (if encountered and where possible) should be used as backfill between the roadway subgrade level and the depth of seasonal frost penetrations (i.e. 1.8 m below finished grade) in order to reduce the potential for differential frost heaving between the new excavated trench and the adjacent section of roadway. Where native backfill is used, it should match the native materials exposed on the trench walls. Backfill below the zone of seasonal frost penetration could consist of either acceptable native material or imported granular material conforming to OPSS Granular B Type II or I. Any boulders larger than 150 mm in size should not be used as trench backfill.

To minimize future settlement of the backfill and achieve an acceptable subgrade for the roadway, the trench should be compacted in maximum 300 mm thick lifts to at least 95% of its SPMDD. The specified density may be reduced where the trench backfill is not located within or in close proximity to existing roadways or any other structures.

For trenches carried out in existing paved areas, transitions should be constructed to ensure that proper compaction is achieved between any new pavement structure and the existing pavement structure to minimize potential future differential settlement between the existing and new pavement structure. The transition should start at the subgrade level and extend to the underside of the asphaltic concrete level (if any) at a 1 horizontal to 1 vertical slope. This is especially important where trench boxes are used and where no side slopes are provided to the excavation. Where asphaltic concrete is present, it should be cut back to a minimum of 150 mm from the edge of the excavation to allow for proper compaction between the new and existing pavement structures.

7 Reuse of On-Site Soils

The existing surficial overburden soils consist mostly of silty sand to clayey silt. These materials are considered to be frost susceptible and should not be used as backfill material directly against foundation walls or underneath unheated concrete slabs. However, these could be reused as general backfill material (service trenches, general landscaping/backfilling) if it can be compacted according to the specifications outlined herein at the time of construction and found free from any waste, organics and debris. Any imported material shall conform to OPSS Granular B – Type II or I, SSM or approved equivalent.

It should be noted that the adequacy of any material for reuse as backfill will depend on its water content at the time of its use and on the weather conditions prevailing prior to and during that time. Therefore, all excavated materials to be reused shall be stockpiled in a manner that will prevent any significant changes in their moisture content, especially during wet conditions. Any excavated materials proposed for reuse should be stockpiled in a manner to promote drying and should be inspected and approved for reuse by a geotechnical engineer.

8 Recommended Pavement Structure

It is anticipated that the subgrade soils for the new access lanes parking areas will consist mostly of silty sand. The construction will be acceptable over the undisturbed native

material once all organic material, or otherwise deleterious material are removed from the subgrade area. Furthermore, the subgrade must be compacted using a suitable heavy duty compacting equipment and approved by a geotechnical engineer prior to placing any granular base material.

The following **Table 5** presents the recommended pavement structures to be constructed over a stable subgrade along the proposed parking areas and access lanes as part of this project.

Table 5: Recommended Pavement Structure

Course	Material	Thickness (mm)	
		Light Duty Parking Area (mm)	Heavy Duty Parking Area (Access Roads, Fire Routes and Trucks) (mm)
Surface	HL3/SP12.5 A/C	50	40
Binder	HL8/SP19.0 A/C	-	50
Base course	Granular A	150	150
Sub base	Granular B Type II	350	450
Total:		550	690

Performance Graded Asphaltic Cement (PGAC) **58-34** is recommended for this project.

The base and subbase granular materials shall conform to **OPSS 1010** material specifications. Any proposed materials shall be tested and approved by a geotechnical engineer prior to delivery to the site and shall be compacted to 98% of its SPMDD. Asphaltic concrete shall conform to **OPSS 1150** and be placed and compacted to at least 93% of the Marshall Density. The mix and its constituents shall be reviewed, tested and approved by a geotechnical engineer prior to delivery to the site.

8.1 Paved Areas & Subgrade Preparation

The access lanes and parking areas shall be stripped of vegetation, debris and other obvious objectionable fill material. Following the backfilling and satisfactory compaction of any underground service trenches up to the subgrade level, the subgrade shall be shaped, crowned and proof-rolled. A loaded Tandem axle, dual wheel dump truck or approved equivalent heavy duty smooth drum roller shall be used for proof-rolling. Any resulting loose/soft areas should be sub-excavated down to an adequate bearing layer and replaced with approved backfill.

The preparation of subgrade shall be scheduled and carried out in manner so that a protective cover of overlying granular material (if required) is placed as quickly as possible in order to avoid unnecessary circulation by heavy equipment, except on unexcavated or protected surfaces. Frost protection of the surface shall be implemented if works are carried out during the winter season.

The performance of the pavement structure is highly dependent on the subsurface groundwater conditions and maintaining the subgrade and pavement structure in a dry condition. The surface of the pavement should be properly graded to direct runoff water towards suitable drainage features. It is recommended that the lateral extent of the

subbase and base layers not be terminated vertically immediately behind the curb/edge of pavement line but be extended beyond the curb.

9 INSPECTION SERVICES

The engagement of the services of the geotechnical consultant during construction is recommended to confirm that the subsurface conditions throughout the proposed site do not materially differ from those given in the report and that the construction activities do not adversely affect the intent of the design.

All footing areas and any structural fill areas for the proposed structures should be inspected by LRL to ensure that a suitable subgrade has been reached and properly prepared. The placing and compaction of any granular materials beneath the foundations and slab-on-grade should be inspected to ensure that the materials used conform to the grading and compaction specifications.

The subgrade for the pavement areas and underground services should be inspected and approved by geotechnical personnel. In-situ density testing should be carried out on the pavement granular materials, pipe bedding and backfill to ensure the materials meet the specifications for required compaction.

If footings are to be constructed during winter season, the footing subgrade should be protected from freezing temperatures using suitable construction techniques.

10 REPORT CONDITIONS AND LIMITATIONS

It is stressed that the information presented in this report is provided for the guidance of the designers and is intended for this project only. The use of this report as a construction document or its use by a third party beyond the client specifically listed in the report is neither intended nor authorized by LRL Associates Ltd. Contractors bidding on or undertaking the works should examine the factual results of the investigation, satisfy themselves as to the adequacy of the information for construction, and make their own interpretation of the factual data as it affects their construction techniques, schedule, safety and equipment capabilities.

The professional services for this project include only the geotechnical aspects of the subsurface conditions at this site. The presence or implications of possible contamination resulting from previous uses or activities at this site or adjacent properties, and/or resulting from the introduction onto the site of materials from off-site sources are outside the terms of reference for this report.

The recommendations provided in this report are based on subsurface data obtained at the specific boring locations only. Boundaries between zones presented on the borehole are often not distinct but transitional and were interpreted. Experience indicates that the subsurface soil and groundwater conditions can vary significantly between and beyond the test locations. For this reason, the recommendations given in this report are subject to a field verification of the subsurface soil conditions at the time of construction.

The recommendations are applicable only to the project described in this report. Any changes to the project will require a review by LRL Associates Ltd., to ensure compatibility with the recommendations contained in this project.

We trust this report provides sufficient information for your present purposes. If you have any questions concerning this report or if we may be of further services to you, please do not hesitate to contact the undersigned.

Yours truly,
LRL Associates Ltd.

Brad Johnson, P.Eng.
Geotechnical Engineer

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APPENDIX A
Site and Borehole Location Plan

LRJ
ENGINEERING | INGÉNIERIE
5430 Canotek Road | Ottawa, ON, K1J 9G2
www.lrl.ca | (613) 842-3434

PROJECT

GEOTECHNICAL INVESTIGATION
PROPOSED WAREHOUSE DEVELOPMENT
363 ENTREPRENEUR CRESCENT
VARS, ONTARIO

DRAWING TITLE

SITE LOCATION
SOURCE: GEOTTAWA

CLIENT	DATE	PROJECT
ENTREPRENEUR HOLDING CORPORATION	NOVEMBER 2022	220487

FIGURE 1

LRJ
ENGINEERING | INGÉNIERIE
5430 Canotek Road | Ottawa, ON, K1J 9G2
www.lrl.ca | (613) 842-3434

PROJECT

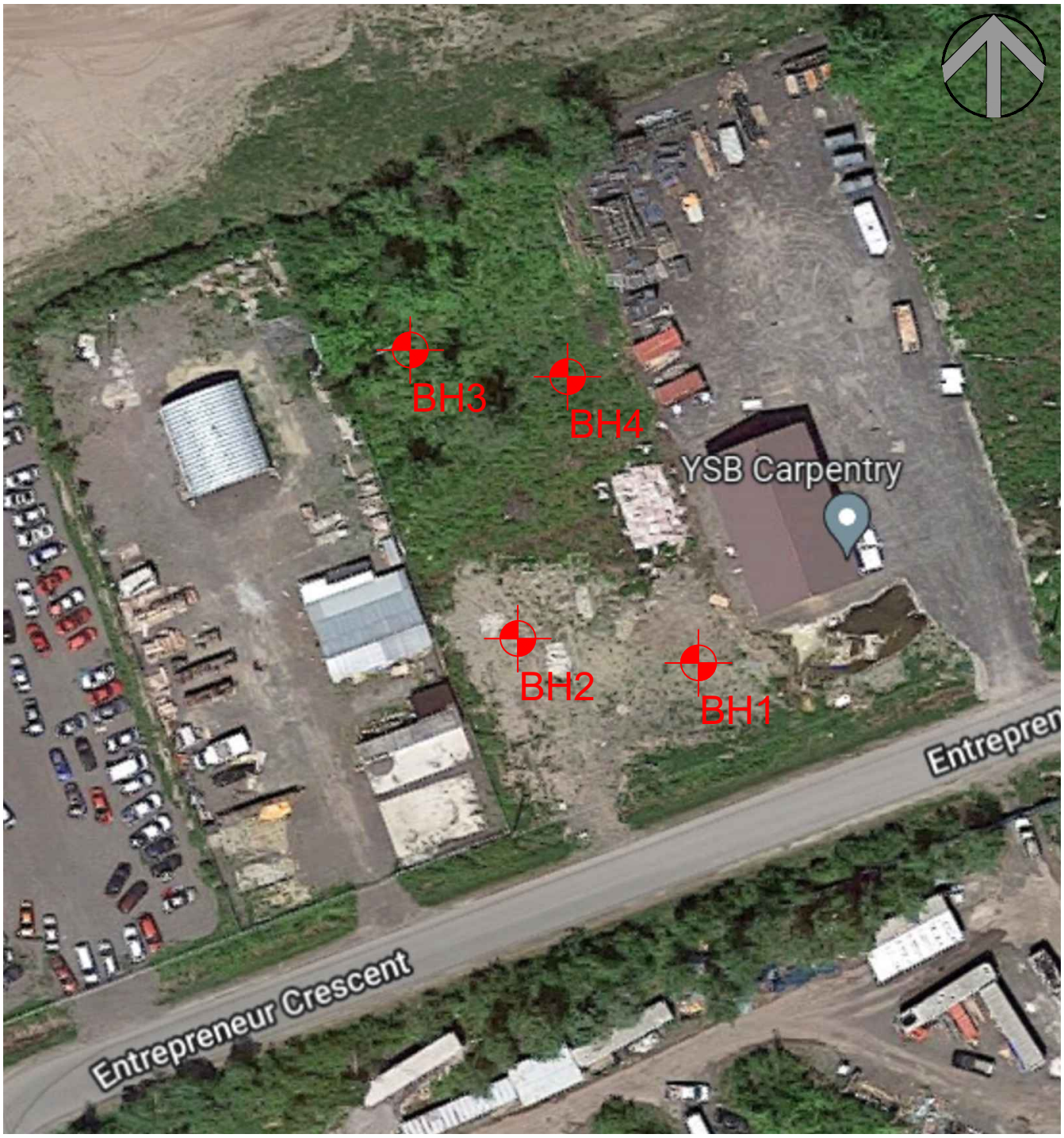
GEOTECHNICAL INVESTIGATION
PROPOSED WAREHOUSE DEVELOPMENT
363 ENTREPRENEUR CRESCENT
VARS, ONTARIO

DRAWING TITLE

BOREHOLE LOCATION
SOURCE: GOOGLE AERIAL VIEW

CLIENT	DATE	PROJECT
ENTREPRENEUR HOLDING CORPORATION	NOVEMBER 2022	220487

FIGURE 2



APPENDIX B
Borehole Logs

Borehole Log: BH1

Project No.: 220487 **Project:** Proposed Warehouse

Client: Entrepreneur Holding Corp. **Location:** 363 Entrepreneur Cres. Vars ON

Date: November 17, 2022 **Field Personnel:** BJ

Driller: CCC Geotech and Enviro Drilling **Drilling Equipment:** Track Mount CME 75 **Drilling Method:** Hollow Stew Auger

Depth (ft / m)	Soil Description	Elev./Depth (m)	Type	Sample Number	N or RQD	Recovery (%)
0 / 0	Ground Surface	100.28				
0 – 3 / 0 – 1	**FILL MATERIAL** crushed stone, grey, moist, dense.	0.00		SS1	34	42
				SS2	19	58
3 – 4 / 1	**SILTY SAND** brown, moist, compact.	99.22 1.07				
4 – 13 / 1 – 4	**CLAYEY SILT** trace sand, grey, firm to very soft, wet.	98.83 1.45		SS3	4	50
				SS4	WH	100
				SS5	WH	100
13 – 23 / 4 – 7	**SILTY CLAY** grey, very soft, wet.	96.16 4.12		SS6	WH	100
				SS7	WH	100
23 / 7	End of Borehole	93.28 7.00				

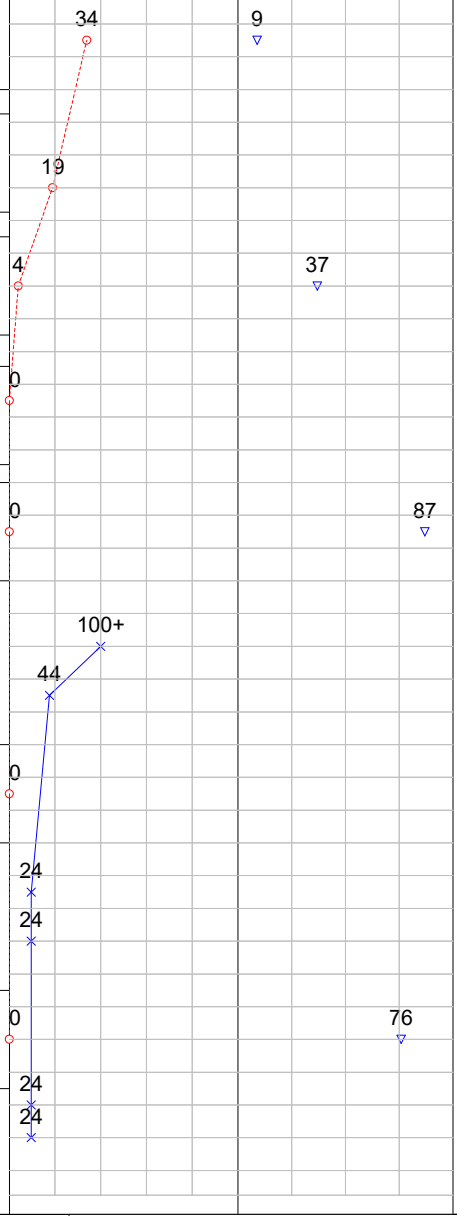
Shear Strength (kPa) 50 150

SPT N Value (Blows/0.3 m) 20 40 60 80

Water Content (%) 25 50 75

Liquid Limit (%) 25 50 75

Monitoring Well Details



Easting: 465773 m **Northing:** 5020883 m

Site Datum: TBM - Top of Culvert located at Southwest of Driveway entrance. (100.00 m)

Groundsurface Elevation: 100.285 m **Top of Riser Elev.:** NA

Hole Diameter: 200 mm **Monitoring Well Diameter:** N/A

NOTES:

Borehole Log: BH2

Project No.: 220487 **Project:** Proposed Warehouse

Client: Entrepreneur Holding Corp. **Location:** 363 Entrepreneur Cres. Vars ON

Date: November 17, 2022 **Field Personnel:** BJ

Driller: CCC Geotech and Enviro Drilling **Drilling Equipment:** Track Mount CME 75 **Drilling Method:** Hollow Stew Auger

Depth (ft)	Depth (m)	Soil Description	Elev./Depth (m)	Type	Sample Number	N or RQD	Recovery (%)	Shear Strength (kPa) / SPT N Value (Blows/0.3 m)	Water Content (%) / Liquid Limit (%)	Monitoring Well Details
		Ground Surface	100.17							
0–2	0	**FILL MATERIAL** crushed stone, grey, moist, dense.	0.00 / 99.57		SS1	30	42	30		
2–4	1	**SILTY SAND** brown, moist, compact.	0.60 / 98.72		SS2	15	50	15	22	
4–6	2	**CLAYEY SILT** trace sand, grey, firm to very soft, wet.	1.45 / 96.05		SS3	1	50	1		
6–8					SS4	WH	58	0	65	
8–10	3				SS5	WH	75	0		
10–13	4							20 / 30		
13–15		**SILTY CLAY** grey, very soft, wet.	4.12		SS6	WH	100	0		
15–19	5							24 / 30		

Easting: 465762 m **Northing:** 5020885 m

Site Datum: TBM - Top of Culvert located at Southwest of Driveway entrance. (100.00 m)

Groundsurface Elevation: 100.165 m **Top of Riser Elev.:** NA

Hole Diameter: 200 mm **Monitoring Well Diameter:** N/A

NOTES:

Borehole Log (continued): BH2

Project No.: 220487 **Project:** Proposed Warehouse

Client: Entrepreneur Holding Corp. **Location:** 363 Entrepreneur Cres. Vars ON

Date: November 17, 2022 **Field Personnel:** BJ

Driller: CCC Geotech and Enviro Drilling **Drilling Equipment:** Track Mount CME 75 **Drilling Method:** Hollow Stew Auger

SUBSURFACE PROFILE		SAMPLE DATA					Shear Strength (kPa) 50 150 / SPT N Value (Blows/0.3 m) 20 40 60 80	Water Content (%) 25 50 75 / Liquid Limit (%) 25 50 75	Monitoring Well Details
Depth	Soil Description	Elev./Depth (m)	Type	Sample Number	N or RQD	Recovery (%)			
20									
21				SS7	WH	100	0	85	
22							24		
23	7						24		
24							0		
25							0		
26	8						0		
27							0		
28							0		
29							0		
30	9						0		
31							0		
32							0		
33	10						0		
34							0		
35							0		
36	11						0		
37							0		
38							0		
39									

NOTES

Borehole Log (continued): BH2

Project No.: 220487 **Project:** Proposed Warehouse

Client: Entrepreneur Holding Corp. **Location:** 363 Entrepreneur Cres. Vars ON

Date: November 17, 2022 **Field Personnel:** BJ

Driller: CCC Geotech and Enviro Drilling **Drilling Equipment:** Track Mount CME 75 **Drilling Method:** Hollow Stew Auger

SUBSURFACE PROFILE		SAMPLE DATA					Shear Strength (kPa) 50 150 / SPT N Value (Blows/0.3 m) 20 40 60 80	Water Content (%) 25 50 75 / Liquid Limit (%) 25 50 75	Monitoring Well Details
Depth	Soil Description	Elev./Depth (m)	Type	Sample Number	N or RQD	Recovery (%)			
40							0		
41							0		
42							0		
43	13						5		
44							5		
45							6		
46	14						6		
47							7		
48							7		
49	15						6		
50							7		
51							9		
52	16						8		
53							9		
54							10		
55							11		
56	17						12		
57							13		
58							12		
59							13		

NOTES

Borehole Log (continued): BH2

Project No.: 220487 **Project:** Proposed Warehouse

Client: Entrepreneur Holding Corp. **Location:** 363 Entrepreneur Cres. Vars ON

Date: November 17, 2022 **Field Personnel:** BJ

Driller: CCC Geotech and Enviro Drilling **Drilling Equipment:** Track Mount CME 75 **Drilling Method:** Hollow Stew Auger

SUBSURFACE PROFILE		SAMPLE DATA					Shear Strength (kPa) 50 150 / SPT N Value (Blows/0.3 m) 20 40 60 80	Water Content (%) 25 50 75 / Liquid Limit (%) 25 50 75	Monitoring Well Details
Depth	Soil Description	Elev./Depth (m)	Type	Sample Number	N or RQD	Recovery (%)			
60							17		
61		81.56					21		
	INFERRED GLACIAL TILL	18.60					20		
62	19						14		
63							20		
64							15		
65							15		
66	20						15		
67							15		
68							13		
69	21						18		
70							15		
71							15		
72	22						16		
73							17		
74							17		
75							16		
	23						27		
76							35		
77							47		
78									

NOTES

Borehole Log (continued): BH2

Project No.: 220487 **Project:** Proposed Warehouse

Client: Entrepreneur Holding Corp. **Location:** 363 Entrepreneur Cres. Vars ON

Date: November 17, 2022 **Field Personnel:** BJ

Driller: CCC Geotech and Enviro Drilling **Drilling Equipment:** Track Mount CME 75 **Drilling Method:** Hollow Stew Auger

SUBSURFACE PROFILE		SAMPLE DATA					Shear Strength (kPa) 50 150 / SPT N Value (Blows/0.3 m) 20 40 60 80	Water Content (%) 25 50 75 / Liquid Limit (%) 25 50 75	Monitoring Well Details
Depth	Soil Description	Elev./Depth (m)	Type	Sample Number	N or RQD	Recovery (%)			
79							44		
80							50		
		75.67							
	End of Borehole	24.50							
81									
82	25								
83									
84									
85									
	26								
86									
87									
88									
	27								
89									
90									
91									
92	28								
93									
94									
95	29								
96									
97									
98									

NOTES

Borehole Log: BH3

Project No.: 220487 **Project:** Proposed Warehouse

Client: Entrepreneur Holding Corp. **Location:** 363 Entrepreneur Cres. Vars ON

Date: November 17, 2022 **Field Personnel:** BJ

Driller: CCC Geotech and Enviro Drilling **Drilling Equipment:** Track Mount CME 75 **Drilling Method:** Hollow Stew Auger

Depth (ft)	Depth (m)	Soil Description	Elev./Depth (m)	Type	Sample Number	N or RQD	Recovery (%)	Shear Strength (kPa) / SPT N Value (Blows/0.3 m)	Water Content (%) / Liquid Limit (%)	Monitoring Well Details
		Ground Surface	100.18							
0–2	0–0.6	**FILL MATERIAL** crushed stone, grey, moist, dense.	0.00 / 99.49		SS1	36	50	36	11	
3–4	1	**SILTY SAND** brown, moist, compact.	0.69 / 98.73		SS2	14	50	14		
5–7	1.5–2	**CLAYEY SILT** trace sand, grey, very soft, wet.	1.45		SS3	1	100	1	83	
8–9	2.5							20 / 32		
10–12	3–3.5	-Sand seam at about 3.65 m bgs			SS4	WH	100	0		
13	4		96.06							
14–16	4.5–5	**SILTY CLAY** grey, very soft, wet.	4.12		SS5	WH	100	0	61 / 90	
17–19	5.5							32 / 32		
20–22	6.5							24 / 24		
23	7	End of Borehole	93.18 / 7.00							

Monitoring Well Details: 0.5 m bgs Dec 6, 2022

Easting: 465745 m **Northing:** 5020920 m

Site Datum: TBM - Top of Culvert located at Southwest of Driveway entrance. (100.00 m)

Groundsurface Elevation: 100.180 m **Top of Riser Elev.:** NA

Hole Diameter: 200 mm **Monitoring Well Diameter:** 19 mm

NOTES:

Borehole Log: BH4

Project No.: 220487 **Project:** Proposed Warehouse

Client: Entrepreneur Holding Corp. **Location:** 363 Entrepreneur Cres. Vars ON

Date: November 17, 2022 **Field Personnel:** BJ

Driller: CCC Geotech and Enviro Drilling **Drilling Equipment:** Track Mount CME 75 **Drilling Method:** Hollow Stew Auger

Depth (ft / m)	Soil Description	Elev./Depth (m)	Type	Sample Number	N or RQD	Recovery (%)	Shear Strength (kPa) / SPT N Value (Blows/0.3 m)	Water Content (%) / Liquid Limit (%)	Monitoring Well Details
0 / 0	Ground Surface	100.22							
0–3 / 0–1	**FILL MATERIAL** crushed stone, grey, moist, dense.	0.00 – 99.63		SS1	35	33	35		
3–5 / 1–1.5	**SILTY SAND** brown, moist, compact.	0.60 – 98.77		SS2	14	50	14	24	
5–13 / 1.5–4	**CLAYEY SILT** trace sand, grey, firm to very soft, wet.	1.45 – 96.10		SS3	2	100	2	67 / 77	
				SS4	WH	100	0		
13–23 / 4–7	**SILTY CLAY** grey, very soft, wet.	4.12 – 93.22					24, 24, 24, 22, 26, 24, 28, 24		
23 / 7	End of Borehole	7.00							

Easting: 465770 m **Northing:** 5020920 m

Site Datum: TBM - Top of Culvert located at Southwest of Driveway entrance. (100.00 m)

Groundsurface Elevation: 100.225 m **Top of Riser Elev.:** NA

Hole Diameter: 200 mm **Monitoring Well Diameter:** N/A

NOTES:

APPENDIX C
Symbols and Terms used in Borehole Logs

Symbols and Terms Used on Borehole and Test Pit Logs

1. Soil Description

The soil descriptions presented in this report are based on commonly accepted methods of classification and identification employed in geotechnical practice. Classification and identification of soil involves some judgement and LRL Associates Ltd. does not guarantee descriptions as exact, but infers accuracy to the extent that is common in current geotechnical practice. Boundaries between zones on the logs are often not distinct but transitional and were interpreted.

a. Proportion

The proportion of each constituent part, as defined by the grain size distribution, is denoted by the following terms:

Term	Proportions
"trace"	1% to 10%
"some"	10% to 20%
prefix (i.e. "sandy" silt)	20% to 35%
"and" (i.e. sand "and" gravel)	35% to 50%

b. Compactness and Consistency

The state of compactness of granular soils is defined on the basis of the Standard Penetration Number (N) as per ASTM D-1586. It corresponds to the number of blows required to drive 300 mm of the split spoon sampler using a metal drop hammer that has a weight of 62.5 kg and free fall distance of 760 mm. For a 600 mm long split spoon, the blow counts are recorded for every 150 mm. The "N" value is obtained by adding the number of blows from the 2nd and 3rd count. Technical refusal indicates a number of blows greater than 50.

The consistency of clayey or cohesive soils is based on the shear strength of the soil, as determined by field vane tests and by a visual and tactile assessment of the soil strength.

The state of compactness of granular soils is defined by the following terms:

State of Compactness Granular Soils	Standard Penetration Number "N"	Relative Density (%)
Very loose	0 – 4	<15
Loose	4 – 10	15 – 35
Compact	10 - 30	35 – 65
Dense	30 - 50	65 - 85
Very dense	> 50	> 85

The consistency of cohesive soils is defined by the following terms:

Consistency Cohesive Soils	Undrained Shear Strength (C_u) (kPa)	Standard Penetration Number "N"
Very soft	<12.5	<2
Soft	12.5 - 25	2 - 4
Firm	25 - 50	4 - 8
Stiff	50 - 100	8 - 15
Very stiff	100 - 200	15 - 30
Hard	>200	>30

c. Field Moisture Condition

Description (ASTM D2488)	Criteria
Dry	Absence of moisture, dusty, dry to touch.
Moist	Dump, but not visible water.
Wet	Visible, free water, usually soil is below water table.

2. Sample Data

a. Elevation depth

This is a reference to the geodesic elevation of the soil or to a benchmark of an arbitrary elevation at the location of the borehole or test pit. The depth of geological boundaries is measured from ground surface.

b. Type

Symbol	Type	Letter Code
	Auger	AU
	Split Spoon	SS
	Shelby Tube	ST
	Rock Core	RC

c. Sample Number

Each sample taken from the borehole is numbered in the field as shown in this column.

LETTER CODE (as above) – Sample Number.

d. Recovery (%)

For soil samples this is the percentage of the recovered sample obtained versus the length sampled. In the case of rock, the percentage is the length of rock core recovered compared to the length of the drill run.

3. Rock Description

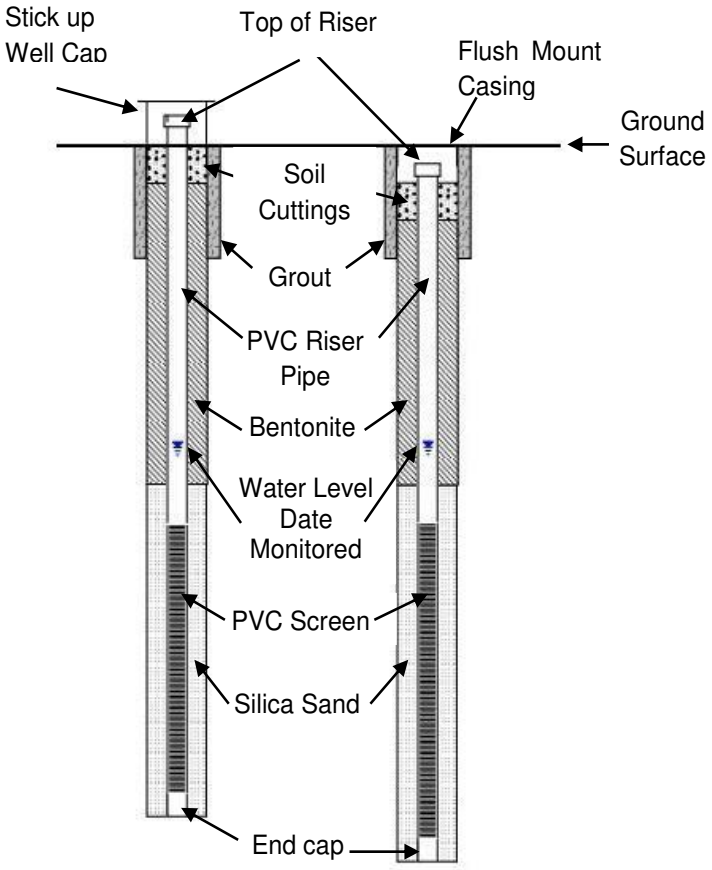
Rock Quality Designation (RQD) is a rough measure of the degree of jointing or fracture in a rock mas. The RQD is calculated as the cumulative length of rock pieces recovered having lengths of 100 mm or more divided by the length of coring. The qualitative description of the bedrock based on RQD is given below.

Rock Quality Designation (RQD) (%)	Description of Rock Quality
0 –25	Very poor
25 – 50	Poor
50 – 75	Fair
75 – 90	Good
90 – 100	Excellent

Strength classification of rock is presented below.

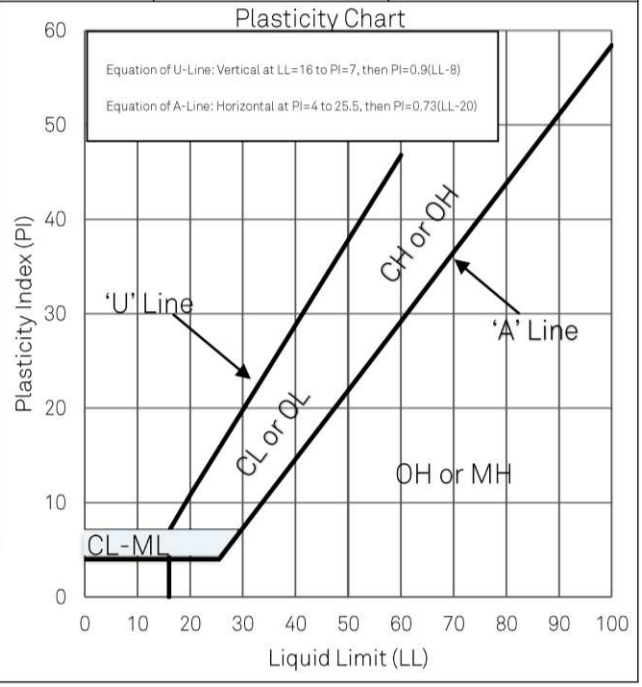
Strength Classification	Range of Unconfined Compressive Strength (MPa)
Extremely weak	< 1
Very weak	1 – 5
Weak	5 – 25
Medium strong	25 – 50
Strong	50 – 100
Very strong	100 – 250
Extremely strong	> 250

4. General Monitoring Well Data



5. Classification of Soils for Engineering Purposes (ASTM D2487)

(United Soil Classification System)

Major divisions			Group Symbol	Typical Names	Classification Criteria		
Coarse-grained soils More than 50% retained on No. 200 sieve* (>0.075 mm)	Gravels More than 50% of coarse fraction retained on No. 4 sieve(4.75 mm)	Clean gravels <5% fines	GW	Well-graded gravel	If 15% sand add "with sand" to group name.	Classification on basis of percentage of fines: Less than 5% pass No. 200 sieve - GW, GP, SW, SP More than 12% pass No. 200 sieve - GM, GC, SM, SC 5 to 12% pass No. 200 sieve - Borderline classifications, use of dual symbols	$C_u = \frac{D_{60}}{D_{10}} \geq 4$; $C_c = \frac{(D_{30})^2}{D_{10} \times D_{60}}$ between 1 and 3
			GP	Poorly graded gravel			Not meeting either Cu or Cc criteria for GW
		Gravels with >12% fines	GM	Silty gravel			Atterberg limits below "A" line or PI less than 4 → Atterberg limits plotting in hatched area are borderline classifications requiring use of dual symbols
			GC	Clayey gravel			Atterberg limits on or above "A" line and PI > 7 → If fines are organic add "with orgnic fines" to group name
	Sands 50% or more of coarse fraction passes No. 4 sieve(<4.75 mm)	Clean sands <5% fines	SW	Well-graded sand	If 15% gravel add "with gravel to group name		$C_u = \frac{D_{60}}{D_{10}} \geq 6$; $C_c = \frac{(D_{30})^2}{D_{10} \times D_{60}}$ between 1 and 3
			SP	Poorly graded sand			Not meeting either Cu or C ccriteria for SW
		Sands with >12% fines	SM	Silty sand			Atterberg limits below "A" line or PI less than 4 → Atterberg limits plotting in hatched area are borderline classifications requiring use of dual symbols
			SC	Clayey sand			Atterberg limits on or above "A" line and PI > 7 → If fines are organic add "with orgnic fines" to group name
Fine-grained soils50% or more passes No. 200 sieve* (<0.075 mm)	Silts and Clays Liquid Limit <50%	Inorganic	ML	Silt	If 15 to 29% coarse-grained, add "with sand" or "with gravel" as appropriate. If > 30% coarse-grained, add "sandy" or "gravelly" as appropriate. Class as organic when oven dried liquid limit is < 75% of undried liquid limit.		
			CL	Lean Clay -low plasticity			
		Organic	OL	Organic clay or silt (Clay plots above 'A' Line)			
	Silts and Clays Liquid Limit >50%	Inorganic	MH	Elastic silt			
			CH	Fat Clay -high plasticity			
		Organic	OH	Organic clay or silt (Clay plots above 'A' Line)			
	Highly Organic Soils		PT	Peat, muck and other highly organic soils			

APPENDIX D
Laboratory Results

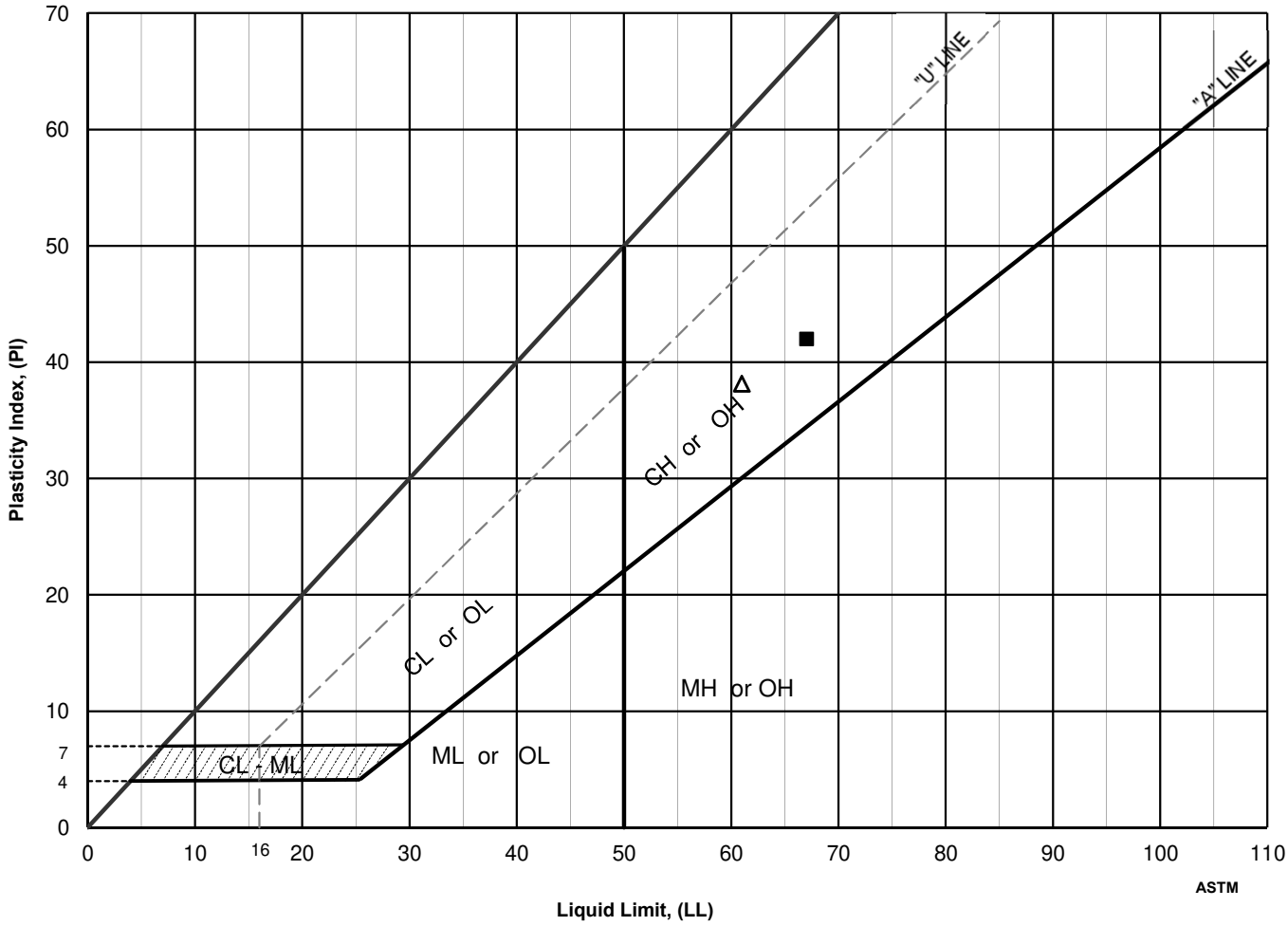
LRL Associates Ltd.

PLASTICITY INDEX

ASTM D 4318 / LS-703/704

Client:	Entrepreneur Holding Corporation	**File No.:**	220487
Project:	Geotechnical Investigation	**Report No.:**	1
Location:	363 Entrepreneur Crescent, Navan, ON.	**Date:**	November 17, 2022

Plasticity Chart



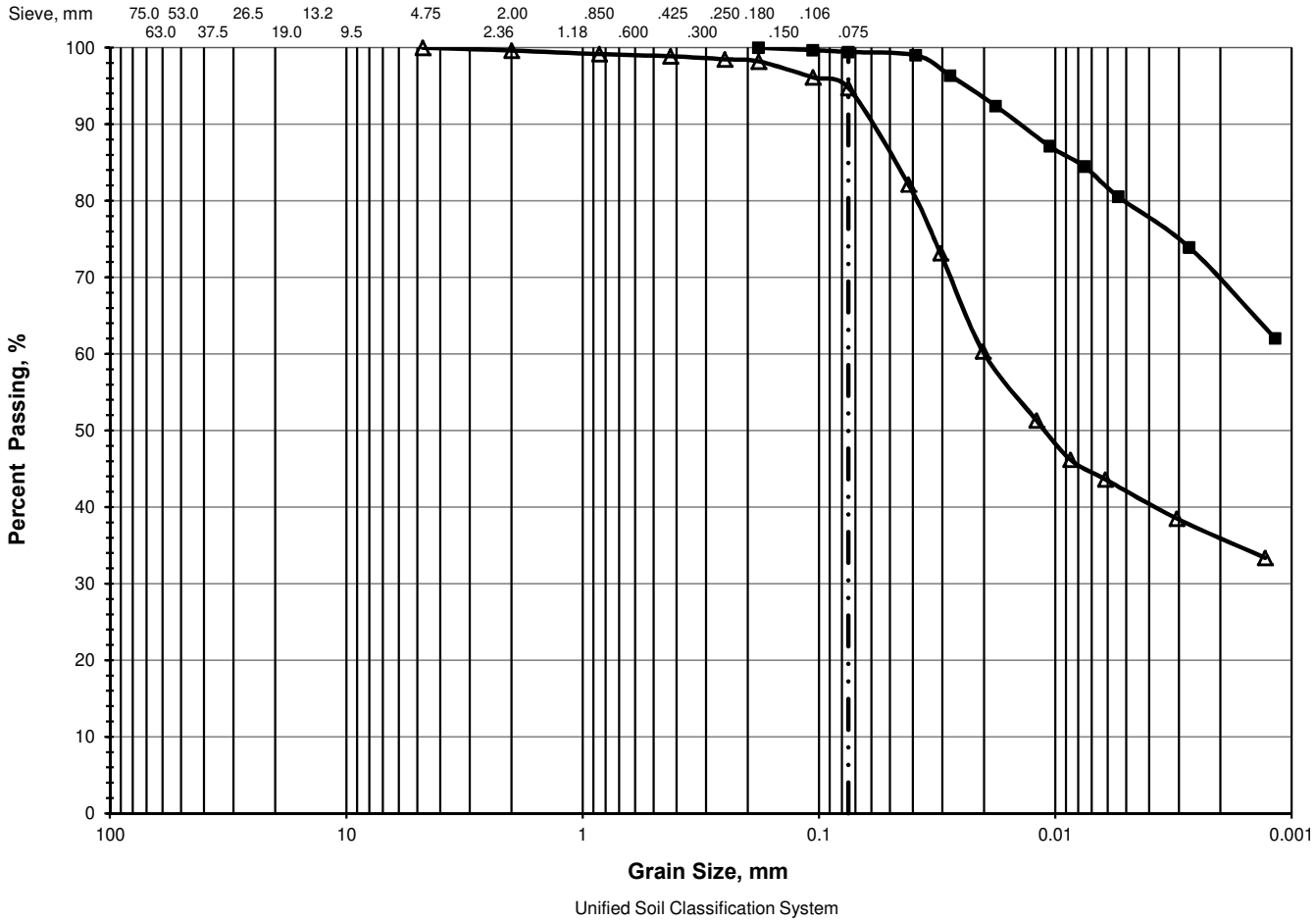
	Location	Sample	Depth, m	Moisture Content, %	Liquid Limit	Plastic Limit	Plasticity Index	Liquidity Index	Activity Number	USCS
△	BH 3	SS-5	4.57 - 5.18	90	61	23	38	1.75	n/d	CH
■	BH 4	SS-3	1.52 - 2.13	77	67	25	42	1.24	n/d	CH

LRL Associates Ltd.

PARTICLE SIZE ANALYSIS

ASTM D 422 / LS-702

Client:	Entrepreneur Holding Corporation	**File No.:**	220487
Project:	Geotechnical Investigation	**Report No.:**	2
Location:	363 Entrepreneur Crescent, Navan, ON.	**Date:**	November 17, 2022



Unified Soil Classification System

	> 75 mm	% GRAVEL		% SAND			% FINES	
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
△	0.0	0.0	0.0	0.4	0.8	4.1	59.3	35.4
■	0.0	0.0	0.0	0.0	0.0	0.6	31.0	68.4

	Location	Sample	Depth, m	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
△	BH 1	SS-3	1.52 - 2.13	0.0199	0.0111					
■	BH 2	SS-7	6.10 - 6.71							

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Certificate of Analysis

LRL Associates Ltd.
5430 Canotek Road
Ottawa, ON K1J 9G2
Attn: Brad Johnson

Client PO:
Project: 220487
Custody: 141038

Report Date: 6-Dec-2022
Order Date: 30-Nov-2022

Order #: 2249226

This Certificate of Analysis contains analytical data applicable to the following samples as submitted:

Paracel ID	Client ID
2249226-01	BH 4 5-7'

Approved By:

Milan Ralitsch, PhD

Senior Technical Manager

Analysis Summary Table

Analysis	Method Reference/Description	Extraction Date	Analysis Date
Anions	EPA 300.1 - IC, water extraction	2-Dec-22	2-Dec-22
pH, soil	EPA 150.1 - pH probe @ 25 °C, CaCl buffered ext.	1-Dec-22	2-Dec-22
Resistivity	EPA 120.1 - probe, water extraction	5-Dec-22	5-Dec-22
Solids, %	CWS Tier 1 - Gravimetric	1-Dec-22	2-Dec-22

Summary of Criteria Exceedances

(If this page is blank then there are no exceedances)

Only those criteria that a sample exceeds will be highlighted in red

Regulatory Comparison:

Paracel Laboratories has provided regulatory guidelines on this report for informational purposes only and makes no representations or warranties that the data is accurate or reflects the current regulatory values. The user is advised to consult with the appropriate official regulations to evaluate compliance. Sample results that are highlighted have exceeded the selected regulatory limit. Calculated uncertainty estimations have not been applied for determining regulatory exceedances.

Sample	Analyte	MDL / Units	Result	-	-

Certificate of Analysis

Report Date: 06-Dec-2022

Client: **LRL Associates Ltd.**

Order Date: 30-Nov-2022

Client PO:

Project Description: 220487

	Client ID:	BH 4 5-7'	-	-	-		
	Sample Date:	17-Nov-22 12:00	-	-	-	-	-
	Sample ID:	2249226-01	-	-	-		
	Matrix:	Soil	-	-	-		
	MDL/Units						
Physical Characteristics							
% Solids	0.1 % by Wt.	56.5	-	-	-	-	-
General Inorganics							
pH	0.05 pH Units	7.44	-	-	-	-	-
Resistivity	0.1 Ohm.m	21.2	-	-	-	-	-
Anions							
Chloride	5 ug/g	101	-	-	-	-	-
Sulphate	5 ug/g	78	-	-	-	-	-

Method Quality Control: Blank

Analyte	Result	Reporting Limit	Units	%REC	%REC Limit	RPD	RPD Limit	Notes
Anions								
Chloride	ND	5	ug/g					
Sulphate	ND	5	ug/g					
General Inorganics								
Resistivity	ND	0.10	Ohm.m					

Method Quality Control: Duplicate

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Anions									
Chloride	18.5	5	ug/g	18.1			2.4	20	
Sulphate	10.5	5	ug/g	9.28			12.3	20	
General Inorganics									
pH	8.02	0.05	pH Units	7.91			1.4	10	
Resistivity	21.4	0.10	Ohm.m	21.3			0.4	20	
Physical Characteristics									
% Solids	82.6	0.1	% by Wt.	82.4			0.2	25	

Method Quality Control: Spike

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Anions									
Chloride	126	5	ug/g	18.1	108	82-118			
Sulphate	121	5	ug/g	9.28	112	80-120			

Certificate of Analysis

Report Date: 06-Dec-2022

Client: **LRL Associates Ltd.**

Order Date: 30-Nov-2022

Client PO:

Project Description: 220487

Qualifier Notes:

Sample Data Revisions:

None

Work Order Revisions / Comments:

None

Other Report Notes:

n/a: not applicable

ND: Not Detected

MDL: Method Detection Limit

Source Result: Data used as source for matrix and duplicate samples

%REC: Percent recovery.

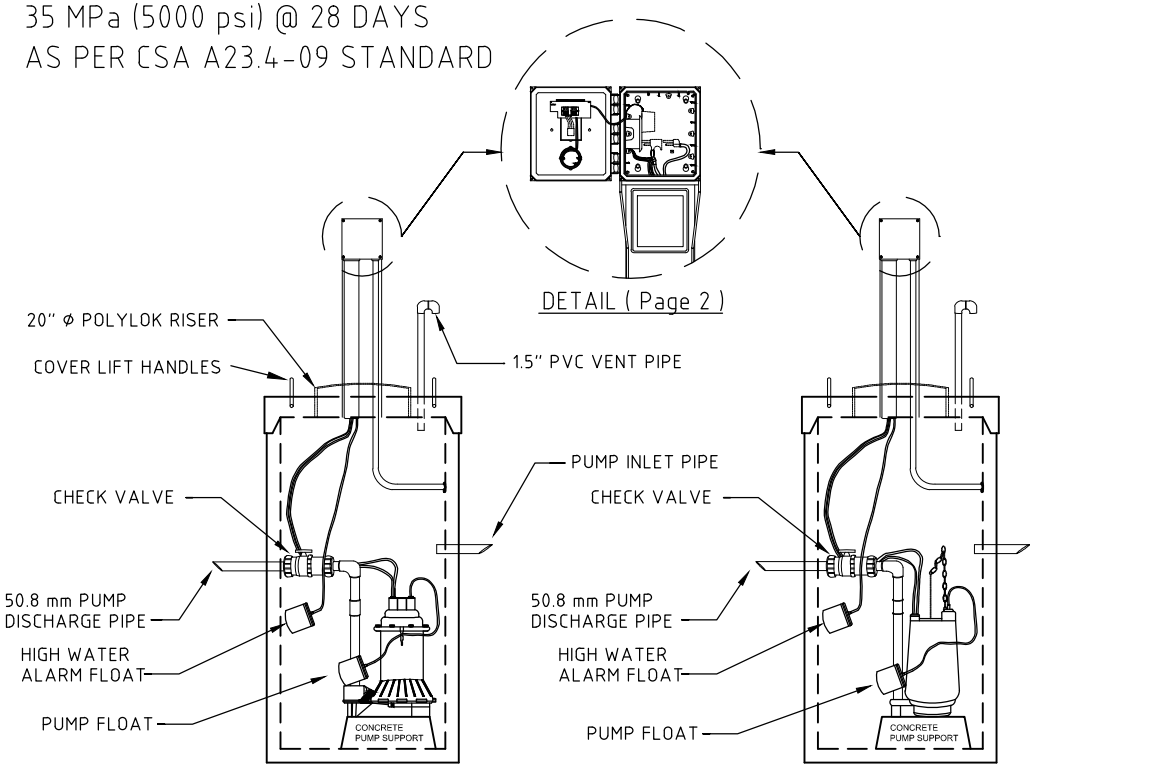
RPD: Relative percent difference.

NC: Not Calculated

Soil results are reported on a dry weight basis unlesss otherwise noted.

Where %Solids is reported, moisture loss includes the loss of volatile hydrocarbons.

6% - 8% AIR ENTRAINED
35 MPa (5000 psi) @ 28 DAYS
AS PER CSA A23.4-09 STANDARD



SRM 4 0.40 HP PUMP SYSTEM

MRG 20 2.0 HP GRINDER PUMP SYSTEM

BOTH PUMP SHOWN ARE 250 GAL / 1135 L PUMP STATIONS, NOT TO SCALE

SIDE VIEW

GENERAL NOTES:

A PUMP STATION IS REQUIRED WHEN A SEPTIC SYSTEM IS UNABLE TO FUNCTION BY GRAVITY.

FROM 8.6.1.3. (3) OF THE O.B.C. 2006, WHERE 2 OR MORE PUMPS ARE EMPLOYED WITHIN A DOSING TANK, THE PUMPS SHALL BE DESIGNED SUCH THAT THE PUMPS ALTERNATE DOSING, AND DOSING SHALL CONTINUE IN THE EVENT THAT ONE OF THE PUMP FAILS.

FROM 8.6.1.3. (4) OF THE O.B.C. 2006, WHERE A PUMP OR SIPHON IS REQUIRED, THE PUMP OR SIPHON SHALL BE DESIGNED TO DISCHARGE A DOSE OF AT LEAST 75% OF THE INTERNAL VOLUME OF THE DISTRIBUTION PIPE WITHIN A TIME PERIOD NOT EXCEEDING 15 MINUTES.

A PUMP STATION SHALL HAVE A WORKING VOLUME OF A THIRD OF THE DAILY FLOW OF THE SEPTIC SYSTEM IT IS DESIGNED FOR.

PUMP STATION ARE AVAILABLE IN MULTIPLE SIZES, AND MULTIPLE PUMP SIZES ALSO AVAILABLE.
DUAL PUMP STATION ALSO AVAILABLE, SEE LIST BELOW, VOLUME INDICATED IS MAXIMUM WORKING VOLUME:

175 GAL / 800 LITERS : 3 FEET ø - 4 FEET WELL TILE
250 GAL / 1135 LITERS : 3 FEET ø - 6 FEET WELL TILE
450 GAL / 2045 LITERS : 4 FEET ø - 6 FEET WELL TILE
DUAL - 760 GAL / 3450 LITERS : NORMAL 800 GAL / 3630 L TANK
DUAL - 1175 GAL / 5340 LITERS : NORMAL 1210 GAL / 5509 L TANK

ALARMS, ELECTRICAL BOXES AND CHECK VALVES MAY DIFFERS FROM ONE PUMP STATION SYSTEMS TO ANOTHER. SIMPLEX AND DUPLEX TIME DOSING CONTROL PANEL AVAILABLE.

16525 SIXTH RD, MOOSE CREEK, ON
KOC 1W0
PHONE : (613)-538-2381
FAX : (613)-538-4870

MOOSE CREEK CEMENT PRODUCTS (2006) LIMITED
PUMP STATION SIDE VIEW (Page 1 / 2)

SCALE	NOT TO SCALE	DATE	JULY 2011

MOOSE CREEK CEMENT PRODUCTS (2006) LIMITED 538-2381

TECHNICAL BROCHURE
B3872 R1

WW05 Series Model 3872

SUBMERSIBLE SEWAGE PUMPS

GOULDS WATER TECHNOLOGY
a xylem brand

FEATURES

Impeller: Glass-filled thermoplastic Full-Vortex design with pump out vanes for mechanical seal protection.

Casing and Base: Rugged glass-filled thermoplastic design provides superior strength and corrosion resistance.

Motor Housing: Cast iron for efficient heat transfer, strength, and durability.

Motor Cover: Thermoplastic cover with integral handle and float switch attachment points.

Bearings: Upper and lower heavy duty ball bearing construction.

Power Cable: Severe duty rated oil and water resistant.

O-ring: Provides positive sealing. Easily replaced during maintenance.

Stainless steel fasteners

AGENCY LISTINGS

By Canadian Standards Association

APPLICATIONS

Specifically designed for the following uses:

- Residential sewage systems
- Dewatering
- Water transfer

Anywhere waste or drainage must be disposed of quickly, quietly and efficiently.

SPECIFICATIONS

Pump:

- Solids handling capability: 2" maximum
- Capacities: up to 75 GPM
- Total heads: up to 18 feet
- Discharge size: 2" NPT
- Mechanical seal: carbon-rotary/ceramic-stationary, BUNA-N elastomers
- Temperature:
  104° F (40° C) continuous
  140° F (60° C) intermittent
- Class B Insulation
- Fasteners: 300 series stainless steel
- Capable of running dry without damage to components.

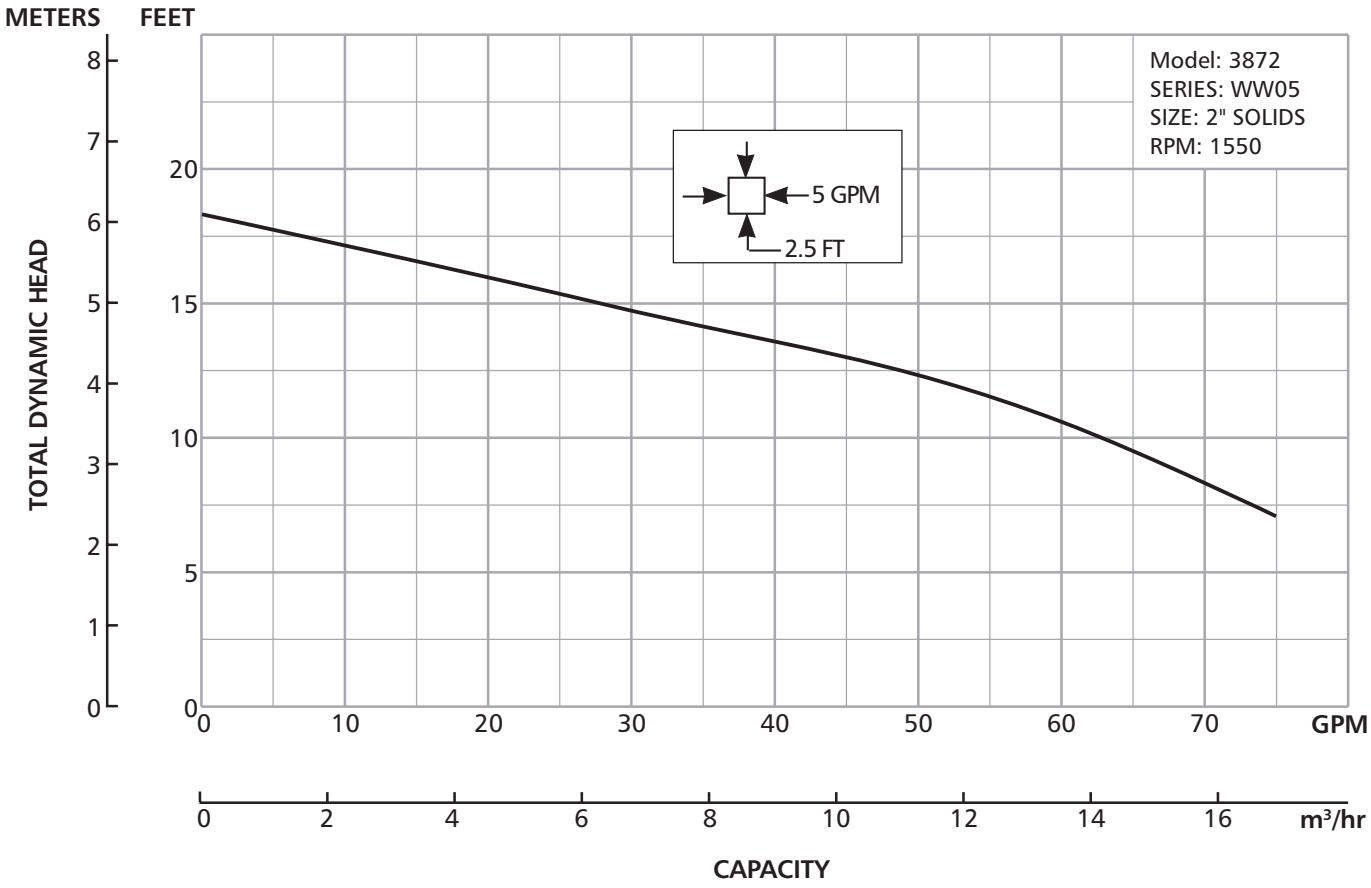
Motor

- Single phase: ½ HP, 115 or 230 V, 60 Hz, 1550 RPM, built in overload with automatic reset.
- Power cord: 10 foot standard length, 16/3 SJTW with three prong grounding plug. Optional 20 foot length, 16/3 SJTW with three prong grounding plug.
- Fully submerged in high grade turbine oil for lubrication and efficient heat transfer.

Available for automatic and manual operation. Automatic models include Mechanical Float Switch assembled and preset at the factory.

MODEL INFORMATION

Order No.	HP	Volts	Amps	Minimum Circuit Breaker	Phase	Float Switch Style	Cord Length	Discharge Connection	Minimum On Level	Minimum Off Level	Minimum Basin Diameter	Maximum Solids Size	Shipping Weight lbs/kg
WW0511	.5	115	13	20	1	Plug / No Switch	10'	2"	Manual	Manual	18"	2"	22 / 10
WW0511A						Piggyback / Wide-Angle	10'	2"	15"	9"	18"		23 / 10.4
WW0511F						Plug / No Switch	20'	2"	Manual	Manual	18"		22 / 10
WW0511AC						Piggyback / Wide-Angle	20'	2"	15"	9"	18"		23 / 10.4
WW0512		230	6.5	10		Plug / No Switch	10'	2"	Manual	Manual	18"		22 / 10
WW0512F						Plug / No Switch	20'	2"	Manual	Manual	18"		22 / 10



PERFORMANCE CHARTS

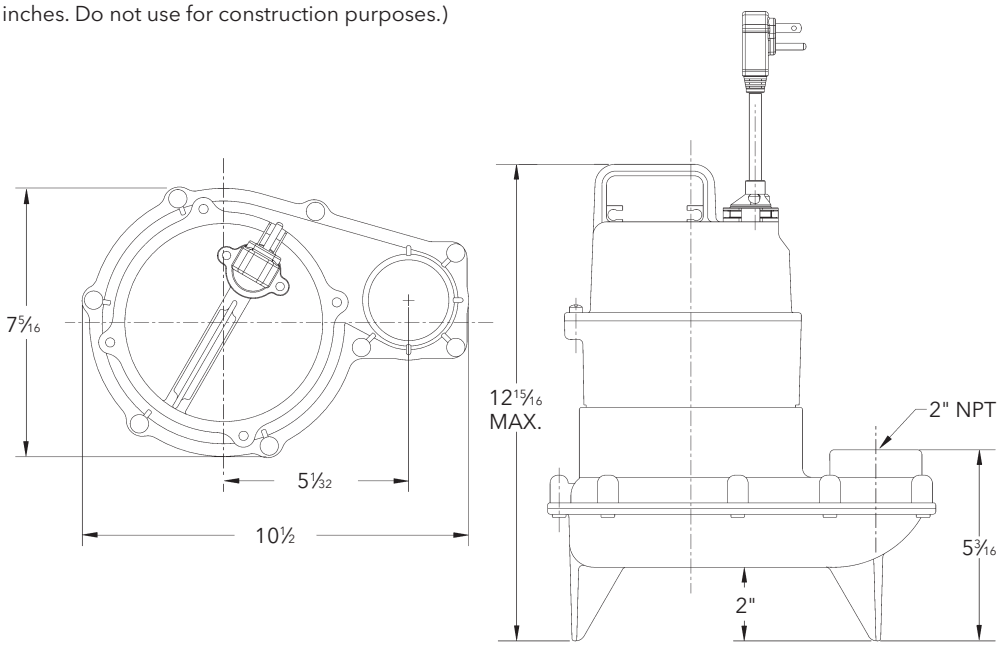
These charts show actual system performance with friction loss factored in for various discharge pipe lengths. Calculations and performance based on a system with 2" PVC, schedule 40 plastic pipe (C150), (4) 90° elbows, (1) check valve and (1) shut-off valve. Wastewater requires a minimum scouring velocity of 21 gpm for 2" pipe. Shaded areas do not provide min. scouring velocity - use only for gray water with no solids.

WW05 (3872)

	4	6	8	10	12	14	16
25	75	68	62	52	40	27	13
50	67	61	54	45	35	24	12
75	61	55	48	40	32	22	11
100	56	50	44	37	29	21	11
150	48	43	38	32	26	18	10
200	43	39	34	29	23	17	10
250	39	35	31	26	21	15	10
300	35	32	29	24	20	14	10

DIMENSIONS

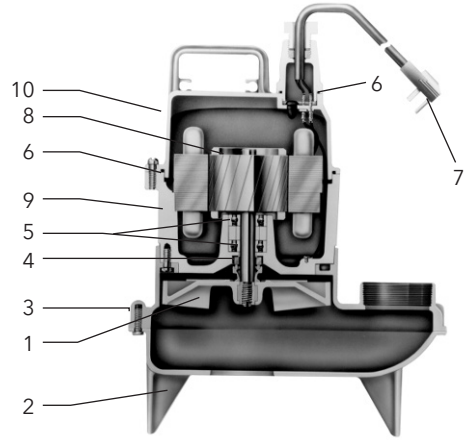
(All dimensions are in inches. Do not use for construction purposes.)



COMPONENTS *(for reference only)*

Item No.	Description
1	Impeller
2	Rugged thermoplastic base
3	Rugged thermoplastic pump casing
4	Mechanical seal
5	Ball bearings
6	O-rings
7	Power cord
8	Oil filled motor
9	Cast iron motor housing/stator assembly
10	Thermoplastic motor cover

* Parts available on repair parts selection chart.



xylem
Let's Solve Water

Xylem, Inc.
2881 East Bayard Street Ext., Suite A
Seneca Falls, NY 13148
Phone: (866) 325-4210
Fax: (888) 322-5877
www.gouldswatertechnology.com

part 1 plan 4R-27827
pin 14558 - 0408

(N 67° 48' 00" E P1, P3)
N 67° 48' 50" E (P2)&Set
94.39 (P2)&Set
190.62 (P1,P2,P3)&Meas.
59.47 (P1,P3)&Meas.
Fd. SIB(AOG) Disturbed & Reset
C/L of Ditch
DITCH TOP OF SLOPE (TOS)
Edge of Gravel
TOS
IB (WIT)
CLF 0.19 West
x. 77.75
16.2m
25.9m
Gravel
81.38 (P1,P3)&Meas.
81.93 (P1,P3)&Meas.
BLOCK 3
PLAN 50M-136
PLAN 50R-6694
PROPOSED 3.5m WIDE PARALLEL PARKING DRIVING AISLE & 3.0m SINGLE DIRECTION DRIVING AISLE
PROPOSED 2.6m X 6.7m PARALLEL PARKING SPACES
PROPOSED 0.3m GRASS BUFFER
PROPOSED 1.5m GRASS BUFFER
Metal Container
Drilled Well (Top Elev=77.90)
pin 14558 - 0356
part 2
pin 14558 - 0401
part 3
pin 14558 - 0402
part 4
part 5
PROPOSED WAREHOUSE
F.F.E = 77.60
(G.F.A. = ±1382m²)
53.3m
80.43
Metal Building
REGISTERED
SUBJECT TO EASEMENT PER INST. OC1627867
SITE BENCHMARK
Nail in Hydro Pole
Elev=77.79
N21°20'40"W
PROPOSED NEW DRILL WELL LOCATION
11.6m
7.8m
part 8 PLAN 4R-27830
SUBJECT TO EASEMENT
PER INST. OC1627866
part 9 PLAN 4R-27830
part 10 PLAN 4R-27830
SUBJECT TO EASEMENT
PER INST. OC1627868
36.75 (P1,P3)&Set
174.45 (P1,P3)&Meas.
211.20 (P1,P3)&Meas.
N68°39'20"E
C/L of Ditch
Drain (Inv.=76.69)
Edge of Asphalt
CSP 0.5ø Inv.=76.43
CSP 0.5ø Inv.=76.39
Centreline of Road
ENTREPRENEUR CRESCENT
pin 14558 - 0066

SEPTIC SITE LOCATION
SCALE: 1: 200

SCALE: 1: 200

DATE: 2023.04.19.
ISSUED FOR PERMIT

PROJECT: 23A011-REV01

ABSOLUTE DRAFTING + DESIGN INC.
PERS. BCIN #44555
FIRM. BCIN #45254

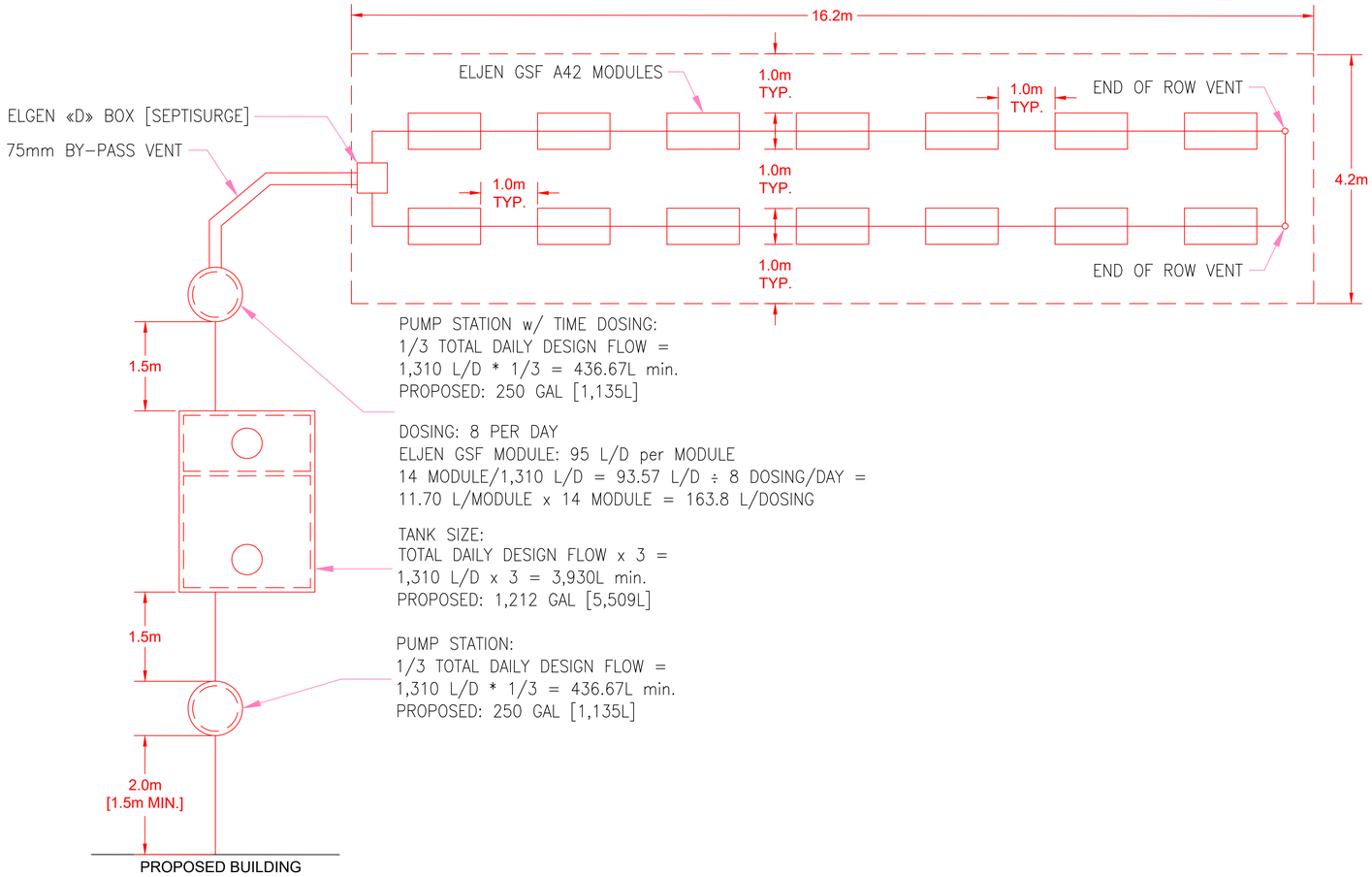
I, ABSOLUTE DRAFTING + DESIGN INC., HAVE REVIEWED THE FOLLOWING DOCUMENTS AND TAKE RESPONSIBILITY FOR THE DESIGN ACTIVITIES.

DESSIN/DRAWING
SEPTIC LOCATION

PROJET/PROJECT
WAREHOUSE DEVELOPMENT
363 ENTREPRENEUR CR., OTTAWA

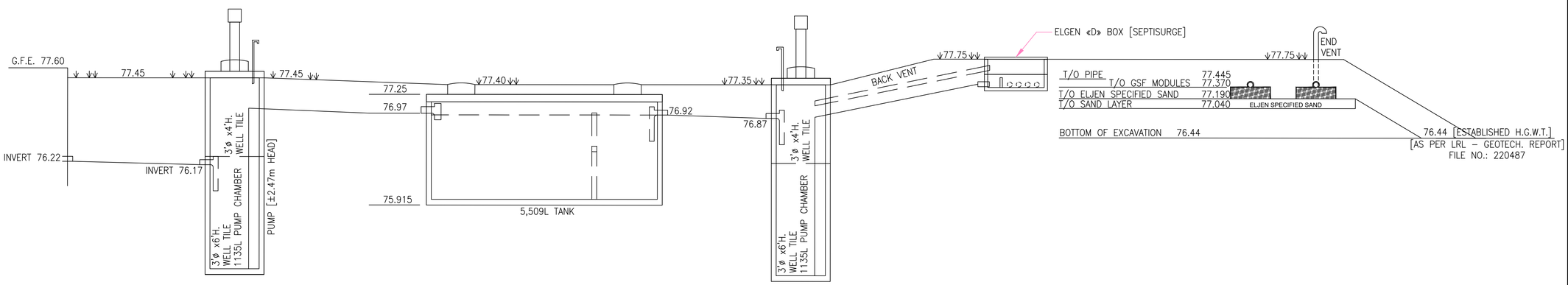
CLIENT
DUSTIN WILSON

S-101 of S-102



SEPTIC LAYOUT

SCALE: 1:50



SEPTIC SECTION

SCALE: 1:35

ALL CONTRACTORS SHALL PERFORM THEIR WORK WHETHER DESCRIBED OR NOT, ACCORDING TO THE APPLICABLE BUILDING CODE REQUIREMENTS AND MUNICIPAL REGULATIONS.

THE GENERAL CONTRACTOR SHALL CHECK AND VERIFY ALL DIMENSIONS AND REPORT ERRORS AND OMISSIONS TO THE DESIGN CONSULTANT.

NO DIMENSION SHOULD BE SCALED ON DRAWINGS.

THE GENERAL CONTRACTOR OR SUB-CONTRACTORS WILL BE HELD RESPONSIBLE FOR ALL WORK DONE ON THE CONSTRUCTION SITE. IN NO EVENT WILL THE DESIGNER BE HELD RESPONSIBLE BEFORE, DURING AND AFTER THE PROJECT.

SCALE: AS INDICATED

DATE: 2023.04.19.
ISSUED FOR PERMIT

PROJECT: 23A011-REV01

ABSOLUTE
DRAFTING + DESIGN INC.
PERS. BCIN #44555
FIRM. BCIN #45254

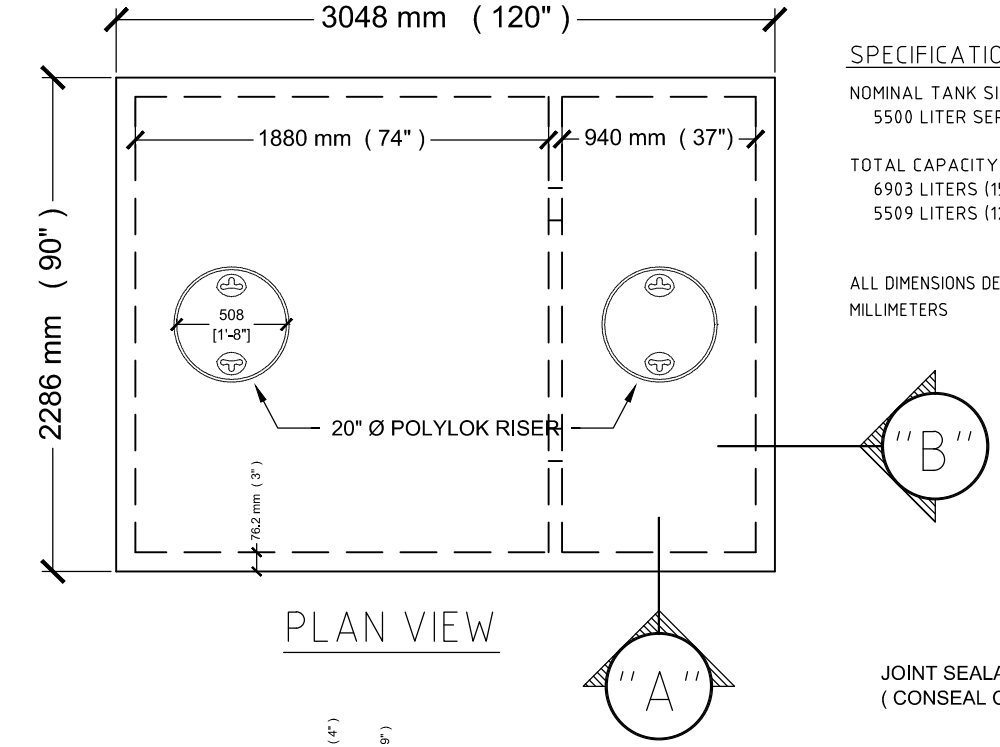
I, ABSOLUTE DRAFTING + DESIGN INC., HAVE REVIEWED THE FOLLOWING DOCUMENTS AND TAKE RESPONSIBILITY FOR THE DESIGN ACTIVITIES.

DESSIN/DRAWING
SEPTIC LAYOUT + SPEC'S

PROJET/PROJECT
WAREHOUSE DEVELOPMENT
363 ENTREPRENEUR CR., OTTAWA

CLIENT
DUSTIN WILSON

S-102 of S-102



PLAN VIEW

SPECIFICATIONS:

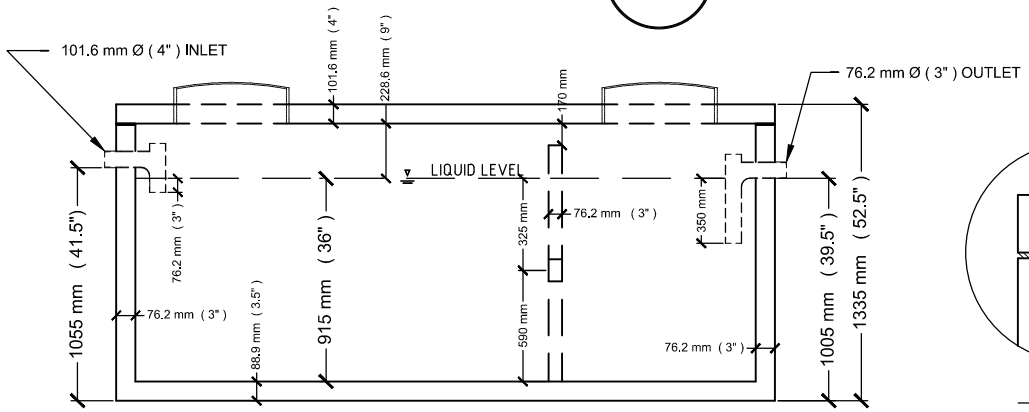
NOMINAL TANK SIZE
5500 LITER SEPTIC TANK

TOTAL CAPACITY
6903 LITERS (1518 GAL)
5509 LITERS (1212 GAL) TO OUTLET

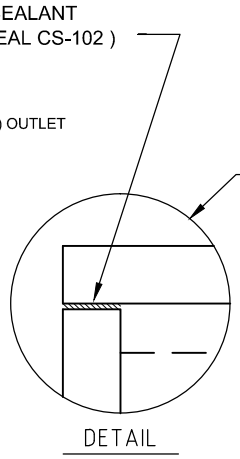
ALL DIMENSIONS DEFAULT TO MILLIMETERS [mm / in]

GENERAL NOTES:

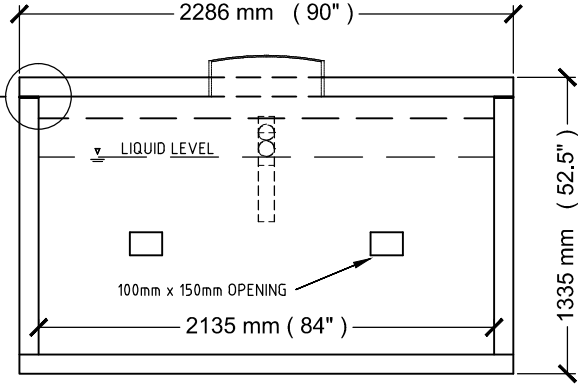
1) CONCRETE TO BE 30 MPa @ 28 DAYS WITH 5-8% AIR ENTRAINMENT
2) CONCRETE MIX IS NON-SULPHATE RESISTANT
3) REINFORCEMENT TO CONFORM TO G30.15 AND CAN/CSA G30.18
4) REINFORCEMENT: TOP SLAB REINFORCEMENT
   -10M REBAR EQUALLY SPACED IN BOTH DIRECTION
   BOTTOM SLAB REINFORCEMENT
   -10M REBAR EQUALLY SPACED IN BOTH DIRECTION
   WALL REINFORCEMENT
   -FIBERGLASS MESH ADDED IN CONCRETE MIX
5) MINIMUM CONCRETE COVER OVER REINFORCEMENT IS 25.4mm / 1"
6) CERTIFIED MINIMUM BURIAL DEPTH: 0.6M (24")
7) WEIGHT OF TOP SLAB = 1635 KG / 3605 LBS
8) WEIGHT OF TANK SECTION = 4113 KG / 9068 LBS
9) ASSEMBLED WEIGHT = 5748 KG / 12672 LBS
10) CHAMBER DIVIDER IS CAST SEPARATELY
11) NO CENTER JOINT IN TANKS
12) 100mmØ INLET AND 75mmØ OUTLET PVC PIPE STUB
13) TOP OF OUTLET FITTING EXTENDS TO AT LEAST THE HEIGHT OF CHAMBER DIVIDER WITH 25mm MINIMUM AIR SPACE
14) PRODUCT IS FACTORY ASSEMBLED AND AS PER CSA A23.4-09 STANDARD AND CSA B 66-00 STANDARD



CROSS SECTION A



DETAIL



CROSS SECTION B

16525 SIXTH RD, MOOSE CREEK, ON
KOC 1W0
PHONE : (613)-538-2381
FAX : (613)-538-4870

MOOSE CREEK CEMENT PRODUCTS (2006) LIMITED

LOW-BOY CONCRETE 1212 GALLON / 5509 LITER SEPTIC TANK

SCALE	NOT TO SCALE	DATE	JULY 2011

MOOSE CREEK CEMENT PRODUCTS (2006) LIMITED 538-2381

TAX BILL /
RELEVÉ D'IMPOSITION

2023 INTERIM TAXES /
TAXES PROVISOIRES 2023

BILLING DATE / DATE DE FACTURATION
FEB/FÉV 09, 2023

City of Ottawa / Ville d'Ottawa
Tel. / Tél : 613-580-2444
Calls will be recorded. / Les appels seront enregistrés.
TTY / ATS : 613-580-2401

ROLL / RÔLE: 0614.500.301.60600.0000
ACCESS CODE / CODE D'ACCÈS: NR64AC1

ENTREPRENEUR HOLDING
CORPORATION
310 SANCTUARY PVT
OTTAWA ON K1S 5W1

ITR 2155

PROPERTY INFORMATION / INFORMATIONS FONCIÈRES
ENTREPRENEUR HOLDING
CORPORATION
363 ENTREPRENEUR CRES
PLAN 50M136 PT BLK 3 RP
50R6694 PART 3
32291.73SF 120.57FR D

	MUNICIPAL / MUNICIPALE				EDUCATION / SCOLAIRE		
Tax Class / Catégorie d'impôts	Municipal Levies/ Prélèvements Municipal	2022 Annualized Taxes/ Impôts annualisés	Rate / Taux	2023 Amount/ Montant	2022 Annualized Taxes/ Impôts annualisés	Rate / Taux	2023 Amount/ Montant
IXN	CITYWIDE / VILLE ENTIÈRE	784.32	50%	392.16	765.60	50%	382.80
IX-TRA	RURAL TRANSIT / TRANSP RURAL	86.94	50%	43.47			
IX-POL	OTTAWA POLICE D'OTTAWA	228.90	50%	114.45			
IX-FSR	FIRE/INCENDIE SERV	65.44	50%	32.72			
IX-CAL	CONS AUTHORITY/AUT DE CONSERV	10.18	50%	5.09			
SUB-TOTALS / TOTAUX PARTIELS:	**Municipal Levy Impôts municipaux**			$587.89	**Education Levy Impôts scolaires**		$382.80

SPECIAL CHARGES / CREDITS FRAIS SPÉCIAUX / CRÉDITS		SUMMARY SOMMAIRE	
		Tax Levy Sub-total (Municipal + Education) Total partiel des impôts (municipaux + scolaires)	$970.69
		Interim Tax Cap Adjustment Redressement d'impôt intérimaire selon le plafonnement	$0.00
		Special Charges / Credits Frais spéciaux / Crédits	$0.00
		2023 Interim Billing Facturation intérimaire 2023	$970.69
TOTAL:	**$0.00**	Past Due/Credit (as of 09-FEB-2023) Arrérages / Crédit (au 09-FÉV-2023)	$51.13
DUE DATE / DATE D'ÉCHÉANCE :	**MAR/MAR 16, 2023**	TOTAL AMOUNT DUE/TOTAL DES IMPÔTS EXIGIBLES:	**$1,021.82**
PENALTY RATE / TAUX DE PÉNALITÉ	1.25%	**Added 1st day of default and 1st day of each month thereafter. Appliqué le 1er jour de défaut de paiement et le 1er jour de chaque mois par la suite.**	

Retain this portion for your records. TB-INT-V1.1.0 **Gardez cette partie pour vos dossiers.**

DUE DATE / DATE D'ÉCHÉANCE **MAR/MAR 16, 2023**

AMOUNT DUE / SOLDE: **$1,021.82**

Amount Paid / Montant payé

ROLL NUMBER / NUMÉRO DU RÔLE 0614.500.301.60600.0000
Name / Nom ENTREPRENEUR HOLDING CORPORATION

5003016060000000010000001021821

2 0 6 1 4 0 0 0 0 0 1 0 2 1 8 2

5 0 0 3 0 1 6 0 6 0 0 0 0 0 0 0