Van Harten SURVEYING INC.
LAND SURVEYORS and ENGINEERS

March 11, 2021
27301-19

Shirewood Centre Inc.
472541 County Road 11
Amaranth, Ontario
L9W 0R3

Attention: Gary Grant

Dear Sir:

Re: Sewage System Consultation
1 Victoria Road
Part of Block A
Registered Plan CAL-5
Town of Caledon, Ontario

Van Harten Surveying Inc. is pleased to submit this report regarding the preliminary sewage system designs prepared for the above referenced site that is located at the northwest corner of Victoria Street and King Street in the village of Alton. This work was authorized by Mr. Gary Grant of Shirewood Centre Inc.

The project involves the proposed severance of an existing property into three lots. The existing privately serviced single family home is to be demolished to facilitate the construction of three single-family residences. As no municipal sanitary services exist in the area, new, private on-site sewage systems will be required to service the proposed residences. The purpose of this engineering letter is to identify the subsurface conditions at the subject property and provide preliminary comments regarding sewage disposal.

The subject property covers approximately 2,080 m^2 and located on 1 Victoria Street in the village of Alton. The site comprises a privately serviced single-family dwelling. The water supply for the existing house is reported to be provided by a municipal water supply. The proposed severed lots would also be serviced by the municipal water supply.

A representative from Van Harten visited the subject property on July 29, 2019. The purpose of the visit was to familiarize ourselves with the subject property, identify water supply wells in the vicinity of the site, identify surface drainage characteristics of the property, and to carry out a subsurface investigation.

Upon arrival on-site, two test pits dug in the approximate location shown on the site plan were open for observation. The test pits were dug to a maximum depth of 1.60 m below the existing grade. Representative samples of the soils were collected from the test pits for visual examination of the density, colour, moisture content, plasticity, and gradation. Groundwater observations in the test pit were also noted at the time of the fieldwork. The test pit locations were approximately located in the field by Van Harten Surveying Inc. referencing property lines and other site features.

A sample of the predominant soil relevant to the design of the sewage system was retained and later submitted to CMT Engineering Inc. for particle size distribution analysis. Laboratory test results from each test pit are enclosed.

Please refer to Table 1 for a detailed summary of the soil and groundwater conditions recorded by Van Harten Surveying Inc. at the time of the site investigation, and to Appendix B for the resulting particle size distribution analysis of the submitted soil sample. The general soil stratigraphy encountered in the test pits dug at the subject property comprises of a 300 mm thick layer of surficial topsoil overlying a deposit of sandy silt that extended beyond a maximum termination depth of 1.60 m. A particle size analysis carried out by CMT Engineering Inc. on a sample of the predominant underlying till deposit obtained from Test Pit 1 reveals the sample contains 4% gravel, 40% sand, 52% silt and 4% clay. No free groundwater was observed in the test pits, dug to a maximum depth of 1.60 m.

The percolation time of the predominant soil deposit has been assessed based on soil characteristics recorded by Van Harten Surveying Inc. at the time of the site investigation and the results of laboratory testing carried out by CMT Engineering Inc. Referring to Supplementary Standard SB-6 of the 2012 OBC, Table 1 of the current report, and the results of the particle size distribution analysis presented in Appendix A, the predominant soil is classified as “SM-ML” under the Unified Soil Classification System with a percolation rate ranging from T = 8 to 50 min/cm. A percolation rate of T = 30 min/cm is considered suitable for the native sand encountered on-site.

Peak daily sewage flows for single-family houses are calculated in accordance with Table 8.2.1.3.A of the OBC and are a function of the number of bedrooms, number of plumbing fixtures and total living area. Given the soil conditions encountered and limited disposal area of each lot, it is advised that the three dwellings proposed for each lot be constructed with a maximum of three bedrooms with no more than 240 m^2 of total living area and no more than twenty-eight (28) fixture units. This will ensure peak daily flow rates do not exceed 2,000 L/day. It is noted other configurations and combinations of living area, bedrooms and fixture units are feasible, but in no case should the design flow rate for any dwelling constructed on these lots exceed 2,000 L/day.

After consultation with the owner regarding site limitations and clearance requirements, we have proceeded with the design of a Class 4 Sewage System utilizing a Level IV treatment unit and shallow buried trench leaching bed.

A Level IV treatment system capable of treating a peak flow of 2,000 L/day is proposed. Several proprietary treatment technologies currently exist that are approved for use in the OBC. In any case, the treatment unit must meet or exceed the requirements of a Level IV treatment unit as noted in Table 8.6.2.2 of the OBC. The treated effluent will be pumped evenly over a 24-hour period to a shallow buried trench leaching bed. As such, the system must include an effluent pump capable of having a pressure head of not less than 600 mm when measured to the furthest point of the distribution system. In accordance with Section 8.7.6 and Table 8.7.3.1 of the OBC, and considering a percolation rate of T = 30 min/cm for the underlying native soil, and a peak sewage flow rate of 2,000 L/day, a minimum of 40.0m of shallow buried trench is required. The distribution system as illustrated proposed comprises three runs of 14.6 m length of shallow buried trench (43.8 m total length) installed at 2.0 m centres.

With respect to setback distances, in accordance with 8.2.1.6.A, advanced treatment tanks must be at least 1.5 m away from structures and 3.0 m away from property lines. Per Table 8.2.1.6.B, the distribution piping must be at least 5.0 m from structures and 3.0 m from property lines. Per the submitted Site Plan, adequate space for the sewage system has been provided considering the theoretical dwelling footprints provided.

I trust that this work has been completed in accordance with your instructions. Please contact me if you have any questions or require further information.

Van Harten Surveying Inc.

Mike Vaughan, P. Eng.

Encl. Table 1 – Test Pit Logs
Encl. Appendix A – Laboratory Test Results

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TABLE 1 – TEST PIT LOGS

1 Victoria Street
Town of Caledon
Van Harten Surveying Inc., Project # 27301-19

Test Pit 1 **July 29, 2019**

Depth (m)	Sample	Soil Description
0-0.30		**TOPSOIL**: dark brown silt, moist;
0.30-1.60	1	**SILTY SAND:** brown silt and sand trace gravel and clay, damp
Groundwater Observations: Test pit open for observation upon arrival on site. No free groundwater observed.		

Test Pit 2 **July 29, 2019**

Depth (m)	Sample	Soil Description
0-0.30		**TOPSOIL**: dark brown silt, moist;
0.30-1.40		**SILTY SAND:** brown silt and sand trace gravel and clay, damp
Groundwater Observations: Test pit open for observation upon arrival on site. No free groundwater observed.		

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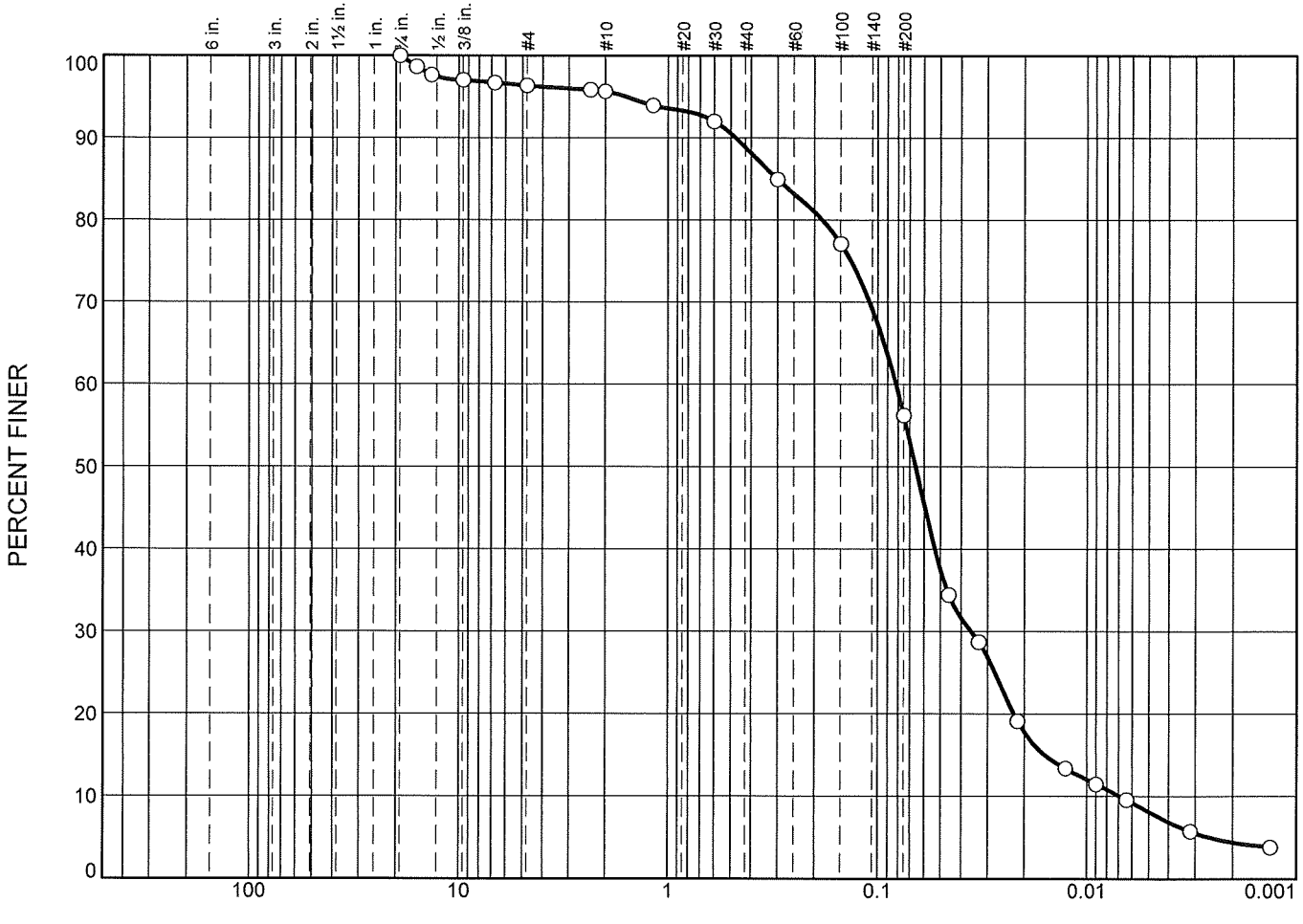
APPENDIX A
LABORATORY TEST RESULTS

R.P. Magahay, B.A. **J.E. Buisman**, B.E.S., B.Sc., O.L.S. **R.M. Mak**, B.Sc., O.L.S. **J.M. Laws**, B.Sc., O.L.S. **J.M. Duffy**, P.Eng.

Particle Size Distribution Report



	% Cobbles	% Gravel		% Sand			% Fines	
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○	0.0	0.0	3.7	0.7	6.8	32.6	51.8	4.4

SOIL DATA

SYMBOL	SOURCE	SAMPLE NO.	DEPTH (ft.)	Material Description	USCS
○	Client	TP1		Victoria Road	ML
				silt and sand, trace clay and gravel	
				Tested by MS of CMT Engineering Inc., August 13, 2019	

CMT Engineering Inc.

St. Clements, ON

Client: Van Harten Surveying Inc.

Project: Miscellaneous Lab Testing

Project No.: 05-095

Figure 1