

Preliminary Septic System Design Proposed Concrete Plant 2596 Carp Road Ottawa, ON



Submitted to:

Thomas Cavanagh Construction Ltd 9094 Cavanagh Road Ottawa, ON K0A 1B0

Preliminary Septic System Design Proposed Concrete Plant 2596 Carp Road Ottawa, ON

> September 19, 2018 Project: 61318.20

GEMTEC Consulting Engineers and Scientists Limited 32 Steacie Drive Ottawa, ON, Canada K2K 2A9

September 19, 2018

File: 61318.20

Thomas Cavanagh Construction Ltd 9094 Cavanagh Road Ottawa, ON K0A 1B0

Re: Preliminary Preliminary Septic System Design – Proposed Concrete Plant 2596 Carp Road

Please find enclosed, our preliminary design and associated documents for the septic system to be constructed at 2596 Carp Road.

The details of the enclosed documents will require review and finalization prior to submission for a permit.

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

Matthew Rainville, C.E.T.

A.C. Houle

Craig Houle. M. Eng. P.Eng

Enclosures

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1.0 INTRODUCTION

It is understood that the construction of a commercial concrete batching plant is proposed. The facility will be located at 2596 Carp Road in Ottawa, Ontario.

In addition, the existing dwelling located at the subject site is to be converted to an office building associated with the operation of the concrete plant.

In consideration of the above, our firm has been retained to prepare:

- An septic system application for a 'change of use' amendment for the proposed change in occupancy of the existing dwelling, and;
- A design for a septic system that will service the proposed concrete plant.

The details of the proposed amendment and the proposed system are provided in the following sections.

2.0 SEPTIC SYSTEM DESIGN

2.1 Daily Design Sewage Flow

The Ontario Building Code (OBC) provides information regarding the Daily Design Sanitary Sewage Flow (DDSSF) for various occupancies.

2.1.1 Proposed Office Building

The existing dwelling, that is proposed to be converted to an office building, is currently serviced by a Class 4 onsite wastewater system. Details for the system were provided to our office for review (OSSO File Search FS-18-111 – see Appendix A). Based on the documents, the dwelling contains a liveable area of 339 square metres and was designed for a DDSSF of 3000 litres.

In regards to the DDSSF for an office occupancy, the OBC stipulates that 75 litres must be provided for every 9.3 square metres of office area. As such, an office with 339 square metres of space will result in a DDSSF of 2,734 litres. This in turn would allow for a maximum of 36 employees within the office building (from an OBC Part 8 perspective).

Given that the existing septic system has a capacity of 3,000 litres per day, no alterations to the Class 4 leaching bed are required. The existing septic tank has a working capacity of 6,000 litres. Commercial occupancies require that the septic tank have a working capacity of three times the DDSSF. As such, a septic tank with a minimum working capacity of 8,202 litres will be required.

A 'Part 10/11 Amendment' application for the proposed change of use, along with necessary documents for the replacement of the septic tank, will be provided under separate cover.

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2.1.2 Proposed Concrete Plant

It is understood that the proposed septic system will receive only domestic strength sewage from the subject building (eg. solely from domestic style plumbing fixtures); no process water or similar will be dispersed to the system.

The DSSF for the concrete plant building is 3,750 litres, based on 50 employees and an allowance of 75 litres per employee per day (it is understood that no showers are to be available within the plant building).

2.2 Septic System Design Details

Based on Boreholes 4 and 5, that were advanced at the subject site (the Record of Borehole sheets are provided in Appendix B), the subsurface conditions in the area of the proposed leaching bed consist of fill (sandy silt, clay, gravel, cobbles). No groundwater inflow was observed within Boreholes 4 and 5 at the time of excavation. Groundwater levels fluctuate seasonally and following precipitation events.

Given the available area for the construction of a leaching bed at the subject site, a Class 4 absorption trench leaching bed is proposed.

2.2.1 Septic Tank (Primary Treatment)

Based on provisions in the OBC, the minimum required septic tank operating volume is 11,250 litres. The tank is to be CSA approved and incorporate an NSF approved effluent filter.

It is understood that the tank will be installed in an area over which heavy equipment traffic will be present. As such, it is recommended that the area of the septic tank and the balancing tank be protected from traffic (eg. bollards). Furthermore, it is recommended that the sewage pipe from the building to the septic tank be adequately bedded in compacted granular material. Furthermore, as precautionary measures, it is recommended that the pipe be installed within a protective sleeve (eg. larger diameter Ipex piping, or equivalent) and insulated for frost protection.

2.2.2 Equalization (Balancing) Tank

Given the distance between the subject concrete plant building and the proposed leaching bed, it will be necessary to pump effluent between the two locations. Because pumping will be required, and given that the DDSSF will typically be generated during the daytime hours, it is recommended that the generated septic effluent be dispersed to the dispersal field on a timed interval basis versus on a 'demand' basis, therefore providing equally spaced, smaller volumes of effluent to the bed versus larger volumes of effluent at fewer, condensed periods throughout 24 hours. This method greatly reduces the stress that may otherwise be applied to the system, therefore likely extending the lifespan of the system.



Given the above, it is recommended that a balancing tank with a minimum operating volume of 3,600 litres be installed - approximately the volume of one peak day of sewage generation from the facility. It is important to ensure that the minimum stated volume is provided in the balancing tank in addition to the volume that will remain in the tank due to the maximum drawdown level of the selected pump).

The balancing tank is to be equipped with two (2) 0.5 HP effluent pumps (Orenco PF5005 HH, or equivalent). The pumps are to be controlled by a timed-dosing capable panel, also capable of operating the pumps on an alternating basis, and furthermore have one pump assume the duty of the other should a pump fail.

Effluent will be transported from the pumps to the header of the leaching bed through a 50 millimetre diameter flexible pipe forcemain. It is understood that the forcemain will extend through areas over which heavy equipment/vehicular traffic will be present. As such, it is recommended that the forcemain be adequately bedded in compacted granular material. Furthermore, as precautionary measures, it is recommended that the forcemain be installed within a protective sleeve (eg. larger diameter lpex piping, or equivalent) and insulated for frost protection.

2.2.2.1 Flow Equalization Concept

It is assumed that the majority of the daily volume of sewage will be generated mainly between 7 a.m. and 7 p.m., daily.

The control panel should be calibrated so as to run the pump for approximately 1.3 minutes every 90 minutes (again, alternating pumps between pump cycles). Assuming a system output rate of approximately 190 litres per minute, about 240 litres will be transported to the leaching bed during every cycle. This will result in 16 pump cycles per 24 hour period (total output of approximately 3,800 litres). If less than 240 litres is present in the balancing tank at a scheduled dose interval, the pump cycle will be delayed until this volume is present (this is to ensure that enough effluent is present to ensure an even distribution throughout the leaching bed piping).

It is recommended that upon system installation, a draw down test be performed so as to verify the actual flow rate from the pump to the dispersal field.

Upon determining the actual flow rate, the estimated settings provided in the following table should be revised as needed to ensure approximately 240 litres of effluent is dispersed at each pump cycle (about 3,800 litres every 24 hours, when present).



TABLE 2.2.2.1 – Control Panel Settings

'ON' time	01:18 (min:sec)
'OFF' time	58:42 (min:sec)

Note: The figures above were established using an estimated pumping rate of 190 litres/minute. The installer is to verify the pump rate by draw down test, and notify the designer of any discrepancies that exist.

The required alarm, both audible and visual, should be installed in a location that will ensure an alarm will be readily noticeable should a system failure occur.

2.2.3 Dispersal Field (Septic Bed)

2.2.3.1 Area of Imported Sand

Given the soil conditions in the area of the proposed leaching bed, it is proposed that the leaching bed be fully raised and constructed of imported sand. The imported sand should have a percolation rate (T-Time) of between 4 and 8 minutes per centimetre and contain a maximum of 5% of finer material (material passing the no. 200 sieve).

In order to provide adequate loading area over the native soil, the minimum area of the imported sand, including mantle area, has been determined as follows:

A = V/6, where

- A = Minimum area (imported sand), (m²)
- V = Daily Sewage Flow (Litres)

 $A = 3,750/6 = 625 \text{ m}^2 \text{ (min)}$

An area of 725 m² has been proposed, including a 15 metre sand mantle installed in the assumed direction of flow (downward gradient).

See Figure 1 and 2 for additional details.

2.2.3.2 Distribution Piping

The minimum total length of distribution piping has been determined as follows:

L = (V * T)/200, where

- V = Daily Sewage Flow (Litres)
- T = Percolation Rate of the imported septic sand fill

L = (3,750 * 8)/200 = 150.0 (min)

A total of 150.4 metres of distribution piping has been proposed.

It order to ensure equal distribution of effluent throughout the leaching bed at each pump cycle, it is proposed that the distribution piping be pressurized. The distribution piping (including the header), will consist of 50 millimetre diameter PVC piping. The piping will be placed as 8 runs each having a length of 18.8 metres, placed on 1.6 metre centres. Along each length of distribution piping (lateral), 3 millimetres orifices will be drilled at 1.2 metre spacing at the 6 o'clock position. The runs of piping will be connected to a solid header with a diameter of 50 millimetres.

It is recommended that clean-out ports be installed at the end of each lateral in order to facilitate future maintenance and cleaning of the piping.

Additional information is provided on Figures 1 and 2.

2.3 Tank Buoyancy Assessment

Given the site conditions, including the relatively shallow groundwater condition in the proposed installation area of the tanks, the potential exists for the septic tank and balancing tank to become buoyant under an elevated groundwater condition. As such, at the final design stage, and upon selection of the septic tank and balancing tank manufacturer and models, our firm will assessed the potential for the proposed septic tank and balancing tank to become buoyant under the proposed installation conditions. If determined to be required, details for the addition of ballast will be provided in our final design.

3.0 SEWAGE SYSTEM MANAGEMENT/MONITORING

Maintenance of the septic system will be the responsibility of the owner/operator of the facility or its designated maintenance provider. As a minimum, it is suggested that the maintenance include the following:

- Inspection/cleaning of the septic tank effluent filter as per manufacturer's recommendations;
- Inspection and pumping of the septic tank when determined to be necessary (typically every 3 to 5 years);
- The pump output rate be verified quarterly; and,
- Inspection and maintenance of pumps, controls, etc., per manufacturer recommendations.

All components of the system shall be inspected and maintained per the manufacturer requirements.



We trust this report provides sufficient information for your present purposes. If you have any questions concerning this report, please do not hesitate to contact our office.

1(0 e

Matthew Rainville, C.E.T. Senior Technologist

A.C. Houle

Craig Houle, M.Eng., P.Eng. Senior Engineer





APPENDIX A

OSSO File Search FS-18-111

AR PROPERTY LINE AND NTAINED ROAD.	THIS CARD MUST BE POSTED NE. VISIBLE FROM THE MAIN
Chief Building Official	Date
Maria	LULY 7. 1999
8 of the Building Code Act, S.O. 1992 Chapter 23. The collection should be directed to the Chief Building Official."	"Personal information contained on this form is collected under Section information will be used within the municipality. Questions arising about this
	FREEDOM OF INFORMATION
: PART: WARD: ראטעדעבא	LOT NO .: PT C CONCESSION NO .: 2 PLAN NO .:
- CONSTRUCT ADDITION CHU ATTACHED	PROJECT DESCRIPTION: INSTALL 2 STORES STREET ADDRESS: 2590 CARP 200
	PERMISSION IS HEREBY GIVEN TO: RUNNP
NO. 99-0249	CARLETON CARLETON BBC

ч. 1

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BUILDI	NC DEDMIT CID		N FODM						
DUILDI	IG FERMIT CIR	CULATIO	NFORM						
APPLICANT:		DATE:	JUNS 2,1999						
CIVIC ADDRESS 2596 CAR	P Read	ROLL #	1,030 310 dota						
APPROVALS APPLICABLE:	* PE	EVISEI	>*						
Date Req. Approved Authorization Letter/Deed M.V.C.A.(fill/flood) Septic Approval/Location Site /Lot Grading Plan Reviewed By: Entrance: MTO RMOC WCD New Existing	Rec Arch/Eng.Review M.O.E.E. Air Discharge M.N.R. Zoning (see below) Severance Minor Variance M.O.L. Council Site Plan	Date Approved	Date Req. Approved O.M.A.F./MDS Arch/Eng Review RMOC Water Regional Health Solicitor Gen/Fire Marshal MTO Bldg/Land Use Plans Examination Finance						
BUILDING DEPARTMENT:	* REVISER	- Ju	NE 24/aq #						
 1. GROSS BLDG. AREA: (all floor levels including exterior walls) 2200 3126 4 3126 4 4. BUILDING DESCRIPTION 									
PLANNING DEPARTMENT: Reviewe	ed by: <u>R-Smith</u>		Date: Dave (D) 991.						
Planning	Zoning Compliance		Other June 25/99 Olay						
Zone Designation <u>Ku MPH</u> Official Plan Designation <u>MR PE</u> Wetland/ANSI/Minerals/Pits/Quarries <u>ND</u> Lamp Post <u>ND</u>	Existing Undersized Lot Bldg Height Dwelling Unit Area Separation Distance Setbacks Met Maximum Coverage	np Play Kary Kary Dian	Subdivision Agreement Special Covenants/Easements NOTE: BO 99 Sever Holg Oak Orak from This parcel. Franking Tune 999.						
	FEES APPLIC	ABLE	RS						
FINANCE:	DEVELOPMENT CHARG	ES	BUILDING						
Reviewed by: <u>for Hourley Jun 1199</u> <u>Comments:</u>	Municipal Dev. Charge Regional Dev. Charge Education Dev. Charge: OCDSB OCCSB OCFLCSB. OCFLPSB Water Lateral Sewer Lateral RMOC Water (221) RMOC Sewer (221) TWSP Local Sewer (221)	\$ 1500.00 \$ 9794.00 1473.00 \$ 689.00 \$ 361.00 \$ 164.00 \$ 20.00 \$ \$ \$ 4947.00 \$ 5	Building \$ 1000 Plumbing \$ 5000 Stove/Fireplace/Chimney \$ Demolition/Moving \$ Entrance Proce \$ Septic \$ 2500 Civic Sign \$ 2500 Civic Sign \$ 2500 Pool Enclosure \$ Revision \$ Admin \$ Subtotal B \$ 1360 ZONING/PLANNING:						
	Subtotal A	\$	Subtotal C \$ 4227.00						
			+ Subtotal A \$6546 + Subtotal B \$1360						
			TOTAL 5 7908						

2 REVISE	DLINE 24/47 4
TOWNSHIP OF WEST CARLETON BUILDING PERMI Personal information on this form is a Building Code Act and the Township o will be used in the processing of your build collection of personal information show	TAPPLICATION collected under the authority of the f West Carleton Building By-law and ilding permit. Questions about this ld be directed to the Municipal Clerk.
APPLICATION DATE: May 27/99	ESTIMATED VALUE: \$ 20,000
WORK TYPE: CONSTRUCT D MOVE DEMOLISH D PLUMB	ING O ADD TO O ALTER O REVISE O INSTALL O SEPTIC O
USE TYPE: RESIDENTIAL 🗹 COMMERCIAL 🗅 FARM	M INSTITUTIONAL INDUSTRIAL INSTITUTIONAL INDUSTRIAL INSTITUTIONAL INDUSTRIAL INSTITUTIONAL INSTITUTION
PERMITFOR Relocate Home 9	("MSTRUCT ATTACHED CONPRACE
(Describe Work)	EAND ADDITICHAL LIVING APER CONTRACTOR APAVE GAPAGE
LOT 6 CON 2 WARD Hourthy	Name Rite Rump
PLAN <u>4R-946</u> PART(S) 1 West MALE	Address 669 - Opk creek
Address/Street Name 2596 CARP RD.	City/Prov_OutARio_Postal Code_KOAJLO
	Phonew()762-0461 h()831-8454
OWNER	
Name Rile River	AFFLICANI
Address	Name / CK / Omp
City/Prov Same	City/Prov. S. D. P
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FLUMDER	SEPTIC INSTALLER
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License # 306 A	h()h()
PLUMBING (SEPTIC APPLIANCES/EINTUPES	SEPTICONY
No. of Fixtures Dishwasher Urinal/Bidet	Septic Connect Sink/Basin Laundry Tub Honner Oil/Int Elacs Desire Class (7.1)
Fixture Units	Hot Water Tank B/W Valve Other
N	<u> </u>
FEES	
Plumbing \$ 50 EDC O.C.C.S.B. \$ 3734 /2	nicipal Development Charge \$ 3797 Stove/Fireplace/Chimney \$
Demolition/Moving \$ EDC O.C.F.LC.S.B. \$ 164	trance \$ 1413.00 Authinistration \$
Pool Enclosure \$ EDC O.C.F.L.P.S.B. \$ 20 Se	sptic \$250 * Revision \$
TO THE CHIEF BUILDING OFFICIAL; THE UNDERSIGNED HEREBY APPLIES FOR A PERMIT TO BU COMPLY WITH ALL BY-LAWS AND MUNICIPAL REGULATIONS, IT BEING EXPRESSLY UNDERSTO SAID BY-LAWS AND REGULATIONS, THOUGH NOT CALLED FOR IN THE SPECIFICATIONS OF FOR ANY CAUSE OR IRREGULARITY OR NON-CONFORMANCE TO THE SAID BY-LAW OR REGULATION THEREFROM AGAINST THE CORPORATION OF THE TOWNSHIP OF WEST CARLETON	ILD ACCORDING TO PLANS, SPECIFICATIONS, AND SITE PLAN HEREWITH SUBMITTED, AND AGREES TO OD THAT THE ISSUING OF A PERMIT DOES NOT RELIEVE THE APPLICANT FROM COMPLYING WITH ALL HOWN ON THE PLANS SUBMITTED. THE APPLICANT FURTHER AGREES THAT IF A PERMIT IS REVOKED ONS, THAT IN THE CONSIDERATION OF THE ISSUANCE OF THE PERMIT ALL CLAIMS ARE WAIVED ARISING
ONHWP: (STATEMENT WITH RESPECT TO THE ONTARIO NEW HOME WARRANTIES PLAN AC REGISTRATION # EXPIRY DATE I AM NOT A BUILDER AS DEFINED BY THE ONTARIO HOME WARRANTIES PLAN ACT. AS OW THIS HOME IS NOT ELIGIBLE FOR ENROLMENT OR COVERAGE UNDER THE ONTARIO NEW HO	CT) I AM BUILDING TO SELL (VENDOR/BUILDER) OR CONTRACTING AS A BUILDER. BUILDERS OR NER/BUILDER IT IS MY INTENTION TO RETAIN OWNERSHIP FOR MY OWN USE. I UNDERSTAND THAT OME WARRANTIES PLAN ACT. YES
PROVINCE OF ONTARIO, REGIONAL MUNICIPALITY IN THE MATTER OF OTTAWA CARLETON TO WIT: BY-LAW NO.	R OF THE APPLICATION FOR A BUILDING PERMIT, IN PURSUANCE OF BUILDING
I, B.RDANP IN THE REGIONAL MUNICIPALITY OF OTTAWA-CARLETON, MAKE OATH AND SAY: THAT I AM T APPLICATION AND THE PLANS AND SPECIFICATIONS SUBMITTED HEREWITH IS TRUE AND COR SOLEMN DECLARATION CONSTITUTIOUSLY BELIEVING IT TO BE TRUE AND KNOWING THAT IT IS C ACT. DECLARED BEFORE IN AT THE TOWNSHIP OF WEST CARLETON, REGIONAL MUNICIPALIT	OF
Witness: (municipal employee	(to be signed by Owner or authorized Agent of Owner)

MUNICIPAL OFFICES • 5670 CARP ROAD • KINBURN, ONTARIO • KOA 2H0 TEL: (613) 832-5644 • Toll-free within area code 613: 1-800-267-6234 • FAX: (613) 832-3341



SEPTIC SYSTEM SITE EVALUATION

CLASS 2 LEACHING PIT CLASS 3 CESS POOL CLASS 4 SYSTEMS ABSORPTION TRENCH CONVENTIONAL ABSORPTION TRENCH RAISED FILTER BED (ATTACH GRADING CERTIFICATE) PROPRIETARY SYSTEM DESCRIBE CLASS 5 HOLDING TANK TYPE OF ALARM ALDIO VISUAL PUMP OUT CONTRACT ATTACH DOCUMENTATION	NAME Kon White Const 47D (Name of Individual Preparing Site Evaluation) ADDRESS P. O. Box 296 CITY Comp On POSTAL CODE KOA ILO PHONE O() 839-5460 H() LICENCE # L1998-1654
	DESIGN PARAMETERS
	NUMBER OF BEDROOMS - EXIST PROPOSED 3
	BUILDING AREA GROSS
	TOTAL ALL FLOORS - LIVING AREA 339 M
	WATER SUPPLY - DUG WELL
	- SAND POINT
	- CASED WELL (min 6M) 🖄 Proposed
SEPTIC SYSTEM DESIGN	PLUMBING FIXTURES EXIST PROPOSED FIXTURE UN
PROPRIETARY TREATMENT SYSTEM	Bathroom Group (3 PCs) 3 × 63
DESCRIBE	Batintub/Snower O X 1.5 Basin (Lavatory) O X 1.5
(ATTACH MANUFACTURERS INFORMATION)	Toilet X 4
	Bidet X 1.0
150 TOTAL LENGTH OF DISTRIBUTION PIPING	Sink X 1.5 _/.5
3000 L DAILY FLOW RATE	Laundry Tub l X 1.5 l C
MINIMUM LOADING AREA	Auto Washer / X 1.5 // S
MINIMUM CONTACT AREA	Water Softener X
TANK TYPE CONCRETE D MANUFACTURER	Other
PLASTIC D DOUCHEr Vre-CAS	5 1

NOTICE: Depth to bedrock/watertable and description of soil type are to be shown for both profiles. TWO test locations are required of BURIED beds.

SOIL PROFILES

DESCRIBE

OTHER

PUMP REQUIRED MANUFACTURER

(ATTACH MANUFACTURER SPECS AND INSTALLATION INSTRUCTIONS)



MODEL

IDENTIFY SOIL TYPE, LAYERS AND DEPTHS, WATER TABLE AND ROCK

TOTALS

The percolation rate shall be determined by test OR soil classification, according to the unified soil classification syste
T Time
Native Soil
Imported Soil / O

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ett

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TOWNSHIP OF WEST CARLETON

16 Y

DESIGN DEVIEW	
CLASS A SEDTLO CHARTER	Permit No. 99-0249 Date 10 v 2/00
CLASS 4 SEPTIC SYSTEM	Plan review By Tillstop
12	Owner R RUM P
Calculate daily design flow Additional flows	Applicant copy
1 bedroom 750 litre additional bedrooms 500 lie	
2 bedroom 1100 litre additional bldg area exceeding 200m2	Number of La 1
(3) bedroom 1600 litre 100 litre / 10m2	Additional Flows Building Area 12 9 - 2
5 bedroom 2500 litre additional fixture unite exceeding 20	Additional Flows Fixture Units 4 FIL 200 litres 339 mi 2200 m
Daily design flow	24 >20
< 10,000 litre/ day > 10,000 litre/ day	1 Total dalla da la construcción
2 Size treatment unit service tank	I that daily design now 30000 litres
2 x daily design flow res / 3x non-res	2 Min Septic tank size_60000 litres
Absorption tranch	
Raised bed _ Partially raised bed (Buried Bed " Raised had	Filter media Proprietary treatment units
A A A A A A A A A A A A A A A A A A A	_rarually raised bed Buried bed Manufacturers installation
T time $\geq 2 \leq 20$ min (see T time $\geq 2 \geq 2)$ min (see T time $\geq 2)$ min (s	Daily design flow
L = OT $L = OT$ $L = OT$	<5000 litre/ day > 5000 litre/ day Branch Opinion
200 1=10 300	Daily daily f
Length of distribution pipe 150 m	< 3000 litre > 3000 litre Secondarios tatiantes
5 Bed loading 6 litre / m2 Red loading to p	tertiary treatment
6 Bed size No. of runs 2 main and m2	300m ²
Length of runs 18:75 m	
Distribution piping > 150 metres	
Determine dosage volume 75% TROPOSED	4 Size bed effective area
of distribution piping 15C, n = 130in	Maximum 75 litre/ m2/ dayMaximum 50 litre/ m2/ day
Volume dia X length Dosage Volume litres	Bed size minimum 10 m2 maximum 10 m2
8 Required	area
900 mm to rock, water table or impervious soil 900 mm	5 Size contact area $A = QT$
40 metre minimum total piping length 150 mm	850 Minimum contact aream2
Source maximum run length 18.15 min	6 750 mm x min bed area Size volume of filter and
600 to 900 depth of trench	45.36 kg per ft3 1602kg per m3
1.6 metre minimum trench spacing	7 Size mantel contact area Daily design flow m2
Paired hada 511	4 litre / m2
minimum 75 % of leaching bed soil	8 Distribution piping maximum spacing 1.2 metre
	evenly spaced with 1/2 space at bed edges
	mm 750 mm filter sand below stone
Raised beds mantel minimum 15	impervious soil
-250 mm depth of material	rural drainage-
10	tensionm
300 to 600 mm tonsoil august and a start at	
Paper over stone	
50 mm stone over tiles	
75 mm minimum tile diameter 25 mm	
Slope of nine minimum 30 mm	
2 Solution of the maximum so mm / 10 metre	<u>6.25</u> mm to <u>73.75</u> mm No slope required on filter beds
+1 Increase clearances for raised beds 2 x	
12 Clearrance Baseland	m
Treatment unit to structure 15 metre	learances Actual
2 x bed height above existing grade	<u>1.5</u> m
Treatment unit to potable water supply drilled wells cased to 6	metre 15 metres / C
Tile bed to water supply	is and dug wells 15 metres 75 m
drilled wells	15 39 metres 15 m
Tile bed to Property lines 3 metres	nts and dug wells 30 metres m
Tile bed toBodies of water 15 metres	<u> </u>
Tile bed to structures 3 metres	<u> </u>
Mantel slopes minimum 4-1 BUR 1272	_5 m
	Total Mantel width m
13 Design conforms to real til	mm
1 - the conforms to regulation	Design does not conform to regulation
14 Required inspections 1 Test pit	
2 Scarify clay	
3 Septic system installat	ion
rinal grading	





PLAN

PROFILE



TYPICAL DRAWING A BURIED BED-ABSORPTION TRENCH METHOD



PROFILE

PLAN



END VIEW

JTT

	\bigcirc \bigcirc										
TOWNSHIP OF	Con	struction S	ite Inspectio	on Re	port						
CARLETON	Permit Number <u>29</u>	Permit Number $29 - 0249$ Date of Inspection $Dec. 8,19$									
	Civic Address $\underline{45}$	No CARP	KD.	Own	er KUXAP						
	Contractor <u>K. U</u>	HILE CON	151. LIL	<u> </u>	pector <u>F. MCOFi</u>	<u></u>					
	Weather			Tim	e						
Inspection		ж.									
Building Site	<u>Plumbing</u> Underground		<u>Septic</u> Site		<u>Other</u> Pool Enclosure						
Excavation D	Sahitary Sewer		Scarification		Wood Appliance						
Framina D	Completion		Final Gradina		Chimney						
Insulation	compicaion		Tinai Orauing	<u> </u>	ricaung						
Progress 🛛		Inspectior	Status	Passe	d						
Occupancy 🛛				Passe	d with Conditions 55	P P					
Final				Not pa	assed Forus	দ্র					
				Do No	t Cover						
			•	Call Fo	or Reinspection						
Inspection Rem	arks			002.0	044 (224)						
1. Fairpas	TION INKPECT		0.044-0			10					
ITEUS	NOTED AUG	20199 0	TISTALIAN	JG							
2 1	ENG DWAS	SIDEWA	ALL OPEN	wa							
3	FILLING HO	NB-1 COUL	BED LONG	P.ST	5 t	***					
	DAUPROFF	IG NOT IN	ISTALES								
<u></u>	DRAWAGE T	ILE INST.	Allation	<u>f.</u>							
5	FROGT PROTE	iction Fo	etung c	5105	BNREY						
2 /				-/							
3 1/150	5 to the	- 5×+61	Usley 1	<u>Sv</u>							
1 PAPE	PN tus			1		<u> </u>					
5 INLE	T PIPE to T	ANNE NO	(NSTAL	EA	- FULLY ME	2					
INS	SPECTION PRU	er to i	CEVER)					
					· · · · · · · · · · · · · · · · · · ·						

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APPENDIX B

Record of Borehole Logs

RECORD OF BOREHOLE 18-4

CLIENT: Cavanagh Developments PROJECT: 2596 Carp Road JOB#: 61318.20 SHEET:1 OF 1DATUM:CGVD2013BORING DATE:Aug 8 2018

LOCATION: See Borehole Location Plan, Figure	2	2
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and bit DESCRIPTION bit		OD	SOIL PROFILE	-	_		SAN	IPLES		● PE RE	NETR/	ATION NCE (N	I). BLO\	NS/0.3r	SH n + N	IEAR S	TRENC	GTH (Cu REMOU	u), kPA JLDED	ı٥	
0 1388 0	METRES	BORING METH	DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	NUMBER	ТҮРЕ	RECOVERY, mm	BLOWS/0.3m	▲ ^{DY} RE	NAMIC SISTA	PENE NCE (N 20 :	TRATIC I), BLO\ 30 4	DN WS/0.3r	n W _F	WATE	ER CON W O 70 8	BO S	% ⊣w _L	ADDITIONAI LAB. TESTIN	PIEZOMETER OR STANDPIPE INSTALLATION
Important Important <t< th=""><th>0</th><th></th><th>Ground Surface</th><th></th><th>113.88</th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th>DUL-4</th></t<>	0		Ground Surface		113.88																DUL-4
1 63 0 1 63 0 1 10 </td <td></td> <td></td> <td>Brown sandy silt, trace gravel and clay, with possible cobbles and boulders (FILL MATERIAL)</td> <td></td> <td>0.05</td> <td></td>			Brown sandy silt, trace gravel and clay, with possible cobbles and boulders (FILL MATERIAL)		0.05																
1 05 0 1 05 0 1 0 1 0		0mm OD)																			
	Town	n Auger (21				1	GS				0									М	Backfilled with soil cuttings
	1	Hollow Ster																			
																					No 20
	_		End of borehole		112.36 1.52																groundwater seepage observed upon completion of borehole
	0																				
	2																				
3 4 5 CENTEC LOGED: KH.																					
	3																				
4 s <u>SEMTEC</u>																					
5 GEMTEC	4																				
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	5																				
		6	SEMTEC	1	1		<u> </u>	<u> </u>				<u></u>					1	1	<u></u>	LOGG	ED: K.H.

RECORD OF BOREHOLE 18-5

CLIENT:Cavanagh DevelopmentsPROJECT:2596 Carp RoadJOB#:61318.20

SHEET:1 OF 1DATUM:CGVD2013BORING DATE:Aug 8 2018

2
2

ш	6	3	SOIL PROFILE				SAMPLES				● PENETRATION SHEAR STRENGTH (Cu), ki RESISTANCE (N), BLOWS/0.3m + NATURAL ⊕ REMOULDE								u), kPA	. (7)	
DEPTH SCAL METRES			DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	NUMBER	ТҮРЕ	RECOVERY, mm	BLOWS/0.3m	▲ DY RE	NAMIC SISTA	PENE NCE (N	TRATIC I), BLO\ 30 4	0N VS/0.3n	n W _F 0 6			NTENT,	% w _∟	ADDITIONAL LAB. TESTIN	PIEZOMETER OR STANDPIPE INSTALLATION
_ 0			Ground Surface		113.91					· · · · ·											
-			TOPSOIL FILL Grey to brown sandy silt, some clay, trace gravel (FILL MATERIAL)		0.03																
- - -	Auger	er (210mm OD				1	GS														
- - - 1	Power /	ollow Stem Aug																			soil cuttings
-		Í			112 30	2	GS														No groundwater
- - -			End of borehole		1.52																seepage
- - 2 -																					-
- - -																					
- - - 3																					-
-																					
- 4																					
- 3																					
																					ED: K.H. KED: B.W.

RECORD OF BOREHOLE 18-7

CLIENT:Cavanagh DevelopmentsPROJECT:2596 Carp RoadJOB#:61318.20

LOCATION: See Borehole Location Plan, Figure 2

 SHEET:
 1 OF 1

 DATUM:
 CGVD2013

 BORING DATE:
 Aug 8 2018

щ	l c	no	SOIL PROFILE	. PROFILE			SAN	/IPLES		● PENETRATION SHEAR STRENGTH (Cu), kPA RESISTANCE (N), BLOWS/0.3m + NATURAL ⊕ REMOULDED 2													
DEPTH SCA METRES		DRING MELL	DESCRIPTION	RATA PLOT	ELEV.	NUMBER	ТҮРЕ	ECOVERY, mm	OWS/0.3m		(NAMI ESIST/	C PEN	ietrat (N), BL	TON OWS/	/0.3m	W _F	WATE	R COI	NTENT	⊺, % — w _L	ADDITIONA -AB. TESTIN	PIE ST INST	Zometer Or Andpipe Tallation
	2	ы М		STF	(m)			Ϋ́	BLG		10	20	30	40	50	6	0 7	70	80	90			
- 0	┝		Ground Surface TOPSOIL	<u>, , , , , , , , , , , , , , , , , , , </u>	112.68																		
- - -			Loose, brown SILTY SAND, trace gravel			1 1B	SS SS	430	7		O										м	Bentonite	e seal
_													: :::	: ::					: : : : - : : :	<u> </u>	-		
- 1		D)				2	SS	480	10	_									Image: Section of the sectio			Filter	sand
	r Auger	ger (210mm O	very dense, grey brown silty sand, trace to some gravel with possible cobbles and boulders (GLACIAL TILL)							_													
-	Power	em Au								-													⊻ E
		Hollow St				3	SS	610	54							•							
- 2																						5 diametre m long s	1 mm 1.52 y well creen
						4	SS	410	>50 1	- for: 150	mm												
			End of borehole	A BA	109.78 2.90																		
- 3			Auger refusal on inferred bedrock																				
																					-		
- 4																							
																		· · · · · · · · · · · · · · · · · · ·			-	DATE 18/08/17	DEPTH EI (m) 1.52 11
- 5																							
		 [-	GEMTEC	_	1	I	<u> </u>	1	1		· · ·	<u>. :</u>	<u>. i</u>	<u>. . :</u>				1	<u>. </u>	<u>. i</u>	LOGO	ED: КН	<u> </u>
		Cor																			CHEC	KED: B.	W.

APPENDIX C

Figures 1 and 2



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P:\0. Files\61300\61318.20\Phase 2 - Septic Design\Drafting\61318.20_FG02_V01_2018-09-19 - Prelim.dwg, FIGURE 2, 9/19/2018 12:37:17 PM



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