4 Campbell Reid Court, Dunrobin
Site Servicing and Stormwater Management Report

Project # CW-05-21

Prepared for:

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By:

Arch-Nova Design Inc.

September 2022

Updated June 2023

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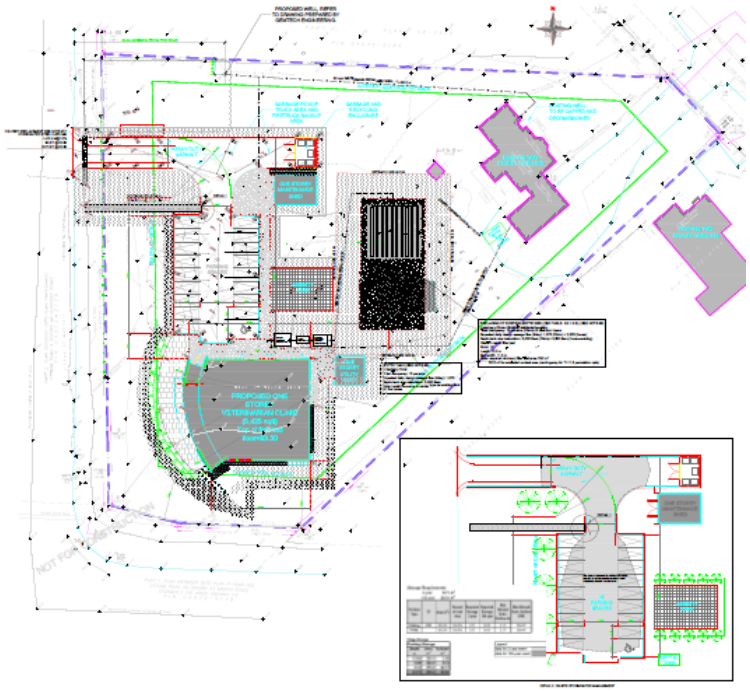
1. Introduction

The subject property is located at 4 Campbell Reid Court, Ottawa. The proposed work comprises of a veterinary clinic building, a parking and amenity area and storage sheds.



4 Campbell Reid Court, Ottawa: Site Plan

Currently the property is used as a residential with a house located along the north edge of the property. The property is surrounded by Dunrobin Road on its west side, March Road on south and Campbell Reid Court on its east edge. The east side borders with another residential property. Between the property and Dunrobin and March Road an existing drain runs toward south and south-east. Its purpose is to drain water from properties along Dunrobin Road. The grade of the property raises from 93.10 m on east corner to 93.49 m on its west side at the entrance to the site.

The drain's depth varies from 0.3m to 0.5 m.

"Hydrogeological Investigation and Terrain Assessment "[1] report provided information on existing and proposed water well and septic systems on site. In general, the report suggested drilling a new well and installation of a new septic system for the for the clinic. Existing well is susceptible to increased chlorides and it is not recommended for

[1] GEMTEC: "Hydrogeological Investigation and Terrain Assessment" July 2022

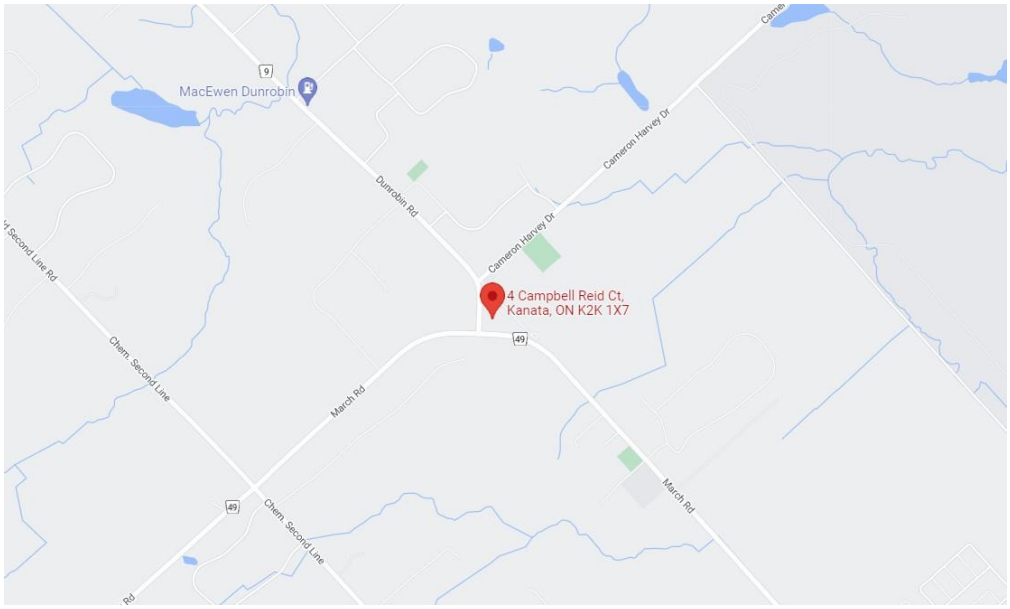
use in the clinic. A newly drilled well was tested and the flow and yield are recorded. A complete geo data as well as terrain analysis are provided in GEMTEC's report.

The new well was tested for 8 hours and samples were taken to the laboratory for: bacteriological, chemical, physical (hardness), metals, chlorides and total dissolved solids.

The water level was monitored for 30 days and fluctuation recorded was between 1.3-1.8 m below casing.

All tested materials had elevated results however, after repeated pumping some of readings decreased to acceptable levels. This trend of normalizing of all components is expected in the future.

In conclusion the report assessed the new well (TW22-1) as capable of pumping 20 m^3 of water daily and to supply both: the clinic and residential building if required.



4 Campbell Reid Court, Ottawa: Location

2. Public Services Capacity

This section of the report will analyze existing municipal services and the potential impact of the proposed building at 4 Campbell Reid Court on the existing service capacity.

2.1 Water Supply

The entire site is supplied by a private well. The capacity of newly drilled well is capable of pumping 20 m^3 of water daily and to supply both: the clinic and residential building.

The existing well is deemed as unsuitable for domestic water supply as the level of chlorides and nitrates is above acceptable. The well will be abandoned and capped.

The new well is proposed to be connected to the clinic by 32 mm pipe as well as a second branch 32 mm diameter to the residential building. It was recommended to have a hydrocell pumping system inside the clinic building as well as a small tank so the well pump is not running all the time. The house should have the same hydrocell system too.

Fire protection in the area is provided from Fire Station #45 at 640 Cameron Harvey Drive. Distance from the fire station to 4 Campbell Reid is 580 m.

Calculated fire demand is 3,000 l/min or 360 m^3 of water for duration of 2 hours.

Following table is showing required flow for establishment like a veterinary clinic and required pressure for operation of the hydrocell pumps inside the building. It will be a responsibility of the owner and contractor to choose and install the pumping system and a reservoir, if required. Also, the pressure in the plumbing system will be determined by a mechanical engineer based on the equipment requirements.

Water Supply Design Criteria

Design Parameter	Value
Residential Average Apartment	1.8 P/unit
Residential Average Daily Demand	280 L/d/P
Residential Maximum Daily Demand	9.5 x Average Daily *
Residential Maximum Hourly	1.5 x Maximum Daily *
Other Occupancy OBC Table 8.2.1.3 B: Vet Clinic	275/practitioner, 75/employee (8 hour shift)
Commercial Maximum Daily Demand	1.5 x Average Daily
Commercial Maximum Hourly	1.8 x Maximum Daily
Minimum Watermain Size	--------
Minimum Depth of Cover	2.4m from top of watermain to finished grade
During Peak Hourly Demand operating pressure must remain within	275kPa and 552kPa (40-80 psi; 28-56m)
* Residential Max. Daily and Max. Hourly peaking factors per MOE Guidelines for Drinking-Water Systems Table 3-3 for 0 to 500 persons.	

Table 1: Water Supply Design Criteria

Fire Station #45: location and distance

2.2 Sanitary Sewer

Sanitary sewer service will be provided on site by a septic system. The new development is characterized as a medical practice (veterinary clinic) with total of 3 practitioners and 10 personnel for duration of one shift of 8 hours. Ontario Building Code (OBC) “Table 8.2.1.3.B - Other Occupancies” is used for sizing the onsite sanitary system: for practitioners 275 l/day and for employees per 8-hour shift 75 l/day.

Infiltration and inflow of 0.33 l/s/ha was considered for the calculation however, the property drains toward drain channels around and away from the proposed location of sewer laterals and septic tank so the infiltration rate into the sewer laterals and the septic tank is assessed as very small to insignificant.

In addition to the statement above it is anticipated that the filter bed will be fully raised construction so no impact from ground water is expected.

The estimated outflow for the new building is **0.02 l/sec** (Average Dry Weather Flow).

Detailed calculation of pre and post development flow is presented in Appendix A.

2.3 Septic System

As the area is not serviced by municipal sewage, an onsite septic system is proposed. Based on the outflow calculation of 1,575 l/day, required primary septic tank capacity is calculated to be 5,000 liters.

Existing residential building is already serviced by a septic system and fully raised filter bed. This system also has a capacity of 5,000 liters for the septic tank.

A recommendation is to install a 10,000 liters tertiary system to service both, the clinic and the residential building. The existing septic system for the residential building will be disconnected and cleaned from the property upon the new system is built. similar model for the veterinary clinic for the reason of standardized maintenance and operation.

The proposed filter bed will be Class 4 raised filter bed and it has 10 (ten) runs. Total inflow to the filter bed from the clinic and the house is calculated to be 3,900 l/day. Percolation rate is estimated to 11.5 min/cm with loading rates of 10 l/m^2/day. Minimum required filter bed loading area is calculated to 78.0 m^2 however, the bed is sized 110 m^2 with extended contact area of 52.76 m^2. The reason for oversizing is in potential lower rate of loading.

The design will be submitted to the Ottawa Septic System Office (OSSO) upon the acceptance of conceptual design provided in this report.

As stated above, it is recommended to construct the same type of septic and filter bed as the existing one. As-built plans of existing system are presented in Appendix C .

2.4 Site Stormwater Services

Current site and the rest of surface of the lot at 4 Campbell Reid Court represent a typical rural site with a residential building on north side and forested and open space toward south. In this area the existing sewage filter bed is located. All stormwater runoff is under uncontrolled condition. Along the property's west side and Dunrobin road an existing drain runs in direction north-south. Current entrance from Dunrobin to the site will be retained. A culvert is installed at the location. It appears as a concrete pipe. As a new access driveway will be wider new culverts are proposed: twin 375 mm corrugated steel pipes, 10.4 m long. There are no other significant physical features of the area such as depressions, wet land or surface retention.

The proposed development will have large impervious areas such as roofs, parking's and driveways. Modified rational method was used to assess an excess runoff and onsite storage volume. An assumption was that the predevelopment runoff coefficient is C=0.25. The ground water level is relatively low so the infiltration is good with minimum or no surface runoff.

For the post development analysis, the sub-catchments are delineated. The uncontrolled runoff area is measured 0.3974 ha with weighted factor of 0.38 (landscape, building, amenity areas, sheds).

Surface Type	ID	Area (ha)	Percent of total Area	C	A X C (ha)
Landscape	A3	0.2297	57.8%	0.25	0.057
Amenity Area	A4	0.1172	29.5%	0.40	0.047
Building	A5	0.0505	12.7%	0.90	0.045
TOTAL		0.3974	100.0%		0.150
Weighted C =					0.38

The controlled area is measured 0.08452 ha with weighted runoff factor of 0.9 (parking).

Surface Type	ID	Area (ha)	Percent of total Area	C	A X C (ha)
Parking	A1	0.0757	89.6%	0.90	0.068
Shed 1	A2	0.0051	6.0%	0.90	0.005
Shed 2	A6	0.0037	4.4%	0.90	0.003
TOTAL		0.08452	4.4%		0.076
Weighted C =					0.90

The parking area will be graded to create a storage for excess of water. Total controlled runoff is calculated to be 3.77 l/sec.

Predevelopment Runoff:		
Uncontrolled Runoff		
2-year	36.01	l/sec
100-year	104.67	l/sec
Controlled Runoff:		
2-year	0.00	l/sec
100-year	0.00	l/sec

Postdevelopment Runoff:		
Uncontrolled Runoff		
2-year	32.24	l/sec
100-year	93.71	l/sec
Controlled Runoff:		
2-year	16.24	l/sec
100-year	41.96	l/sec

Controlled allowable runoff		
Controlled Runoff:		
2-year	**3.77**	**l/sec**

100-year storage volume required to be stored on site and released under predevelopment 2-year runoff is:

Stage-Storage

Parking Storage		
Depth	**Area**	**Volume**
m	m^2	m^3
0.030	250.0	2.50
0.081	**324.0**	**8.75**
0.14	**475.0**	**22.17**
0.194	**525.0**	**33.95**

The 100-year predevelopment runoff is 104.67 l/sec. The post development 100-year uncontrolled runoff is 93.71 l/sec and with the controlled outflow of 3.77 l/sec it will make total of 97.48 l/sec which is less than the predevelopment 100-year runoff.

The goal to match 100-year postdevelopment to 2-year predevelopment runoff is not achievable as significant increase of imperviousness resulted in the uncontrolled 100-year postdevelopment runoff larger than 2-year predevelopment runoff. For such a reason a decision was to make sure that under any condition the post development runoff will not be larger than the predevelopment. The postdevelopment 2-year runoff will be 36.01 l/sec and the 100-year postdevelopment runoff will be less than the predevelopment one, for 7.19 l/sec.

At the time of preparation of this report there were no indications of flooding around the property so the proposed development will not cause adverse impact.

Difference in elevations between proposed parking lot and the existing drain is only 0.5 m so any standard inlet control device cannot be installed. For such a reason a curb installed 100 mm pipe with opening of 60% was designed. It releases water into a swale 1.45 m wide and 23.0 m long at 2.1% slope, connecting the parking and the ditch. The bottom of the swale is proposed to be covered with a large river rock material. It will also serve capture small particles before water reaches the ditch.

Top of the curb is set at 0.175 m above the bottom of inlet. It will serve as the storage depth control as well as an emergency overflow point.

2.5 Site Grading

The site grading is designed to create a storage for the stormwater on the parking area and to evacuate water from the access areas to the facility. Slopes toward existing drain and the site access driveway maintained and will not change general pattern od runoff or cause erosion.

Area south-west from existing filter bed is reserved for the extension and the grading will match the existing grading of the filter bed.

3. Conclusion and Recommendation

3.1 Water Supply

The site is serviced from existing well which is deemed as not suitable based on the quality of water. A new well was drilled and it has sufficient capacity to service both: the residential house and the new veterinary clinic.

3.2 Sanitary Sewer

The site (existing house) is serviced by a septic system however a new filter bed is proposed and will serve both: the house and the clinic. A new septic tank for the clinic and the existing house with capacity of 10,000 liters will be installed beside the clinic's building and connected by forcemain the filter bed. The filter bed consists of 10 runs and with extended contact area.

The design will be submitted to the Ottawa Septic System Office (OSSO) upon the acceptance of conceptual design provided in this report.

3.3 Stormwater

The 100-year predevelopment runoff is 104.67 l/sec. The post development 100-year uncontrolled runoff is 93.71 l/sec and with the controlled outflow of 3.77 l/sec it will make total of 97.48 l/sec which is less than the predevelopment 100-year runoff.

Difference in elevations between proposed parking lot and the existing drain is only 0.5 m so any standard inlet control device cannot be installed. For such a reason a curb installed 100 mm pipe with opening of 60% was designed. It releases water into a swale 1.45 m wide and 23.0 m long at 2.1% slope, connecting the parking and the ditch. The bottom of the swale is proposed to be covered with a large river rock material. It will also serve capture small particles before water reaches the ditch.

Existing driveway/access to the site will remain in function but widened and with asphalt surface. As a new access driveway will be wider new culverts are proposed: twin 375 mm corrugated steel pipes, 10.4 m long. The existing ditch will remain unchanged as it appears operational. New swale connecting the parking and the ditch will function to direct water from the parking to the ditch as well as to dissipate water to settle particles (quality control).

Prepared by:

Zoran Mrdja, P.Eng., FEC

September, 2022
Updated: April 2023

Professional Engineers Ontario

Authorized by Professional Engineers of Ontario to provide professional services to public

Appendix A: Calculations

Appendix A: Calculations

Project Number: CW-05-21 4 Campbell Reid Crt.

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PRE-DEVELOPMENT

The pre-development time of concentration is 10 minutes

where:

$I_2 = 732.951 / (Tc + 6.199)^{0.810}$ $I_{100} = 1735.688 / (Tc + 6.014)^{0.820}$

$I_2 =$ **76.8 mm/hr** $I_{100} =$ **178.6 mm/hr**

Surface Type	ID	Area (ha)	Percent of total Area	C	A X C (ha)
Site	A1	0.48185	100.0%	0.35	0.169
TOTAL		0.4819	100.0%		0.169
Weighted C =					0.35

$Q_{2pre} = (2.78)*(C)*(I_5)*(A)$
$Q_{2pre} =$ 2.78 x 0.35 x 76.8 x 0.4819
$Q_{2pre} =$ 36.01 L/s

$Q_{100pre} = (2.78)*(C)*(I_{100})*(A)$
$Q_{100pre} =$ 2.78 x 0.44 x 178.6 x 0.4819
$Q_{100pre} =$ 104.67 L/s

POST-DEVELOPMENT (UNCONTROLLED RUNOFF)

The post-development time of concentration is 10 minutes

where:

$I_2 = 732.951 / (Tc + 6.199)^{0.810}$ $I_{100} = 1735.688 / (Tc + 6.014)^{0.820}$

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Surface Type	ID	Area (ha)	Percent of total Area	C	A X C (ha)
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Building	A5	0.0505	12.7%	0.90	0.045
TOTAL		0.3974	100.0%		0.150
Weighted C =					0.38

$Q_{2post} = (2.78)*(C)*(I_5)*(A)$
$Q_{2post} =$ 2.78 x 0.38 x 76.8 x 0.3974
$Q_{2post} =$ 32.24 L/s

$Q_{100post} = (2.78)*(C)*(I_{100})*(A)$
$Q_{100post} =$ 2.78 x 0.48 x 178.6 x 0.3974
$Q_{100post} =$ 93.71 L/s

Project Number: CW-05-21 4 Campbell Reid Crt.

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PRE-DEVELOPMENT (CONTROLLED RUNOFF)

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Surface Type	ID	Area (ha)	Percent of total Area	C	A X C (ha)
Site	A1	0.00000	0.0%	0.25	0.000
TOTAL		0.0000	0.0%		0.000
Weighted C =					0.00

C=0.6 used for predevelopment calculation (City of Ottawa requirement)

$Q_{2pre} = (2.78)*(C)*(I_2)*(A)$
$Q_{2pre} =$ 2.78 x 0.00 x 76.8 x 0.0000
$Q_{2pre} =$ 0.00 L/s

$Q_{100pre} = (2.78)*(C)*(I_{100})*(A)$
$Q_{100pre} =$ 2.78 x 0.00 x 178.6 x 0.0000
$Q_{100pre} =$ 0.00 L/s

POST-DEVELOPMENT (CONTROLLED RUNOFF)

The post-development time of concentration is 10 minutes

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$I_2 = 732.951 / (Tc + 6.199)^{0.810}$ $I_{100} = 1735.688 / (Tc + 6.014)^{0.820}$

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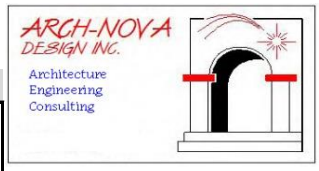
Surface Type	ID	Area (ha)	Percent of total Area	C	A X C (ha)
Parking	A1	0.0757	89.6%	0.90	0.068
Shed 1	A2	0.0051	6.0%	0.90	0.005
Shed 2	A6	0.0037	4.4%	0.90	0.003
TOTAL		0.08452	4.4%		0.076
Weighted C =					0.90

$Q_{2post} = (2.78)*(C)*(I_2)*(A)$
$Q_{2post} =$ 2.78 x 0.90 x 76.8 x 0.0845
$Q_{2post} =$ 16.24 L/s

$Q_{100post} = (2.78)*(C)*(I_{100})*(A)$
$Q_{100post} =$ 2.78 x 1.00 x 178.6 x 0.0845
$Q_{100post} =$ 41.96 L/s

ALLOWABLE RUNOFF



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Postdevelopment Runoff:		
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Controlled Runoff:		
2-year	16.24	l/sec
100-year	41.96	l/sec

Controlled allowable runoff		
Controlled Runoff:		
2-year	**3.77**	**l/sec**

Comment:

Storage Volumes (2-Year Storm)

Project: 384 Frank St.

Tc = 10 (mins)
C_{AVG} = 0.90 (dimmensionless)
Area = 0.0845 (hectares)
Storm = 2 (year)
Release Rate = 3.77 (L/sec)
Time Interval = 10 (mins)

Duration (min)	Rainfall Intensity (mm/hr)	Peak Flow (L/sec)	Release Rate (L/sec)	Storage Rate (L/sec)	Storage (m^3)
1	148	3.1	3.77		
11	73	15.5	3.77	11.70	7.72
21	50	10.7	3.77	6.91	8.70
31	39	8.3	3.77	4.51	8.40
41	32	6.8	3.77	3.06	7.53
51	28	5.8	3.77	2.08	6.36
61	24	5.1	3.77	1.36	4.98
71	22	4.6	3.77	0.82	3.48
81	20	4.2	3.77	0.39	1.88
91	18	3.8	3.77	0.04	0.20
101	17	3.5	3.77	-0.25	-1.54
111	15	3.3	3.77	-0.50	-3.32
121	14	3.1	3.77	-0.71	-5.15
131	14	2.9	3.77	-0.89	-7.00
141	13	2.7	3.77	-1.05	-8.88
151	12	2.6	3.77	-1.19	-10.79
161	12	2.5	3.77	-1.32	-12.72
171	11	2.3	3.77	-1.43	-14.66
181	11	2.2	3.77	-1.53	-16.63
191	10	2.1	3.77	-1.62	-18.60
201	10	2.1	3.77	-1.71	-20.59
211	9	2.0	3.77	-1.78	-22.60
221	9	1.9	3.77	-1.86	-24.61
231	9	1.8	3.77	-1.92	-26.63
241	8	1.8	3.77	-1.98	-28.66
251	8	1.7	3.77	-2.04	-30.70
261	8	1.7	3.77	-2.09	-32.75
271	7.7	1.6	3.77	-2.14	-34.80

Notes

1) For a storm duration that is less than the time of concentration the peak flow is equal to the product of 2.78CIA and the ratio of the storm duration to the time of concentration.

2) Rainfall Intensity, I = 732.951 / (Tc + 6.199)^0.810 (2 year, City of Ottawa)
3) Peak Flow = Duration/Tc x 2.78 x C x I x A (Duration < Tc)
4) Peak Flow = 2.78 x C x I x A (Duration > Tc)
5) Storage = Duration x Storage Rate

Storage Volumes (100-Year Storm)

Tc = 10 (mins)
C_{AVG} = 1.00 (dimmensionless)
Area = 0.0845 (hectares)
Storm = 100 (year)
Release Rate = 3.77 (L/sec)
Time Interval = 10 (mins)

Duration (min)	Rainfall Intensity (mm/hr)	Peak Flow (L/sec)	Release Rate (L/sec)	Storage Rate (L/sec)	Storage (m^3)
1	351	8.3	3.77		
11	170	39.9	3.77	36.15	23.86
21	116	27.3	3.77	23.56	29.68
31	90	21.1	3.77	17.34	32.25
41	74	17.3	3.77	13.58	33.41
51	63	14.8	3.77	11.04	33.79
61	55	13.0	3.77	9.20	33.69
71	49	11.6	3.77	7.81	33.25
81	45	10.5	3.77	6.70	32.58
91	41	9.6	3.77	5.81	31.72
101	38	8.8	3.77	5.07	30.72
111	35	8.2	3.77	4.44	29.60
121	33	7.7	3.77	3.91	28.39
131	31	7.2	3.77	3.45	27.10
141	29	6.8	3.77	3.04	25.74
151	27	6.5	3.77	2.69	24.33
161	26	6.1	3.77	2.37	22.86
171	25	5.8	3.77	2.08	21.35
181	24	5.6	3.77	1.82	19.80
191	23	5.4	3.77	1.59	18.21
201	22	5.1	3.77	1.38	16.60
211	21	4.9	3.77	1.18	14.95
221	20	4.8	3.77	1.00	13.28
231	20	4.6	3.77	0.84	11.58
241	19	4.5	3.77	0.68	9.87
251	18	4.3	3.77	0.54	8.13
261	18	4.2	3.77	0.41	6.38
271	17	4.1	3.77	0.28	4.60

Notes

1) For a storm duration that is less than the time of concentration the peak flow is equal to the product of 2.78CIA and the ratio of the storm duration to the time of concentration.

2) Rainfall Intensity, I = 1735.688 / (Tc + 6.014)^0.820 (100 year, City of Ottawa)
3) Peak Flow = Duration/Tc x 2.78 x C x I x A (Duration < Tc)
4) Peak Flow = 2.78 x C x I x A (Duration > Tc)
5) Storage = Duration x Storage Rate

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Storage Requirements

2-year **8.70 m^3**

100-year **33.79 m^3**

Surface Type	ID	Area (m^2)	Percent of total Area	Required Storage 2 year	Required Storage 100 year	Max Allowed Drain Outflow l/s	Max Allowed Drain Outflow GPM
Parking	**ICD**	525.00	100.0%	8.70	33.79	3.77	59.73
TOTAL		525.00	100.0%	8.70	33.79	3.77	59.73

Stage-Storage

Parking Storage		
Depth m	**Area** m^2	**Volume** m^3
0.030	250.0	2.50
0.081	**324.0**	**8.75**
0.14	**475.0**	**22.17**
0.194	**525.0**	**33.95**

Legend:	
data for 2-year event	
data for 100-year event	

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Notes:

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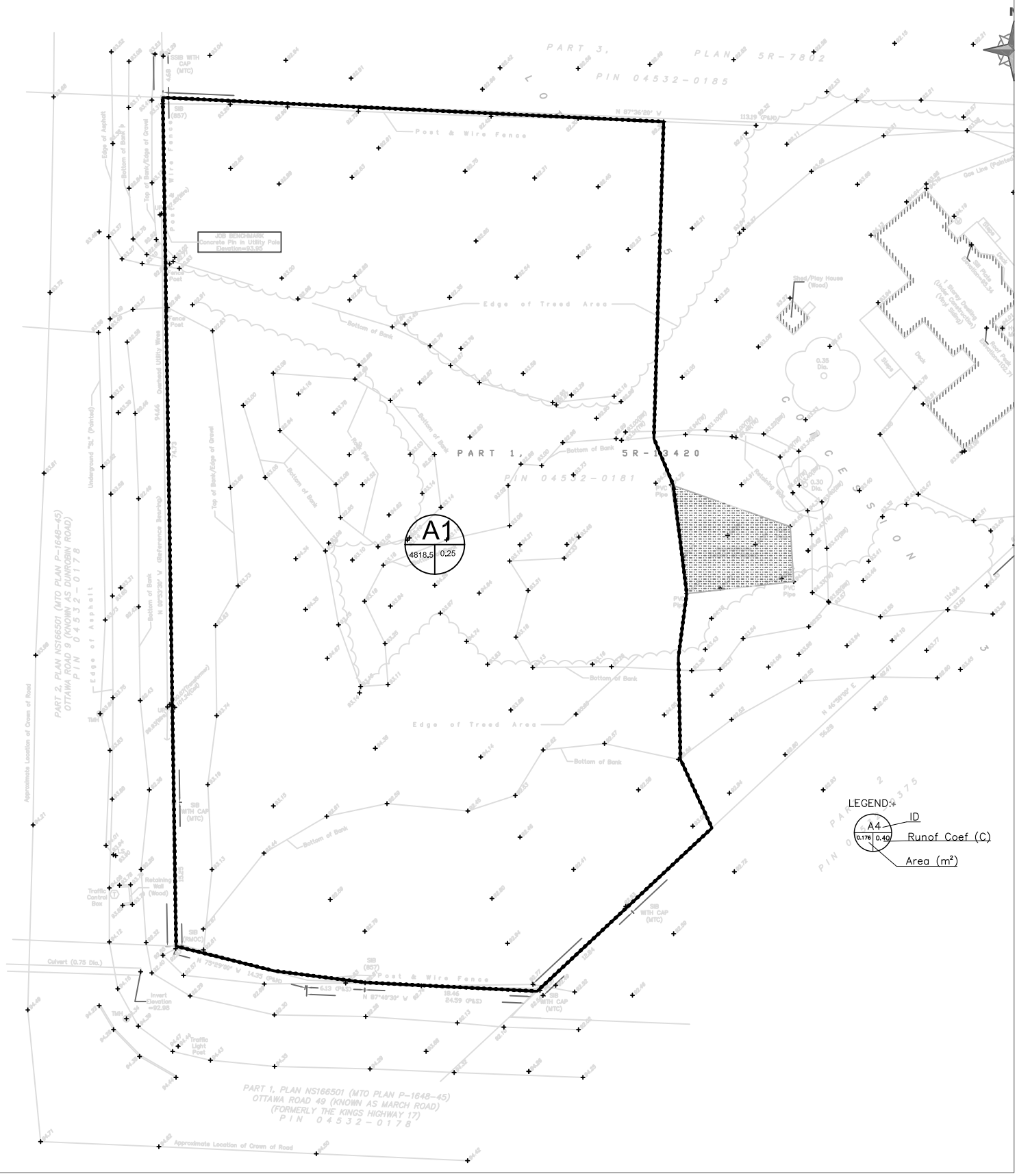
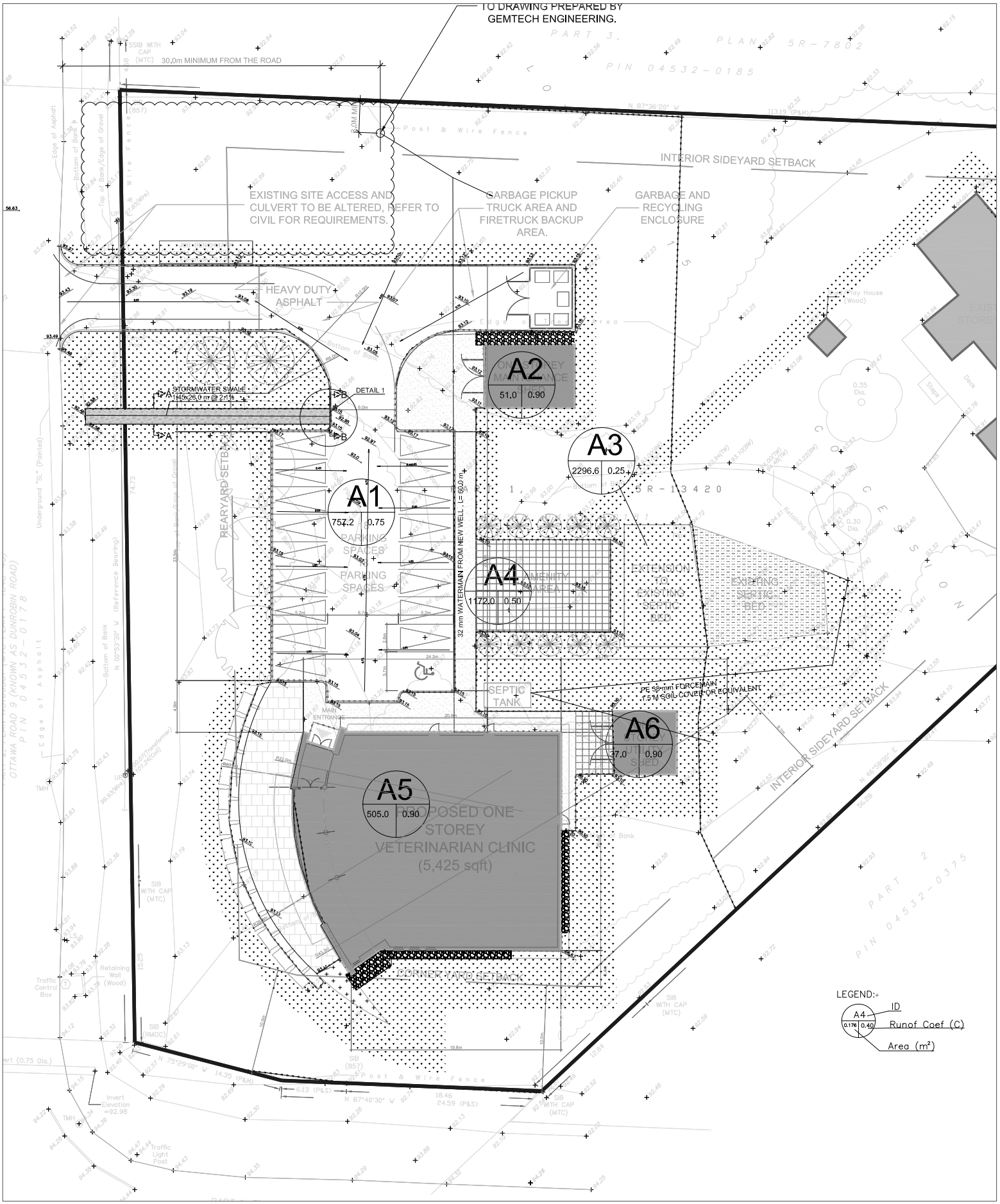


4 Campbell Reid Crt., Donrobin
SWM PREDEVELOPMENT

ARCH-NOVA Design Inc.
45 Banner Road NEPEAN ON K2H 8X5
613-702-3403 contact@archnova.ca



4 Campbell Reid Crt., Donrobin
SWM POSTDEVELOPMENT

ARCH-NOVA Design Inc.
45 Banner Road NEPEAN ON K2H 8X5
613-702-3403 contact@archnova.ca

DESIGN CALCULATIONS
FOR CLASS 2, 4 & 5 ON-SITE SEWAGE SYSTEM

Owner: Dr. Olander	Designer: Mrdja	2022-09-23

STEP 1

DAILY SEWAGE FLOW (Based on Hydraulic Loads for Fixtures, Floor Area, and Number of Bedrooms)

Plumbing Fixture Description	Existing Number of Fixtures	Proposed Number of Fixtures	Total x Fixture Units Value = Number of Fixture Units		
Bathroom group (toilet, sink, bathtub)	2		2	6	12
Toilet (alone)	1		1	4	4
Washbasin	2		2	1.5	3
Bathtub or Shower	1		1	1.5	1.5
Kitchen Sink(s)	1		1	1.5	1.5
Bar Sink			0	1.5	0
Dishwasher	1		1	1.5	1.5
Washing Machine	1		1	1.5	1.5
Bidet			0	1	0
Laundry Tub	1		1	1.5	1.5
Other:			0		0
				Total Fixture Units	**26.5**

Proposed: 220 m^2 2368.1 ft^2

Existing: 195 m^2 2099 ft^2

Total Finished Floor Area Excluding Area of Finished Basement

0.00 m^2

0.00 ft^2

(Multiply m^2 x 10.764 = ft^2)

From the chart below, please calculate the expected daily sewage flow for your proposed building, and mark the total in the space provided. For non-residential occupancies see Table 8.2.1.3 B O.B.C.

Residential Occupancy	Existing	Q in Litres	Calculations
1 Bedroom		750	0
2 Bedrooms		1100	0
3 Bedrooms		1600	0
4 Bedrooms	1	2000	2000
5 Bedrooms		2500	0
Additional Flow for:			0
Each Bedroom over 5		500	0
Floor Space for each 10m^2 over 200 m^2 up to 400 m^2	0	100	0
Floor Space for each 10m^2 over 400 m^2 up to 600 m^2		75	0
Floor Space for each 10m^2 over 600 m^2 **OR***		50	0
Each fixture unit over 20 fixture units total	6.5	50	325
Total			**2325**

NOTE: Where you need to do multiple calculations, signified by the "OR" in the table, do the calculation for daily sewage flow based on bedrooms and floor space first, then fixture units, and use the larger of the two calculations.

Other Occupancy (Table 8.2.1.3 (B))			
Establishment Type: Veterinary Clinic	**Occupant Load**	**Volume (Liters)**	**Calculations**
Per practitioner	3	275	825
Per employee per 8 hours shift	10	75	750
Per stall, kennel or cage if floor drain connected		**75**	0
		Total	**1575**

EXPECTED DAILY DESIGN SEWAGE FLOW (Q) **3,900.00** Liters

(Use Q for the following calculations)

STEP 2

PROPERTY SOIL PROFILE AND PERCOLATION RATE (T) DESCRIPTION

Soil Type	Coarse Gravel, no fines	Gravel, some small rocks	Gravel, sand mix, some fines	Sand, fairly uniform, some fines	Sandy, Loam mix	Silty, Loam, almost clay	Clay, smears well, rolls into ribbon
T-time Min/cm	0 to 1	1 to 5	5 to 10	10 to 15	15 to 25	25 to 50	> 50

ON-SITE PROFILE (Subtract useable depth of Soil from 1.5m (5') for depth of imported fill)

Soil Depth Meters	Percolation Rate T	Soil Type (see above)	Depth of Rock/Impervious Soil/GroundwaterTable √
0.2			
0.4			
0.6	11.5	sand	1
0.8			
1.0			
1.2			
1.4			
1.6			

Topsoil to be removed:

Depth m 0 (ft)

Usable Existing Soil:

Depth 0.25 m 0.825 (ft)

Imported Fill:

Depth 0.75 m 2.475 (ft)

Percolation Rate (T) 10 min/cm

Excavation of Existing Soil:

Depth m 0 (ft)

CONTACT AREA CALCULATION

If you do not have a minimum of 250 mm (10") of useable soil on the property, you will need to import the mantle, or contact area. Choose T range, divide Q by Loading Rate for T.

Percolation Time (T) of Soil (min/cm)	Loading Rates (L/m2/day)	Q
1 < T ≤ 20	10	3900
20 < T ≤	8	
35 < T ≤	6	
T > 50	4	
Column 1	2	

Contact Area **Daily Sewage Flow (Q)÷ Loading Rate =** **390.00** **m^2**

STEP 3

A) SEPTIC TANK SIZE CALCULATION To calculate the minimum capacity of your septic tank, use the following formulas. Minimum tank size is 3600 Litres.

Residential:	**Q** =	2325	**2 x Q =**	4650	**Litres**	**Tank Size:**	5,000.00
Other Occupants:	**Q** =	1,575.00	**3 x Q =**	4,725.00	**Litres**	**Tank Size:**	5,000.00

B) LEACHING BED LENGTH CALCULATION **(Divide meters by 0.305 to convert to feet)**

Length (m)= (QxT)/200	224.25	**(m)**	735.25	**ft**

DESCRIPTION

Number of Runs:	**10**	**D - Box**	Y	**Header**	Y
Distance between runs	**1.60**				
Run length	**22.43**				
Leaching Bed Width	**33.00**				
Leaching Bed Area	**872.03**				

FILTER BED

Where you may not have sufficient area on your property to install a leaching bed, you may install a filter bed for your distribution system.

FILTER BED CALCULATION **(Multiply m_2 x 10.764 to convert T to ft_2)**

If your daily sewage flow is less than 3000 litres per day, perform calculation 1), or if your daily sewage flow exceeds 3000 litres per day, perform calculation 2).

1) Filter Bed Surface Area = Q ÷75 expressed as m^2

Q 3,900.00 / **75** = **52.00** m^2

2) Filter Bed Surface Area = Q ÷50 expressed as m^2

Q 3,900.00 / **50** = **78.00** m^2

Where Percolation Rate T < 11.5 then Q/75 = Area of filter bed 52 m^2 or 559.7 ft^2

The total square area is calculated by measuring the length, and multiplying it against the width. In most instances, the filter bed is constructed long and narrow, as opposed to a square. This helps the bed "breathe," as more oxygen can penetrate the filter bed from the sides, and from above.

Filter Bed Loading Area	**78.00**	**m^2**	**Length m**	**11**	**Width m**	**7.09**
	839.59	**ft^2**	**Length ft**	**36.30**	**Width ft**	**23.40**

EXTENDED CONTACT AREA

Where Percolation Rate T > 11.5 then (Q x T)/850 = Extended Contact Area _____m_2 or ____ 52.76 m2

Filter Bed Loading Area	**52.76**	**m^2**	**Length m**	**11**	**Width m**	**4.80**
	567.96	**ft^2**	**Length ft**	**36.30**	**Width ft**	**15.83**

Water Supply Design Criteria

Design Parameter	Value
Residential Average Apartment	1.8 P/unit
Residential Average Daily Demand	280 L/d/P
Residential Maximum Daily Demand	9.5 x Average Daily *
Residential Maximum Hourly	1.5 x Maximum Daily *
Other Occupancy OBC Table 8.2.1.3 B: Vet Clinic	275/practitioner, 75/employee (8 hour shift)
Commercial Maximum Daily Demand	1.5 x Average Daily
Commercial Maximum Hourly	1.8 x Maximum Daily
Minimum Watermain Size	150mm diameter
Minimum Depth of Cover	2.4m from top of watermain to finished grade
must remain within	275kPa and 552kPa (40-80 psi; 28-56m)
During fire flow operating pressure must not drop below	140kPa (20 psi; 14 m)
* Residential Max. Daily and Max. Hourly peaking factors per MOE Guidelines for Drinking-Water Systems Table 3-3 for 0 to 500 persons.	

Water Demand and Boundary Conditions

Proposed Conditions

Design Parameter	Anticipated Demand[1] (L/min)	Boundary Condition[2] (m)
Average Daily Demand	1.09	
Max Day + Fire Flow	3,001.64	
Peak Hour	2.95	

[1)] Water demand calculation per Water Supply Guidelines. See Appendix B for detailed calculations.

[2)] Boundary conditions supplied by the City of Ottawa. See Appendix B for correspondence with the City.

Domestic Demand

Type of Housing	Per / Unit	Units	Pop
Single Family	3.4	0	0
Semi-detached	2.7		0
Townhouse	2.7		0
Apartment			0
Bachelor	1.4		0
1 Bedroom	1.4		0
2 Bedroom	2.1		0
3 Bedroom	3.1		0
4 Bedroom	4.2	0	0

	Pop	Avg. Daily		Max Day		Peak Hour	
		m^3/d	L/min	m^3/d	L/min	m^3/d	L/min
Total Domestic Demand	0	0.00	0.00	0.00	0.00	0.00	0.00

Institutional / Commercial / Industrial Demand

				Avg. Daily		Max Day		Peak Hour	
Property Type	**Unit Rate**		**Units**	m^3/d	L/min	m^3/d	L/min	m^3/d	L/min
Commercial floor space	2.5	$L/m^2/d$							
Office	75.0	$L/9.3m^2/d$							
Veterinary Clinic	275.0	L/practitioner/d	3	0.83	0.57	1.24	0.86	2.23	1.55
Veterinary Clinic	75.0	L/employee/d	10	0.75	0.52	1.13	0.78	2.03	1.41
Industrial -Heavy	55,000.0	L/gross ha/d							
Total I/C/I Demand				1.58	1.09	2.36	1.64	4.25	2.95

Total Demand	1.58	1.09	2.36	1.64	4.25	2.95

* Estimated number of seats at 1seat per $9.3m^2$

Water Supply Design Criteria

Design Parameter	Value
Residential Average Apartment	1.8 P/unit
Residential Average Daily Demand	280 L/d/P
Residential Maximum Daily Demand	2.5 x Average Daily *
Residential Maximum Hourly	2.2 x Maximum Daily *
Commercial Demand	2.5 L / m2 /d
Commercial Maximum Daily Demand	1.5 x Average Daily
Commercial Maximum Hourly	1.8 x Maximum Daily
Minimum Watermain Size	150mm diameter
Minimum Depth of Cover	2.4m from top of watermain to finished grade
must remain within	275kPa and 552kPa
During fire flow operating pressure must not drop below	140kPa
* Residential Max. Daily and Max. Hourly peaking factors per MOE Guidelines for Drinking-Water Systems Table 3-3 for 0 to 500 persons.	

Water Demand and Boundary Conditions

Proposed Conditions

Design Parameter	Anticipated Demand[1] (L/min)	Boundary Condition[2] (kPa)
Average Daily Demand	1.09	
Max Day + Fire Flow	3,002.95	
Peak Hour	2.95	

[1)] Water demand calculation per Water Supply Guidelines. See Appendix B for detailed calculations.

[2)] Boundary conditions supplied by the City of Ottawa. See Appendix B for correspondence with the City.

Wastewater Design Criteria

Design Parameter	Value
Residential Average Apartment	1.8 P/unit
Average Daily Demand	280 L/cap/day
Peaking Factor	Harmon's Peaking Factor. Max 4.0, Min 2.0
Correction Factor (City of Ottawa Tech.Bulletin ISTB-2018-0	0.8
Commercial Space	28,000 L/ha/day
Infiltration and Inflow Allowance	0.28L/s/ha
Sanitary sewers are to be sized employing the Manning's Equation	$Q = (1/n)AR^{2/3}S^{1/2}$
Minimum Sewer Size	200mm diameter
Minimum Manning's 'n'	0.013
Minimum Depth of Cover	2.5m from crown of sewer to grade
Minimum Full Flowing Velocity	0.6m/s
Maximum Full Flowing Velocity	3.0m/s
Extracted from Sections 4 and 6 of the City of Ottawa Sewer Design Guidelines, November 2012.	

Sanitary Sewer Post Development Outflow

Site Area	**0.4 ha**
Extraneous Flow Allowances	
Infiltration / Inflow	**0.132 L/s**

Domestic Contributions

Unit Type	Unit Rate	Units	**Pop**
Single Family	3.4	0	0
Semi-detached and duplex	2.7		0
Duplex	2.3		0
Townhouse	2.7		0
Apartment			
Bachelor	1.4		0
1 Bedroom	1.4	0	0
2 Bedroom	2.1	0	0
3 Bedroom	3.1	0	0
4 Bedroom	4.2	0	0
Total Population			**0**
Average Domestic Flow			**0.00 L/s**
Peaking Factor			**3.80**
Peak Domestic Flow			**0.00 L/s**

Institutional / Commercial / Industrial Contributions

Property Type	**Unit Rate**	**No. of Units**	**Avg Wastewater (L/s)**
Commercial	28,000 L/gross ha/d	0.006215	0.00
Veterinary Clinic	275 l/unit/day	3	0.01
Veterinary Clinic	75 l/person/day	10	0.01
Institutional	28,000 L/gross ha/d	0	0.00
Industrial - Light	35,000 L/gross ha/d	0	0.00
Industrial - Heavy	55,000 L/gross ha/d	0	0.00
Average I/C/I Flow			**0.020**
Peak Institutional / Commercial Flow*			**0.030**
Peak Industrial Flow**			**0.000**
Peak I/C/I Flow			**0.030**

Total Estimated Average Dry Weather Flow Rate	**0.020**
Total Estimated Peak Dry Weather Flow Rate	**0.030**
Total Estimated Peak Wet Weather Flow Rate	**0.162**

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**Use Apendix 4B diagram

FUS Fire Flow Calculations

Project: 4 Campbell Reid Court

Calculations Based on 1999 Publication "Water Supply for Public Protection Fire Protection " by Fire Underwriters' Survey (FUS)

Fire Flow Calculation #: 1

Date August 19, 2022 Building Type/Description/Name: Veterinary Clinic

Data input by: Zoran Mrdja, P.Eng.

Table A: Fire Underwriters Survey Determination of Required Fire Flow - Long Method

Step	Task	Term	Options	Multiplier Associated with Option	Choose:	Value Used	Unit	Total Fire Flow (L/min)
1	Choose Frame Used for Construction of Unit	Framing Material						
		Coefficient related to type of construction (C)	Wood Frame	1.50	Fire resistive construction (>2 hrs)	0.60		
			Ordinary construction	1.00				
			Non-combustible construction	0.80				
			Fire resistive construction (< 2 hrs)	0.70				
			Fire resistive construction (> 2 hrs)	0.60				
2	Choose Type of Housing (if TH, Enter Number of Units Per TH Block)	Floor Space Area						
		Type of Housing	Single Family	1	Other (Comm, ind)	1	Units	
			Townhouse - indicate # of units	1				
			Other (Comm, Ind, etc.)	1				
2.2	# of Storeys	Number of Floors/ Storeys in the Unit (do not include basement):					Storeys	
3	Enter Ground Floor Area of One Unit	Enter Ground Floor Area (A) of One Unit Only :			area			
		Measurement Units	Square Feet (ft2)	5425.0	dist	504	Area in Square Meters (m2)	
			Square Metres (m2)	504				
			Hectares (ha)	0				
4	Obtain Required Fire Flow without Reductions	Required Fire Flow(without reductions or increases per FUS) (F = 220 * C * √A) Round to nearest 1000L/min						2,963
5	Apply Factors Affecting Burning	Reductions/Increases Due to Factors Affecting Burning						
5.1	Choose Combustibility of Building Contents	Occupancy content hazard reduction or surcharge	Non-combustible	0.25	Non-combustible	-0.25	N/A	-741
			Limited combustible	-0.15				
			Combustible	0.00				
			Free burning	0.15				
			Rapid burning	0.25				
5.2	Choose Reduction Due to Presence of Sprinklers	Sprinkler reduction	Complete Automatic Sprinkler Protection	-0.3	None	0.00	N/A	0
			None	0				
5.3	Choose Separation Distance Between Units	Exposure Distance Between Units	North Side	30.1-45 m	0.05	0.20	m	
			East Side	30.1-45 m	0.05			
			South Side	30.1-45 m	0.05			
			West Side	30.1-45 m	0.05			593
6	Obtain Required Fire Flow, Duration & Volume	Total Required Fire Flow, rounded to nearest 1000 L/min, with max/min limits applied:						3,000
		Total Required Fire Flow (above) in L/s:						50
		Required Duration of Fire Flow (hrs)						2.00
		Required Volume of Fire Flow (m3)						360

Note: The most current FUS document should be referenced before design to ensure that the above figures are consistent with the intent of the Guideline

Legend	
	Drop down menu - choose option, or enter value.
	No Information, No input required.

Note:

The most current FUS document should be referenced before design to ensure that the above figures are consistent with the intent of the Guideline.

Appendix B: Correspondence

Pre-application Consultation PC2019-0171

4 Campbell Crt

Meeting Notes

July 18, 2019

Attendees

Drs Olenders, owners
Dr Firestone, with owner
Tim Moore, agent
Sami Rehman, Environmental Planner
Kevin Hall, Project Manager
Michel Kearney, Hydrogeologist
Neeti Paudel, Transportation
Cheryl McWilliams, File Lead

Proposal:

- New 6000 sq ft veterinary hospital, combining their March and Dunrobin facilities
- Keep existing house (No basement renovation for house proposed now)
- Proposed new septic for vet building
- Access vet building off of Dunrobin Road

Transportation

In the case that the access is proposed on Dunrobin Road;

Please follow the Transportation Impact Assessment (TIA) Guidelines:

- Submit TIA Step 2 Scoping, a full TIA will be required.
- Please note that the application will not be deemed complete until it meets the necessary TIA components (Draft Steps 1-4 of the TIA). If roadway modifications are required, draft RMA package will have to be submitted with Step 4 of the TIA.

In the case that the access is proposed on Campbell Reid Court – TIA will not be required.

Right of way protection for March Road is 34m. Ensure this is protected.

Right of way to be protected for Dunrobin Road is 30m.

When submitting site plans:

- Show all details of the road abutting the site including the opposite curb. Pavement markings, accesses and sidewalks must be included.
- Turning templates are required for all accesses and internal movements. Ensure the turning templates show the largest vehicle turning in to and out of the site at all accesses.

- Curb radii at the access should be reduced as much as possible. Ensure the measurements are shown in the site plan.

Noise Impact Study is required for the following:

- Road. *Dunrobin Road and March Road are both classified as arterial roads.*

Corner triangles (Dunrobin Road and March Road) as per OP Annex 1 - Road Classification and Rights-of-Way at the following locations on the final plan will be required: Arterial Road to Arterial Road: 10 metre x 10 metres

Environment

- Part of the natural heritage system overlay
- Species at risk needs to be considered and woodlot linkages
- Requires Tree Conservation Report and Environmental Impact Statement
- The subject property is part of the Natural Heritage System (NHS) and as per Official Plan policies (Section 2.4.2 and 4.7.8), the proposed development requires an Environmental Impact Statement (EIS). This part of the NHS is one of the natural landscape linkages. The EIS must demonstrate that the proposed development will have no negative impacts to the natural landscape linkage and its associated ecological functions. Furthermore, the EIS should examine potential significant habitat for Species at Risk on the subject property (OP 4.7.4).
- Further details of the EIS requirements can be found in OP Section 4.7.8 and the EIS guidelines:
- https://documents.ottawa.ca/sites/default/files/documents/eis_guidelines2015_en.pdf
- The proposed development will also require a Tree Conservation Report (TCR), as per OP Section 4.7.2. Further details of the requirements for the TCR can be found in the TCR guidelines:
- https://ottawa.ca/en/residents/water-and-environment/trees-and-community-forests/protection#tree-conservation-report-guidelines
- To avoid duplications, the TCR can be combined with the EIS.

Engineering

- Stormwater management is required to demonstrate post to pre run off
- Contact Matt Craig at Mississippi Valley Conservation Authority for stormwater quality requirements
- Road side ditch should be the legal outlet – NEED TO CON.
- Require a geotechnical report
- Require no light spillage onto adjacent properties
- Show any on-site snow storage
- Geotech report will be required.
- Hydro-Geological report required
- Lighting certificate confirming the site light meets our standards
- Stormwater report. The CA should be contacted to confirm the quality requirements. They need to confirm they have a legal outlet for the runoff from this site.
- Consult what the onsite fire requirements will be.
- Access from Dunrobin and possible use of an access on to Campbell Reid.

Fire

- May need storage tanks – comments provided by Fire Services
- Will need fire route shown on the site plan

Private Servicing (hydrogeological report required

- Proposal would have separate well and septic for each use
- Concerns with separation distances
- Soils are thin (less than one metre)
- Septic capacity if more than 10000 l per day for the lot then needs Ministry of Environment Conservation and Parks approval (house typically 2-3000)

Planning

- Need to buffer the site and especially parking from March and Dunrobin roads, Best done through maintaining trees and undergrowth along those two roads. In particular along March and at the north west corner along Dunrobin Road.
- Looking for an enhanced building façade with any visibility to the roads. Looking to have the materials and colours for the most part 'fit' with a rural context. Some visibility from the roads for the building and signage would be appropriate.
- We will be looking for some screening off of Campbell Court abutting the property owner to the south to ensure buffering between any commercial use, access or parking and loading form that residential property.
- Access off of Campbell court may be best for safety
- The application would be a Site Plan – Rural based – Standard one.

Appendix C: Guidelines, Existing Reports, Studies and References, Plans

The following studies were utilized in the preparation of this report:

- **Ottawa Sewer Design Guidelines**,

  City of Ottawa, SDG002, October 2012, amended 2019 & 2020. (City Standards)

  - Technical Bulletin ISTB-2018-01, City of Ottawa, March 21, 2018.
  - Technical Bulletin ISTB-2018-03, City of Ottawa, March 21, 2018.

- **Ottawa Design Guidelines – Water Distribution**

  City of Ottawa, July 2010., (Water Supply Guidelines)

  - Technical Bulletin ISD-2010-2, City of Ottawa, December 15, 2010.
  - Technical Bulletin ISDTB-2014-02, City of Ottawa, May 27, 2014.
  - Technical Bulletin ISDTB-2018-02, City of Ottawa, March 21, 2018.

- **Design Guidelines for Sewage Works,**

  Ministry of the Environment, 2008., (MOE Design Guidelines)

- **Stormwater Planning and Design Manual,**

  Ministry of the Environment, March 2003.,(SWMP Design Manual)

- **Ontario Building Code Compendium**

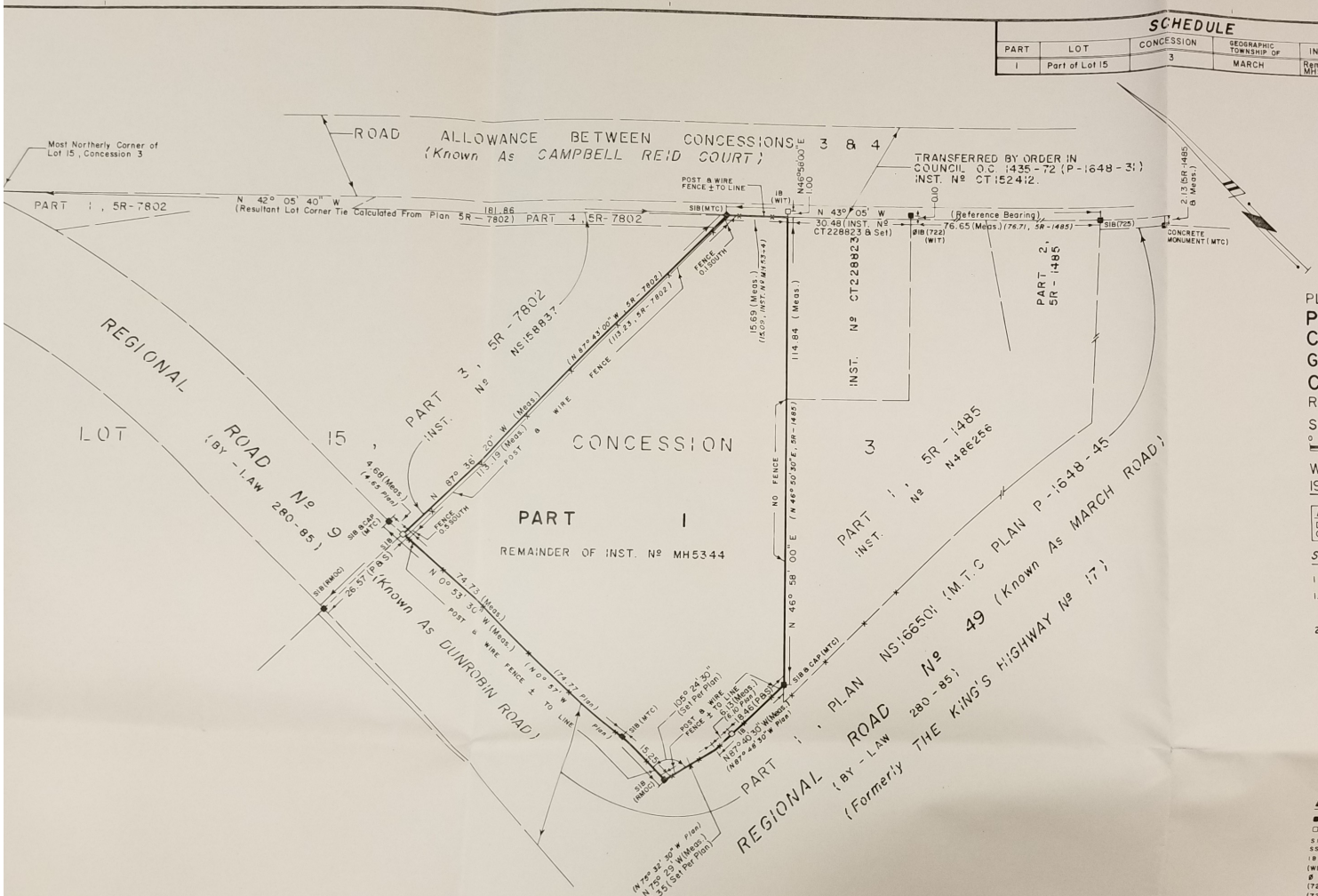
  Ministry of Municipal Affairs and Housing Building Development Branch, January 1, 2010 Update.(OBC)

- **Water Supply for Public Fire Protection**

  Fire Underwriters Survey, 1999., (FUS)

- **NFPA 13 – Standard for the Installation of Sprinkler Systems**

  National Fire Protection Association, 2016., (NFPA Standards)



SCHEDULE

PART	LOT	CONCESSION	GEOGRAPHIC TOWNSHIP OF	INST. Nº
1	Part of Lot 15	3	MARCH	Remainder of MH5344

I REQUIRE THIS PLAN TO BE DEPOSITED UNDER THE REGISTRY ACT.

DATE 1990-02-08

W. R. BARROW

PLAN 5R-13

RECEIVED AND DEPOSITE

DATE Feb 12, 19

ASST DEP J. Rishi

LAND REGISTRAR FOR REGISTRY DIVISION OTTAWA-CARLETON (

PLAN OF SURVEY OF

PART OF LOT 15
CONCESSION 3
Geographic Township of March
CITY OF KANATA

REGIONAL MUNICIPALITY OF OTTAWA-CARLETON

SCALE 1:750

0 5 10 20 50 METRES

W. R. BARROW, O.L.S.

1990

METRIC

DISTANCES SHOWN ON THIS PLAN ARE IN METRES AND CAN BE CONVERTED TO FEET BY DIVIDING BY 0.3048.

SURVEYOR'S CERTIFICATE

I CERTIFY THAT:

1. THIS SURVEY AND PLAN ARE CORRECT AND IN ACCORDANCE WITH THE SU ACT AND THE REGISTRY ACT AND THE REGULATIONS MADE THEREUND
2. THE SURVEY WAS COMPLETED ON THE 2nd DAY OF FEBRUARY, 1990.

1990-02-07
DATE

W. R. BARROW
ONTARIO LAND SURVEY

NOTES

BEARINGS ARE ASTRONOMIC AND ARE REFERRED TO THE NORTHEASTERLY LIMIT OF PARTS 1 & 2, PLAN 5R-1485, HAVING A BEARING OF N 43° 05' W.

LEGEND

- ■ — DENOTES SURVEY MONUMENT FOUND
- □ — DENOTES SURVEY MONUMENT SET
- SIB — DENOTES STANDARD IRON BAR
- SSIB — DENOTES SHORT STANDARD IRON BAR
- IB — DENOTES IRON BAR
- (WIT) — DENOTES WITNESS
- ø — DENOTES ROUND
- (722) — DENOTES W.E. RIDOUT, O.L.S.
- (725) — DENOTES R.W. ARNETT, O.L.S.
- (MTC) — DENOTES MINISTRY OF TRANSPORTATION & COMMUNICATIONS
- (Plan) — DENOTES PLAN OR-93
- (P&S) — DENOTES PLAN & SET
- (RMOC) — DENOTES REGIONAL MUNICIPALITY OF OTTAWA-CARLETON

CAUTION THIS PLAN IS NOT A PLAN OF SUBDIVISION WITHIN THE MEANING OF THE PL

FAIRHALL, MOFFATT & WOODLAND LIMITED
ONTARIO LAND SURVEYORS
OTTAWA KANATA

FILE

JOB Nº

REF Nº 157-

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

Installation Report • Rapport d'installation

Applicant: Simpson | Legal Description: Lot: 15 Conc.: 3 S.Lot: ____ R.Plan: ____

File #: 07-005 | Present on site: ____ | Inspector: JFM

Date: NOV 5/07 | Time: 3:05 pm | Weather: OVERCAST

Civic Address: 4 Campbell Reid Court

Scarification Inspection and/or Clay Seal

Time: 2:15 pm | Date: Aug 28, 2007 | Approved: ☒ yes ☐ no

Weather: Sun, Warm | On-site: ____ | Inspector: G. Nelson

Length: ~~28.5m~~ 29 m | Width: 15 m | Elevations: Bed Area: 99.1 masl TOE

Comments: ____ | Mantle 98.53 masl

Section A Tank

Septic tank/holding tank size: ____ (L) | Filter make and model: ____

Make and model: EXISTING | Inlet: ____ | Outlet: ____

☐ plastic ☒ concrete ☐ fiberglass ☐ on-site ☒ prefabricated | Lids: ____ | Baffles: ____

Section B Treatment Unit

Make: ____ | Connections: ____

Model: ____ | Electrical: ____

Section C Leaching Bed

Location: REAR YARD | Distances:

Type: TRENCH | Structure(s): ____ | House: 7.8m

Height: OK | Lot Lines: ____ | Wells*: 1) ____

Header: ☒ level | End Pipe: ☒ level | Watercourses: ____ | 2) ____

Runs: 8 | Length: 11m | Tree(s): ____

Gravel Size: 3/4" | Thickness: OK

Fall on Runs: ☒ yes ☐ no | Between Trenches: 1.6m

Ends capped: ☐ yes ☐ no | Interconnect ☒ | Mantles: 15 metres in 1 direction(s)

Geotextile: ☒ yes ☐ no | Paper: ☐ yes ☐ no | thickness: 0.25

Pipes: Diameter ☒ 3 in. ☐ 4 in. ☐ chamber syst. | Other: ____

Make: ROYAL | Elevations: (if required)

Extended base: ____ | Header: ____ ____ | Ends: ____ ____

Paperwork for F.M.: ☐ grain size and C.U. ☐ Weigh Bills | **Area Bed:** ____

Shallow Buried Trench: Runs: ____ Length: ____ | Stone: Length: ____ | Width: ____

Pipe: ☐ 1" ☐ 1.5" Chamber: ____ | Sand: Length: ____ | Width: ____

Section D Pump Chamber

☐ pump chamber ☐ pump present | ☐ forced main: ☐ check valve ☐ frost protection installed

☐ floats installed ☐ electrical wiring

☐ alarm: ☐ inside ☐ outside | ☐ other: ____

☐ joints sealed properly

Section E Distribution Box

☐ sealed joints ☐ baffle or other | Diagram:

☐ level ☐ compacted base

☐ frost protection | number of outlets: ____

*affected neighbouring wells

☒ Picture(s) taken

☐ Approved in Full

☒ Preliminary On-Site Approval (additional paperwork required, etc.)

☐ Not approved, for re-inspection, call 692-0160 or 1-800-459-5975. Please ensure that ALL noted deficiencies have been rectified prior to calling for a re-inspection.

Remarks: PUMP CHAMBER & DISTRIBUTION SYSTEM TO BE INSTALLED

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

Application for a Permit to Construct or Demolish

This form is authorized under the Building Code Sentence 2.4.1.1A.(2).

OSSO PERMIT #
07 - 005

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

REQUIRED FOR ALL INQUIRIES

(3) Copies

INV# 00059-2007

Application submitted to: Rideau Valley Conservation Authority
(Name of municipality, upper-tier municipality, board of health or conservation authority)

A. Project information

Building number, street name: 4 Campbell Reid Court		Unit number	Lot/con.: 15/3
Municipality: Ottawa (Kanata)	Postal code: K2K 1X7	Plan number/other description: Part 1, Plan 5R-13420	
Project value est. $		Area of work (m^2)	

B. Applicant

Applicant is: ☐ Owner or ☒ Authorized agent of owner

Last name	First name	Corporation or partnership: Paterson Group Inc.	
Street address: 28 Concourse Gate		Unit number: 1	Lot/con.
Municipality: Ottawa (Nepean)	Postal code: K2E 7T7	Province: Ontario	E-mail: avanschie@patersongroup.ca
Telephone number: (613) 226-7381	Fax: (613) 226-6344	Cell number: ( )	

C. Owner (if different from applicant)

Last name: Simpson	First name: Geoff	Corporation or partnership	
Street address: 4 Campbell Reid Court		Unit number	Lot/con.
Municipality: Ottawa (Kanata)	Postal code: K2K 1X7	Province: Ontario	E-mail
Telephone number: (613) 592-0692	Fax: ( )	Cell number: (613) 853-3358	

D. Builder (optional)

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

E. Purpose of application

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

Proposed use of building	Current use of building: Residential

Description of proposed work

Install a Class 4 Sewage System

DIRECTIONS - MARCH ROAD TO DUNROBIN ROAD TO CAMPBELL REID COURT

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. Attachments

O.S.S.O. PERMIT # 07 - 005

i. Attach documents establishing compliance with applicable law as set out in Article 1.1.3.3.
ii. Attach Schedule 1 for each individual who reviews and takes responsibility for design activities.
iii. Attach Schedule 2 where application is to construct on-site, install or repair a sewage system.
iv. Attach types and quantities of plans and specifications for the proposed construction or demolition that are prescribed by the by-law, resolution, or regulation of the municipality, upper-tier municipality, board of health or conservation authority to which this application is made.

H. Declaration of applicant

I Albert Van Schie - Paterson Group Inc. certify 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. I have authority to bind the corporation or partnership (if applicable).

January 2, 2007
Date

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.
4 Campbell Reid Court			15/3
Municipality	**Postal code**	**Plan number/ other description**	
Ottawa (Kanata)	K2K 1X7	Part 1, Plan 5R-13420	

B. Individual who reviews and takes responsibility for design activities

Name		Firm			
Albert Van Schie		Paterson Group Inc.			
Street address				**Unit no.**	**Lot/con.**
28 Concourse Gate				1	
Municipality	**Postal code**	**Province**		**E-mail**	
Ottawa, Nepean	K2E 7T7	Ontario		avanschie@patersongroup.ca	
Telephone number		**Fax number**		**Cell number**	
(613) 226-7381		(613) 226-6344		( )	

C. Design activities undertaken by individual identified in Section B. [Building Code Table 2.20.2.1]

☐ 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

Sewage System Design

D. Declaration of Designer

I Albert Van Schie - Paterson Group 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 2.17.4. of the Building Code. I am qualified, and the firm is registered, in the appropriate classes/categories.

Individual BCIN: 24387

Firm BCIN: 29346

☐ I review and take responsibility for the design work and am qualified in the appropriate category as an "other designer" under subsection 2.17.5. 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 authority to bind the corporation or partnership (if applicable).

January 2, 2007 _____
Date Signature of Designer

*For the purposes of this form, "individual" means the "person" referred to in Clause 2.17.4.7.(1)(d), Article 2.17.5.1. and all other persons who are exempt from qualification under Subsections 2.17.4. and 2.17.5.

NOTE:

1. Firm and Individual BCIN numbers are not required for building permit applications submitted prior to January 1, 2006
2. Schedule 1 does not need to be completed by architects, or holders of a Certificate of Practice or a Temporary License under the *Architects Act.*

Schedule 2: Sewage System Installer Information

A. Project Information				
Building number, street name: 4 Campbell Reid Court			Unit number	Lot/con.: 15/3
Municipality: Ottawa (Kanata)	Postal code: K2K 1X7	Plan number/ other description: Part 1, Plan 5R-13420		

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 2.18.1.1?

- ☐ 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 Albert Van Schie - Paterson Group 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. I have authority to bind the corporation or partnership (if applicable).

January 2, 2007
Date

Signature of applicant

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

R.V.C.A. RECEIVED
JAN - 5 2007
REFER TO:

Do Not Complete
Permit No O.S.S.O. PERMIT #
Revision No
Date 07-005
REQUIRED FOR ALL INQUIRIES

Schedule 4
Proposed Services

1. Engineered
   - X Yes
   - __ No

2. Water supply
   - __ Proposed
   - X Existing

3. Type of work proposed
   - __ New Installation
   - X Replacement
   - __ Alteration

4. Type of Well
   - __ Dug/bored/Sandpoint well
   - X Drilled well
   - __ Municipal
   - __ Other

5. Residential Sewage Design Flow Info.
   - Bedrooms 4
   - House (floor area) 220 m^2
   - People
   - Total Fixture Units 15.5 (Schedule 8)
   - Residential Flow 2200 L/day

6. Sewage Design Flow for Other Occupancies
   Design Flow _____ L/day
   Detailed sewage flow calculations:

7. Type of System
   - __ Treatment Unit _____
   - __ Class 2 – Leaching Pit
   - __ Class 3 – Cesspool
   - __ Class 4 – Shallow Buried Trench
   - X Class 4 – Trench
     - X Fully raised
     - __ Partially raised
     - __ In-ground
   - __ Class 4 – Filter Media
     - __ Fully raised
     - __ Partially raised
     - __ In-ground
   - __ Class 4 – Area Bed
     - __ Fully raised
     - __ Partially raised
     - __ In-ground
   - __ Class 4 – Aerobic with Trench
     - __ Fully raised
     - __ Partially raised
     - __ In-ground
   - __ Class 4 – Aerobic with Filter Media
     - __ Fully raised
     - __ Partially raised
     - __ In-ground
   - __ Class 5 – Holding Tank

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

Do Not Complete
Permit No
Revision No
Date

Schedule 5
Sewage System Details

Type of System Class 4 - Trench (Schedule 4)

Septic/Holding Tank Existing L

Septic Tank Effluent Filter Yes

Treatment Unit – Make & Model _____

Number of Units _____

Refer to Typical Drawing PH0547-1&2

Mantle Information:

Native or (imported) =15m in W direction(s)

Slope subgrade 2% (min) % slope

Westerly direction(s)

Site to be Scarified (If in clay) YES / (NO)

Clay Seal Required (If in bedrock) YES / (NO)

☒ **Trench**

Distribution Pipe Length 88 m

Loading Area 423 m^2

Type of Chamber _____

Length of Chamber _____ m

☐ **Area Bed**

Stone _____ m^2

Sand _____ m^2

Pipe _____ m

☐ **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^2

Note: Alarm required for all pumping systems

Construction Notes: _____

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

Do Not Complete
Permit No
Revision No
Date

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

Name of Applicant/Agent: Paterson Group Inc. Date: November 24, 2006 Time: Applicant/Agent Signature: AS	Inspector: JKD Date: JAN 10/07 Time: Inspector Signature:

EG (……..) Soil Description	T	EG (……..) Soil Description	T
REFER TO PATERSON GROUP DRAWING PH0547-2 1.0 m 1.5m 2.0 m		.5m AS PER ENGINEER 1.0 m 1.5m 2.0 m	
EG (……..) Soil Description	T	EG (……..) Soil Description	T
.5m 1.0 m 1.5m 2.0 m		.5m 1.0 m 1.5m 2.0 m	

LEGEND

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

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Date

Scale: 1Block = _____

Schedule 7
Layout Section

N

REFER TO PATERSON GROUP DRAWING PH0547-1

_Dug Well _Drilled Well _Neighbouring Homes ◊Benchmark ---Tile Drainage __Property Line

Elevations (metric only)
B.M 100.00 m
B.M Description Top of Deck @ Rear Left Corner of House
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

Ottawa Septic System Office
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Revision No
Date 07-005
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Schedule 8
Fixture unit count

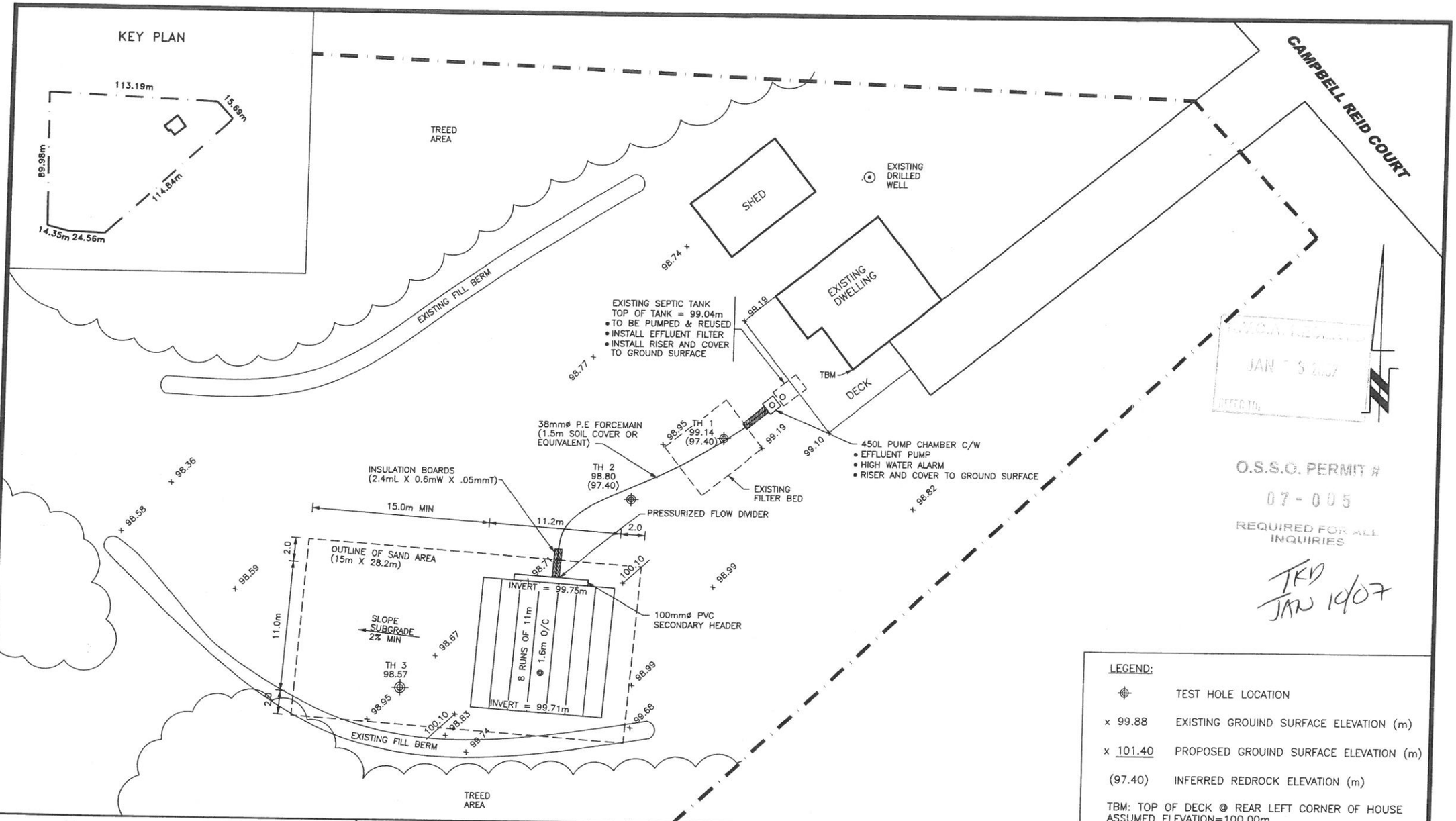
Fixtures	# Existing	+	# Proposed	X	unit count	=	Fixture Count
Bathroom							
Bathroom group (toilet, sink and tub or shower) with flush tank	2	+		X	6	=	12.0
Bathtub with/without overhead shower		+		X	1.5	=	
Shower stall		+		X	1.5	=	
Wash basin (1_inch trap)		+		X	1.5	=	
Watercloset (toilet) tank operated		+		X	4	=	
Bidet		+		X	1	=	
Kitchen							
Dishwasher	1	+		X	0.5	=	0.5
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 1_ trap)		+		X	1.5	=	
					Total:		15.5

Insert the TOTAL in section 5 of Schedule 4 (0.Reb.403/97 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)).

Agent/Owner signature

January 2, 2007
Date



paterson group
consulting engineers
28 Concourse Gate, Unit 1, Ottawa, Ontario K2E 7T7

Scale:	1:300
Des.:	JB
Dwn:	MH
Chkd:	AVS

MR. GEOFF SIMPSON
PROPOSED SEWAGE SYSTEM REPLACEMENT
4 CAMPBELL REID COURT
OTTAWA (KANATA), ONTARIO

SEWAGE SYSTEM LAYOUT PLAN

Dwg. No. PH0547-1
Report No.: PH0547-1
Date: 11/2006

11x17

CLASS 4 ABSORPTION TRENCH STYLE BED

NOTES:

1) ESTIMATE OF DAILY SEWAGE FLOW (Q)

- NO. OF BEDROOMS = 4
- LIVING AREA OF DWELLING = 220 m2
- FIXTURE COUNT = 15.5

DESIGN SEWAGE FLOW = 2200 L/DAY

2) SUBSURFACE CONDITIONS

SOILS INFORMATION GATHERED BY PATERSON GROUP INC.

TH 2, ELEV. 98.80m		TH 3, ELEV. 98.57m	
0–0.10	TOPSOIL	0–0.10	TOPSOIL
0.10–1.36	SILTY CLAY	0.10–0.50	ROCK FILL INTERMIXED WITH SILT, SAND & CLAY
1.36	REFUSAL ON INFERRED BEDROCK	0.50	REFUSAL ON ROCK FILL

– EFFLUENT @ 1.00m

– DRY UPON COMPLETION

3) DISTRIBUTION PIPING NETWORK

- LENGTH OF PIPE REQUIRED = QT/200 = 2200(8)/200 = 88m
- USE 8 RUNS OF 11m EACH RUN.
- TOTAL LENGTH OF PIPE PROVIDED = 88 LINEAR METRES

4) HYDRAULIC LOADING RATE

- TOTAL BED AREA = 423 m2
- HYDRAULIC LOADING RATE = 5.2 L/DAY/m2

5) SEPTIC TANK

- PUMP & RE–USE EXISTING SEPTIC TANK
- AN EFFLUENT FILTER SHALL BE INSTALLED ON THE OUTLET PIPE IN THE EXISTING SEPTIC TANK.
- INSTALL RISERS AND COVER TO PROVIDE ACCESS FROM GROUND SURFACE OVER FILTER.

6) PUMP CHAMBER

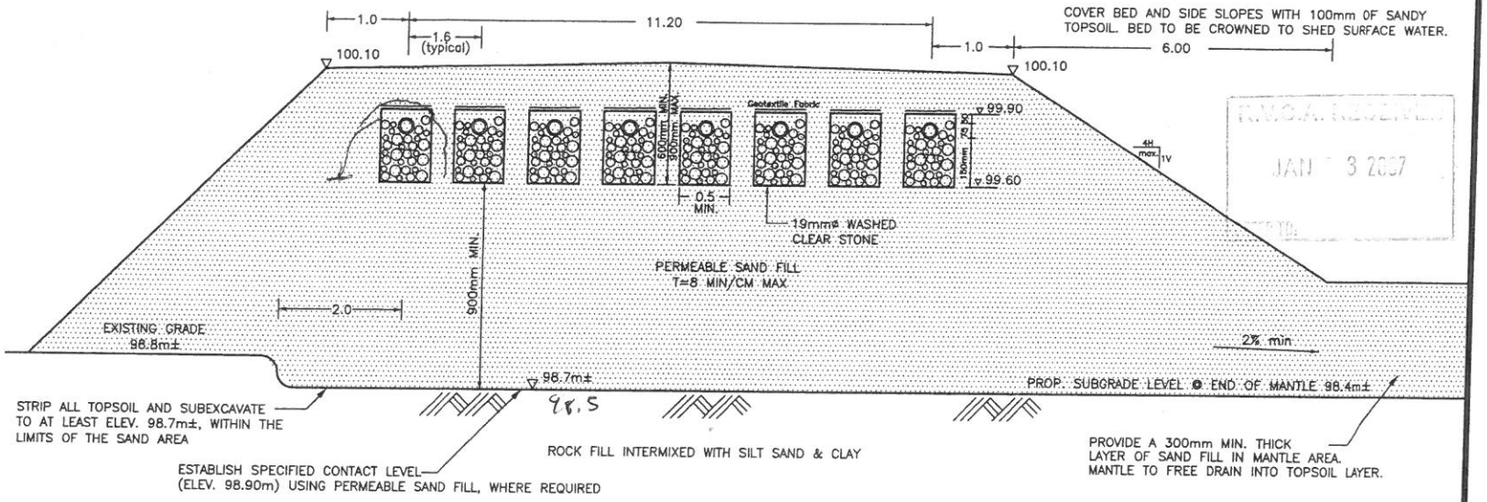
- INSTALL A 450L MINIMUM PUMP CHAMBER IN SERIES AND DOWNSTREAM FROM THE TREATMENT UNIT.
- AN EFFLUENT PUMP (MYERS ME40 OR EQUIVALENT) AND A HIGH WATER ALARM SHALL BE INSTALLED IN THE PUMP CHAMBER.
- THE RECOMMENDED PUMP DUTY CYCLE IS 290L.
- A 3mmø DRAIN HOLE SHALL BE INSTALLED IN THE BOTTOM OF THE FORCEMAIN IN THE PUMP CHAMBER.
- RISERS WITH A COVER SHALL BE INSTALLED OVER THE CHAMBER TO PROVIDED ACCESS FROM THE GROUND SURFACE.

7) PRESSURIZED FLOW DIVIDER/FORCEMAIN

- A 38mmø (NOMINAL) FORCEMAIN SHALL BE USED TO CARRY THE EFFLUENT FROM THE PUMP CHAMBER TO THE LEACHING BED.
- THE FORCEMAIN SHALL BE PROVIDED WITH 1.5m SOIL COVER OR EQUIVALENT.
- THE FORCEMAIN SHALL BE OVERLAIN WITH 50mm T x 600mm W INSULATION BOARDS AT THE PIPE CONNECTIONS.
- THE FORCEMAIN SHALL DISCHARGE INTO A PRESSURIZED FLOW DIVIDER (PREMIER TECH PSF–200) WHICH SHALL BE INSTALLED INTO A SECONDARY HEADER PIPE.
- THE FLOW DIVIDING TEE SHALL BE INSTALLED LEVEL ON A BED OF COMPACTED SAND.

8) LEACHING BED

- A FULLY–RAISED FILL BASED ABSORPTION TRENCH STYLE LEACHING BED TO BE INSTALLED.
- A MINIMUM THICKNESS OF 0.9m OF IMPORTED SAND FILL, HAVING A PERCOLATION RATE OF NOT GREATER 8 min./cm, SHALL BE PROVIDED BELOW THE BASE OF THE TRENCHES.
- THE SUBGRADE SURFACE FOR THE BED AND MANTLE AREAS SHOULD BE PREPARED BY REMOVAL OF ALL EXISTING TOPSOIL AND SUBEXCAVATING TO AT LEAST ELEV. 98.7m±.
- THE SPECIFIED CONTACT LEVEL, ELEV. 98.7m±, SHALL BE ESTABLISHED USING PERMEABLE SAND FILL, WHERE REQUIRED.



PROFILE
NOT TO SCALE

- THE DISTRIBUTION PIPES SHOULD CONSIST OF 75mmø PERFORATED SEPTIC PIPE WHICH SHOULD BE EMBEDDED IN A 300mm THICK BY 500mm (MIN.) WIDE LAYER OF 19mmø WASHED CLEAR STONE.
- THE DISTRIBUTION PIPES SHOULD BE INSTALLED WITH A UNIFORM DOWNWARD SLOPE FROM ELEV. 99.75m AT THE HEADER TO ELEV. 99.71m AT THE FOOTER.
- THE ENDS OF EACH RUN SHALL BE INTERCONNECTED WITH A FOOTER PIPE.
- THE CLEAR STONE LAYER SHOULD BE COVERED WITH AN APPROVED GEOTEXTILE FABRIC.
- THE SURFACE OF THE BED SHOULD BE COVERED WITH PERMEABLE SAND FOLLOWED BY APPROXIMATELY 100mm OF SANDY TOPSOIL. THE BED AREA SHOULD BE VEGETATED.
- THE TOTAL THICKNESS OF THE COVER OVER THE BASE OF THE TRENCHES SHOULD BE WITHIN THE RANGE OF 0.6m TO 0.9m.
- THE SIDES OF THE BED SHOULD BE SLOPED IN THE RANGE OF 4H:1V OR SHALLOWER.

9) MINIMUM CLEARANCE FROM LEACHING BED

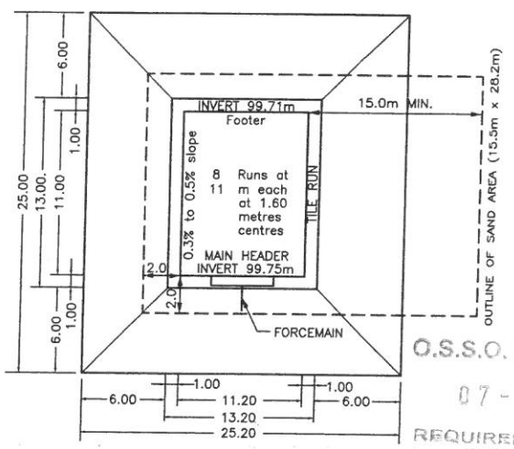
- 6.0m FROM ANY PROPERTY LINE.
- 8.0m FROM ANY STRUCTURE
- 18.0m FROM ANY DRILLED WELL.
- 5.0m FROM ANY TREES UNLESS OTHERWISE APPROVED.
- 5.0m FROM DRIVEWAY

10) MINIMUM CLEARANCE FROM TANK(S)

- 1.5m FROM ANY STRUCTURE
- 15.0m FROM ANY DRILLED WELL
- 3.0m FROM ANY PROPERTY LINE

11) OTHER PERTINENT DETAILS

- POOLS AND ALL APPURTENANCES, SUCH AS FENCES, PATIOS, ETC. SHOULD BE LOCATED A MINIMUM OF 5m FROM THE DISTRIBUTION SYSTEM OF LEACHING BED.
- THE BACKWASH WATERS FROM ANY TREATMENT UNIT, SUCH AS A WATER SOFTENER, SHOULD NOT DISCHARGE INTO THE SEPTIC TANK SYSTEM.
- THE CONTRACTOR IS RESPONSIBLE TO LOCATE AND PROTECT ALL EXISTING UNDERGROUND SERVICES.
- THE FIRM OF PATERSON GROUP INC. HAS PROVIDED DESIGN SERVICES ONLY FOR THE SUBJECT SEWAGE SYSTEM. THE DESIGN HAS BEEN CARRIED OUT IN ACCORDANCE WITH OUR INTERPRETATION OF PART 8 OF THE ONTARIO BUILDING CODE, 1997. INSPECTIONS BY THE CONSULTANT DURING THE INSTALLATION OF THE SYSTEM IS A REQUIREMENT OF SOME REGULATING AUTHORITIES AND IS STRONGLY RECOMMENDED BY THIS FIRM.



PLAN VIEW
NOT TO SCALE

TKD JAN 10/07

O.S.S.O. PERMIT # 07-005 REQUIRED FOR ALL INQUIRIES

paterson group consulting engineers 28 Concourse Gate, Unit 1, Ottawa, Ontario K2E 7T7	Scale: N.T.S. Des.: JB Dwn: MH Chkd: AVS	MR. GEOFF SIMPSON PROPOSED SEWAGE SYSTEM REPLACEMENT 4 CAMPBELL REID COURT OTTAWA (KANATA), ONTARIO	SEWAGE SYSTEM DETAILS & NOTES	Dwg. No. PH0547–2 Report No.: PH0547–1 Date: 12/2006

1x17

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

Do Not Complete
Permit No 07-005
Revision No
Date

Permit
Part 8 - Sewage System
Ontario Building Code

Inspected & Recommended by: JKD
Inspection Date & time: JAN 10/07 @ 9:15AM
Civic Address: 4 CAMPBELL REID COURT
Owner: SIMPSON
Weather: SUN
Legal:

Design T	min/cm	Percolation test required	Yes/No
Design HGWT	m	Grain size analysis required	Yes/No
Subgrade Elevation	m	Site to be Scarified	Yes/No
Depth to rock/impervious soil	m	Clay Seal Inspection	Yes/No
		Mantle required	Yes/No

Septic/~~Holding Tank/Pretreatment~~ Tank EXISTING L
Septic Tank Effluent Filter REQUIRED.
Pump Rate L/15min
Treatment Unit – Make & Model Number of Units

ELEVATION ❒ In Ground ❒ Partially Raised ☒ Fully Raised

TYPE OF SYSTEM

☒ **Trench**
- Distribution Pipe Length 88 m
- Loading Area 423 m²
- Type of Chamber
- Length of Chamber m

❒ **Area Bed**
- Stone m²
- Sand m²
- Pipe m

❒ **Shallow Buried Trench**
- Pipe Length m

❒ **Filter Media Bed**
- Stone m²
- Extended Base m²
- Pipe m
- Weight of Filter Media Kg
- Loading Area m²

Manager, Septic System Approvals: Jennifer Davidson
Permit Issued Date: JANUARY 10, 2007.
Comments:

❒ Maintenance Contract Required

❒ Engineer to Verify
- ❒ Subgrade
- ❒ Soil
- ❒ Squirt Height

Manager, Septic System Approvals:
Revision Issued Date:
Comments:

NOTE: For further details, refer to corresponding application

Version 09/06