CLASS 4 SYSTEM DESIGN CALCULATIONS "Classic" Absorption Trench or Filter Bed

To be submitted with application package

DAILY SEWAGE FLOW CALCULATION

Based on Hydraulic Loads for Number of Bedrooms and the greater of Fixtures or Floor Area. **FIXTURES** Total # of Total # of **Plumbing Fixture** FLOOR AREA Fixtures in Final Unit Fixture Description Project Design Units **Bathroom Group** m² (includes toilet, sink and x 6 = Proposed bathtub and/or shower) ${\rm m}^2$ Toilet (alone) x 4 = Existing Washbasin x 1.5 = **Total Finished** ${\rm m}^2$ Bathtub or Shower x 1.5 = Footprint: Kitchen Sink x 1.5 = To convert ft^2 to m^2 x 1.5 = Bar Sink multiply ft^2 by 0.093 Dishwasher x 1.5 = Washing Machine x 1.5 = Bidet x 1 = x 1.5 = Laundry Tub Other ✦ Add units in last column Total Fixture Units =

Residential Occupancy	Final Project Design	(Q) in L	Total									
1 Bedroom		750										
2 Bedrooms		1100										
3 Bedrooms		1600										
4 Bedrooms		2000										
5 Bedrooms		2500										
PLUS Additional Flow For:												
Each Bedroom over 5		500										
OR *												
Floor Space for each 10m ² over 200 m ² up to 400 m ²		100										
Floor Space for each 10m ² over 400 m ² up to 600 m ²	Floor Space for each 10m ² over 400 m ² up to 600 m ² 75											
Floor Space for each 10m ² over 600 m ² 50												
OR *												
Each fixture unit over 20 fixture units		50										
	Add units in last	column *	•									
	Total Daily Design F	low (Q) =										
*NOTE: Where you need to do multiple calculations, signified by the	e "OR" in the table, do the cal	culation for d	aily sewage									

***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 first, then use the largest additional flow calculation added to the bedroom calculation to determine the Total Daily Sewage Flow (Q)

TOTAL DAILY DESIGN SEWAGE FLOW (Q) = _____ Litres

SEPTIC TANK SIZE CALCULATION

To calculate the minimum capacity of your septic tank, use one of the following formulas. Minimum tank size is 3600 Litres.

Residential:	(Q)	X 2 =	Litres
Other Occupancies:	(Q)	X 3 =	Litres

PROPERTY SOIL PROFILE AND PERCOLATION RATE (T) DESCRIPTION

Please refer to the APH website pages titled **Property Soil Profile & Percolation Rate** to find how to determine the percolation rate of the soil on your site. Percolation rate (T) is measured as minutes per centimetre, and measures the rate at which water drains into the soil. Please indicate the (T) of your site, and/or imported fill below.

Soil Type	Coarse Gravel, no fines	Gravel, some small rocks	Gravel- sand mix, some fines	Sand, fairly uniform, some fines	Sandy- Ioam mix	Silty- Ioam, almost clay	Clay. Smears well, rolls into ribbons
Percolation Rate (T)	0 to 1	1 to 5	5 to 10	10 to 15	15 to 25	25 to 50	>50

ON-SITE PROFILE

Soil Depth (metres)	Soil Type (See Above)	Percolation Rate (T)	Depth of Rock/Impervious Soil/Groundwater Table	Topsoil to be removed: Depthm
0.2				Usable Existing Soil:
0.4				Depthm
0.6				Excavation of Existing Soil:
0.8				Depthm
1.0				Imported Fill:
1.2				Depthm
1.4				Percolation Rate (T):
1.6				min/cm

LEACHING BED CALCULATIONS

Choose EITHER Absorption Trenches OR Filter Bed

ABSORPTION TRENCHES Length of Distribution Pipe = (Q) ______ x (T) ______ = ____ metres 200 Note: • Absorption Trenches shall not be installed in soils with (T) less than 1 or greater than 50. • The total length of Distribution Pipe shall not be less than 40 metres. • The pipes shall be laid in multiple runs, each the same length not exceeding 30 metres. • If native soils have a (T) of greater than 15, any imported soils must have a (T) not less than

• If halfve solis have a (1) of greater than 15, any imported solis must have a (1) not less than 75% of the native soils unless the native soil (T) is used in the above calculation or the system is fully raised with imported soil used for the contact area (mantle).

FILTER BED

BASE OF FILTER MEDIUM											
Shall extend to a thickness of 250n	nm over the following area:										
Base Filter Area = (Q)	x (T)	=	_ m ²								
	850										
but shall not be smaller than the Su	urface Loading Area.										
Note:											
 Soil in the Filter Bed Area m 8.7.5.2 of Part 8 of the Build 											
SURFACE LOADING AREA											
If (Q) is 3000 L or less:	(Q)	÷ 75 =	m ²								
If (Q) is more than 3000 L:	(Q)	÷ 50 =	m²								

Note:

- The effective area of the Surface Loading Area in each filter bed shall be at least 10 m² and not more than 50 m².
- If more than 1 Filter Bed is required, they shall each be separated by at least 5 m between the distribution pipes of each bed.
- The lines of distribution pipe shall be evenly spaced over the Surface Loading Area.

CONTACT AREA CALCULATION (Mantle)

The Mantle must be at least 250 mm deep and extend a minimum of 15 metres beyond the outer Distribution Pipes in any direction in which the effluent will move horizontally (i.e. drain away from Distribution Pipes).

Choose (T) range from the provided chart. Divide (Q) by Loading Rate (LR) for the minimum Contact Area.

Percolation Time (T) of Native Soil	Loading Rate (LR)
1 < T ≤ 20	10
20 < T ≤ 35	8
35 < T ≤ 50	6
T > 50	4

Contact Area	(Q) ÷ (LR) =	m²
	To convert to square feet mult	<i>iply</i> m ² <i>by 10.7</i> 6

If you do not have a minimum of 250 mm of useable soil on the property (unsaturated soil with a (T) between 1 and 50) that extends 15 m beyond the end of the Distribution Pipe in any direction in which the effluent will move horizontally you will need to import a Contact Area (Mantle) that meets these requirements.

PUMP CHAMBER SIZE CALCULATION (if required)

If you must pump effluent uphill or over a long distance, there is no minimum size required, however, consider the volume of effluent that may back into the system should the pump fail and size the chamber accordingly.

If the length of Distribution Pipe to be used is 150 metres or more, the minimum size of the pump chamber shall be no less than 75% of the total volume of the Distribution Pipe. This is the minimum volume your pump must deliver within 15 minutes each time it cycles.

Distribution Pipe Diameter	Calculate based on design pipe length:	Minimum Volume of Pump Chamber:
3"	3.4 xm of distribution pipe =	Litres
4"	6.0 xm of distribution pipe =	Litres
	·	

TRANSFER THE ABOVE CALCULATIONS TO THE APPROPRIATE PLACES ON THE "DESIGN LAYOUT ON-SITE SEWAGE SYSTEMS AND BUILDING PERMITS" FORM

YOU MUST STILL SUBMIT THESE PAGES WITH YOUR APPLICATION



DESIGN LAYOUT ON-SITE SEWAGE SYSTEMS AND BUILDING PERMITS

ROLL NUMBER:					OWN	IER:							
PROPERTY ADDRESS:					DESIGN	IER:				EF/W	BF#:		
LEGAL DESCRIPTION:					INSTALL	ER:					BCIN:		
FROM YOUR WORKSHEET STATE NO. OF FIXTURE UNITS	NO. OF BEDROOM OCCUPANCY		SIZE OF FINIS		TOTAL DAILY		GN SEWAGE		PROPOSE	D WAT	ER SUPP	LY	
				•	Q =		-	I	MUNICIPAL		PRIV	ATE	
CLASS 1,2,3 SEWAGE SY	STEM PROPOS	SAL DET	TAILS		-				BORED WELL		DRILL		
DIMENSIONS OF SYSTEM								W	ELL DEPTH /		CASIN	IG SIZE	
CLASS 4,5 SEWAGE SYS	TEM PROPOSA	L DETA	ILS						SURFACE WAT	FER SU	JPPLY		
WORKING CAPACITY OF SEPTIC OR HOLDING TANK	SIZE OF PUMP CHAMBER	LINEAL N LEACHIN	IETRES OF G PIPE	FILTER	BED SIZE	CON	TACT AREA SIZ	ZE	DEPTH OF FILL		OLATION ATIVE I	TIME OF S	-
LITRES					E METRES	SQU	ARE METRES			т =			
Directions to Lot - Hwy No., S	Secondary Roads	, Signs to	o Follow, etc										

THE SITE PLAN SHALL SHOW

The location of existing buildings, proposed buildings, water supply, existing sewage systems, property lines, surface water (lake, river, etc.), and any neighbours wells, etc.

												INSPECTOR COMMENTS
											_	
											-	
											-	
											-	

SIDE PROFILE

Indicate foundation depth in relation to all components of the sewage system, including clearances to the groundwater table, bedrock, or soil with a percolation rate greater than 50 min/cm. If additional fill is required, please indicate the height above existing grade.

INSPECTION REPORT

	INSPECTION	SUB-SURFACE CONDITIONS OBSERVED										
			ROCK & GWT	м	FT	SOIL TYPE						
DATE	TIME REPRESENTING OWNER / INSTA	AM / PM		0.3	1							
	REPRESENTING OWNER / INSTA	ALLER		0.6	2							
				0.9	3							
				1.2	4							
				1.5	5							

PROPOSAL MEETS ONTARIO BUILDING CODE REQUIREMENTS

🛾 YES 🖓

DATE

🗆 NO

INSPECTORS SIGNATURE

PRINT NAME

In accordance with the Municipal Freedom of Information and Protection of Privacy Act the information is collected under the authority of the Building Code Act for the purposes of processing permit applications.