Peterborough Public Health

Class 2 Sewage Systems - Greywater Leaching Pits

In Ontario a Class 2 sewage system are onsite sewage systems that are only used for disposal of greywater, which is wastewater that does not contain human waste. Greywater comes from plumbing fixtures such as bath tubs, showers, hand sinks, washing machines, kitchen sinks and laundry tubs. They are typically used in addition to a Class 1 sewage system (i.e. an outhouse) which handles human body waste.

A Class 2 sewage system is regulated under the Ontario Building Code (OBC) and can only be used if the daily design sanitary sewage flow is less than 1,000 L/day. A permit is required to install a Class 2 sewage system.

Daily Design Sanitary Sewage Flow Calculation

- 200 litres per fixture unit where water supply is pressurized
- 125 litres per fixture unit where water supply is not pressurized

Plumbing Fixture	Fixture Units
Kitchen Sink	1.5
Bathtub (with or without shower)	1.5
Shower	1.5
Handwashing Basin	1.5
Clothes Washer	1.5
Laundry Tub	1.5
Dishwasher*	1.0 (*0 if directly plumbed through the kitchen sink)

Loading Rate and Pit Sizing

The size of the greywater pit is determined by the following formula:

L_R= 400/T

L_R= the loading rate of the side walls in Litres per day per m^2

T = percolation rate of the receiving soil

Sample Calculations

If the soil is a gravelly sand with little to no fine material, the percolation rate or "T time" could be about 5 minutes/cm.

L_R = 400/5

L_R = 80 L/day/m2

There is 1 kitchen sink, 1 shower, and 1 handwashing basin you are discharging to the leaching pit, and the water is pressurized:

4.5 fixture units x 200 L/day = 900 L/day

(REMINDER: a maximum of 1000 L/day can be discharged to a greywater pit)

Take your daily sewage flow, divided by your loading rate to get the total amount of sidewall area required:
900/80 = 11.25m^2 of sidewall area required

Proceed to design the pit so that the four walls will provide a sidewall area of at least 11.25m2.

Construction Requirements

Minimum horizontal clearance distances for Class 2 Sewage systems are required by the Ontario Building Code (listed below). Please note that the local municipality may have increased clearance distance requirements required by by-laws and if so, the greater distance must be achieved.

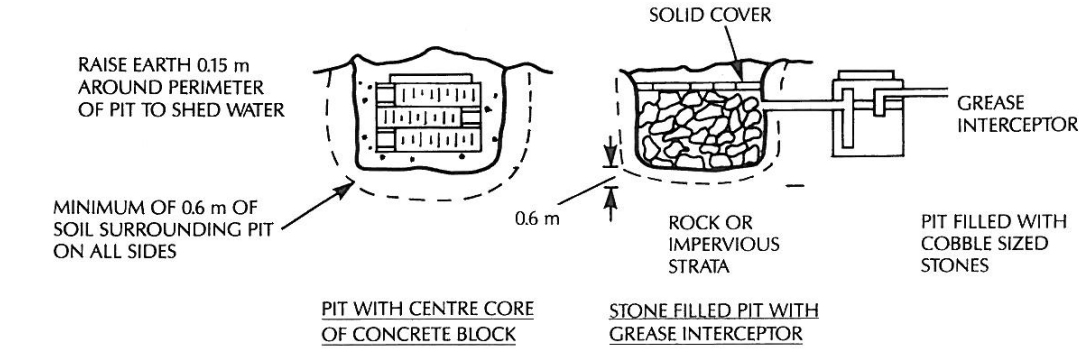
Land Feature	Distance (metres)
Well with watertight casing to a depth of at least 6 m	10
A spring used as a source of *potable* water or well without a watertight casing to a depth of at least 6 m	15
A lake, river, pond, stream, reservoir, or a spring not used as a source of *potable* water	15
A property line	3

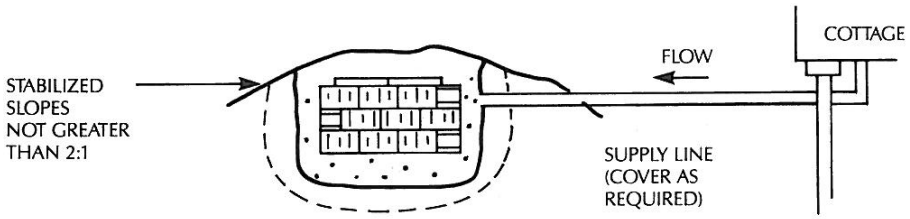
- The bottom of the pit must be 900mm above the high ground water table (this will be determined by an inspection of test holes by the sewage system inspector).
- Must be constructed in a way that prevents the collapse of the sidewalls.
- Material to support or form the sidewalls must be open jointed, to allow water to percolate and be treated by the surrounding soil.
- Pit must be covered by a strong, tight cover that is able to opened to allow access to the pit for maintenance, as required.
- Earth around the pit should be mounded 150mm and graded away so that surface water run-off is diverted away from the pit.
- The bottom and sides of the pit should be surrounded by 600mm depth of soil that has a percolation rate of less than 50 min/cm.

General Tips

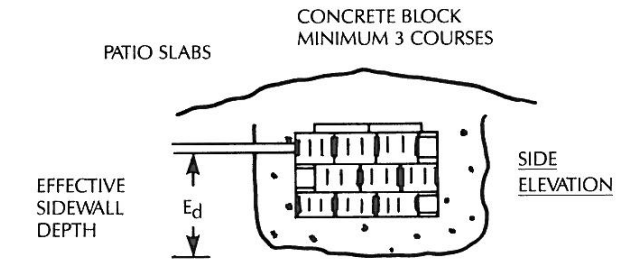
- The area should be elevated and well drained.
    - Low lying areas are subject to excessive run off which could overload the pit and saturate the receiving soils, increasing the risk of ground water contamination.
- The excavation for a pit should not exceed 1.25m (4 feet) in depth. Better treatment, drainage and evaporation are achieved in the soil that is just below the surface.
- The bottom of the pit must be a minimum of 0.9m (3 feet) above the high groundwater table or bedrock.
- A thin layer of topsoil and sodding will prevent erosion, assist with evaporation, and divert surface water away from the leaching pit.
- A grease interceptor is recommended if there will be kitchen wastes going into the leaching pit. This separates greases and oils from the wastewater, and will protect the soils from clogging.
    - Grease interceptor should be strategically placed to allow easy access for maintenance
- A grease interceptor and a class 2 system can be pumped out, much like a septic tank. If solids build up, a pump out can extend the life of the system.

Example Leaching Pits

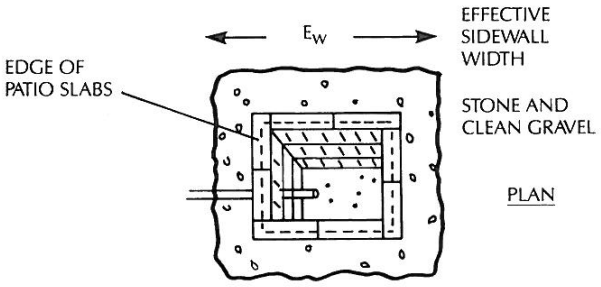




RAISED LEACHING PIT



STONE AND CLEAN GRAVEL FILL UNDER BLOCKS
AND BETWEEN BLOCKS AND SIDES OF PIT



DETAILS: TYPICAL CONCRETE BLOCK LEACHING PIT

CLASS 2 SYSTEM
TYPICAL LEACHING PITS

For more information, contact Peterborough Public Health

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