



Class 1, 2 and 3 Sewage Systems

Introduction

Ontario Building Code products are available at 1-888-361-0003 or at www.orderline.com

Class 1, 2 and 3 sewage systems offer an alternative to the complete, Class 4, septic system. These systems can be used as a temporary or a long-term solution for sewage disposal and treatment. Part 8 of the Ontario Building Code has the specific requirements for these systems as well as complete systems and advanced treatment units.

A permit is not required for a Class 1 sewage system but for Class 2 and 3 systems, a permit must be obtained from the Northwestern Health Unit before construction begins.

Class 1 Systems

Class 1 systems are comprised of: privies, composting toilets, chemical toilets and incinerating toilets. A complete listing of the various privies can be found in Section 8.1.2.1. of the Ontario Building Code. There are a number of construction requirements for class 1 systems. These include location, clearance distances to the water table or bedrock and specific requirements for venting in the case of earth pit privies.

Clearance distances from wells, water bodies and property lines are specified in Table 3 on page 4.

Class 1 sewage systems are used only for the disposal of human body wastes. Chemicals used to mask odours may be used. Composting toilets are allowed to receive vegetables and other biodegradable matter in accordance to the manufacturer's instructions.

Requirements for Earth Pit Privies

A privy shall be enclosed with a structure that:

- is constructed of strong durable weatherproof materials
- has a solid floor supported by a sill constructed of treated timber, masonry, or other material of at least equal strength and durability
- is easily cleaned
- has one or more seats each having a cover and being supported by an enclosed bench which is lined with a impervious material on all interior vertical surfaces
- has a self closing door
- has one or more screened openings for ventilation
- shall not have any openings for the reception of human body waste, other than urinals and those constructed as above.

An earth pit privy shall be constructed in the following manner:

- the bottom of the pit shall be at least 900 mm (3 feet) above the high ground water table,
- the sides of the pit shall be reinforced so as to prevent collapse thereof,
- the pit shall be surrounded on all sides and on its bottom by not less than 600 mm (2 feet) of soil or leaching bed fill, and
- the soil or leaching bed fill around the base of the sides of the structure shall be mounded to a height of at least 150 mm (6 inches) above ground level
- no sinks or other greywater may be connected to the pit privy

Class 2 Sewage Systems

Greywater is waste from any plumbing other than a toilet.

The design of a greywater system depends on the amount of water that could be used and the percolation rate of the soil to be used to construct the system. The Regulation limits the volume of a greywater system to a maximum of 1000 liters per day.

The formulas for calculating the size of a greywater system can be found in the Ontario Building Code.

There is a distinction between pressurized water systems and non-pressurized water systems that are connected to the plumbing fixtures. These rates are for the water supply to the plumbing. An example of a non-pressurized water supply would be a water tower system that flows gravity into the cabin.

The Regulation requires that the soil that surrounds the system be used for calculating the amount of sidewall area of the system. A coarse sand may have a percolation rate of 5, a medium sand may have a percolation rate of 10, a silt may have a percolation rate of 25-40 and a clay soil may have a rate of 50 or higher. **This design soil must surround the sides and bottom of the system for a depth of 600mm (2 feet).**

The amount of sidewall area required is found by using the following tables.

Table 1

Typical Greywater Systems for Pressurized Water Supply

Plumbing	Soil	Sidewall Area Required	
1 sink	T=5 coarse sand	4 m ²	40 ft ²
	T=10 medium sand	8 m ²	80 ft ²
2 sinks or 1 sink and 1 shower	T=5 coarse sand	8 m ²	80 ft ²
	T=10 medium sand	15 m ²	160 ft ²
2 sinks and 1 shower	T=5 coarse sand	11 m ²	120 ft ²
	T=10 medium sand	22 m ²	240 ft ²

Values rounded

m² - square metres

ft² - square feet

Table 2**Typical Greywater Systems for Non-Pressurized Water Supply**

Plumbing	Soil	Sidewall Area Required	
1 sink	T=5 coarse sand	2 ½ m ²	25ft ²
	T=10 medium sand	5 m ²	50 ft ²
2 sinks or sink and 1 shower	T=5 coarse sand	5 m ²	50ft ²
	T=10 medium sand	9 m ²	100 ft ²
2 sinks and 1 shower	T=5 coarse sand	7 m ²	75ft ²
	T=10 medium sand	14 m ²	150 ft ²

Values rounded

The Regulation has minimum horizontal setback requirements for greywater systems to various components such as wells, lakes and property lines found in Table 3. The setbacks for earth pit privies are also found in Table 3.

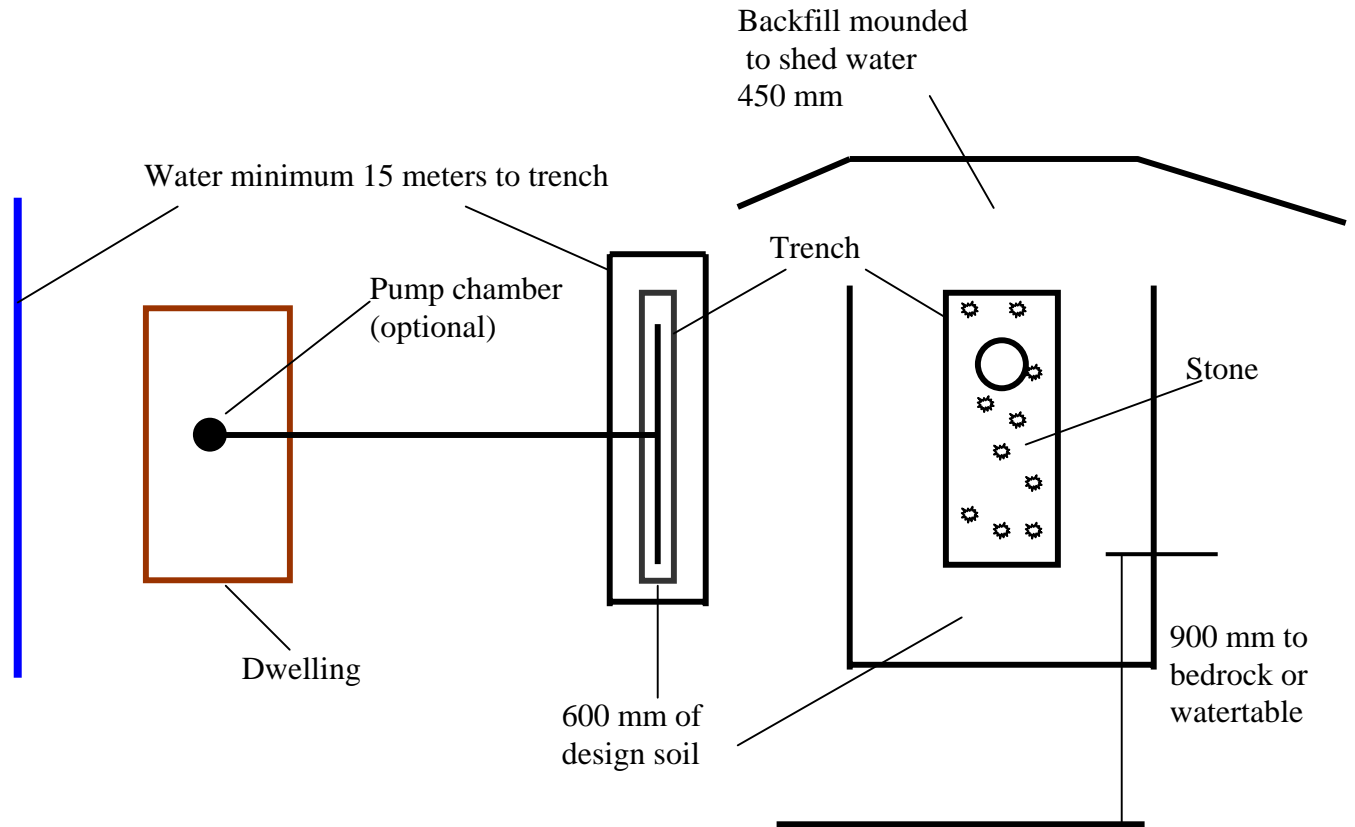
Table 3**Minimum Horizontal Setback Distances for Earth Pit Privies and Greywater Systems**

	Distance to a Well with a minimum 6m casing (drilled well)	Other Wells	Property Line	Waterbodies Lake, creek, etc.
Earth Pit Privy	15 meters (50 feet)	30 meters (100 feet)	3 meters (10 feet)	15 meters (50 feet)
Greywater System	10 meters (30 feet)	15 meters (50 feet)	3 meters (10 feet)	15 meters (50 feet)

Designing the Layout of the System

Once the sidewall area has been determined , a design that suits the site has to be found. **Note that there is a minimum clearance distance of 900 mm (3 feet) from the bottom of the system to either the underlying bedrock or the design high watertable.** A system that requires 11 meters of sidewall area could be constructed by means of a trench that is 1 meter deep, ½ meter wide and 5 meters long.

Figure 1 Top View of Sample Layout with Side Profile of Trench Type System



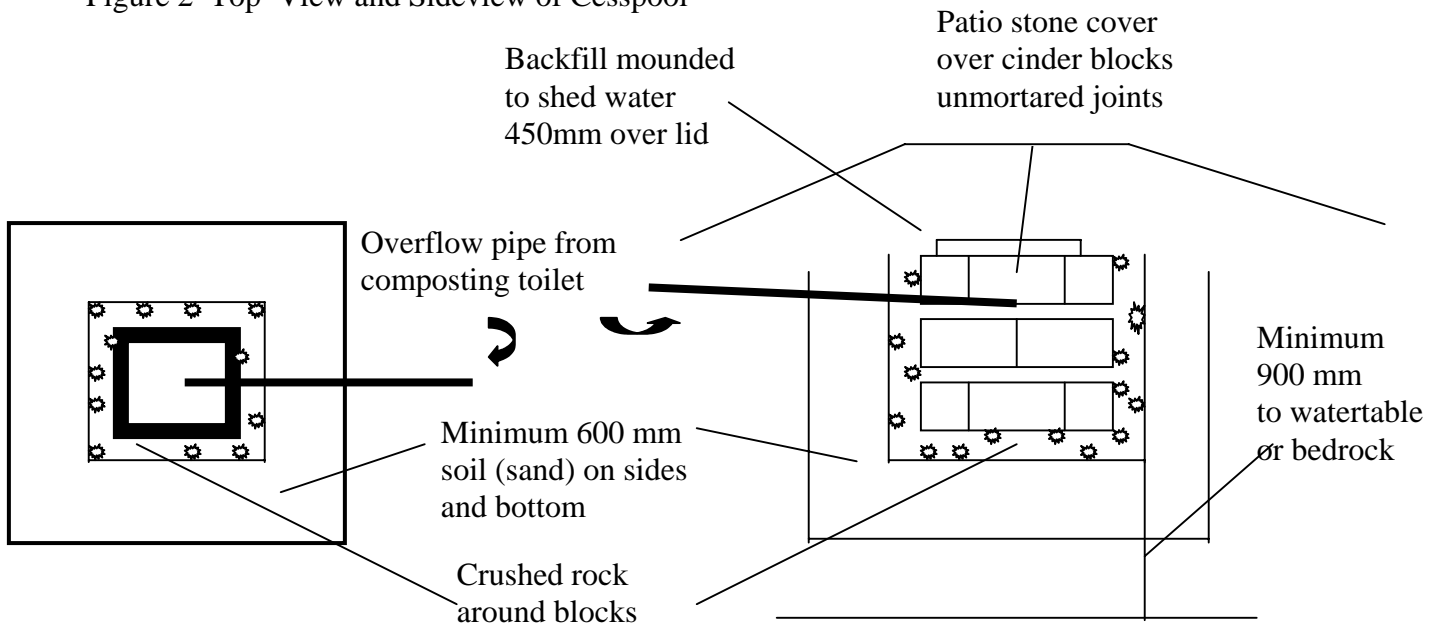
Class 3 Systems – Cesspools

Cesspools can only receive the contents of a class 1 sewage system or effluent from a class 1 sewage system. They are typically used in conjunction with a composting toilet to receive the overflow from the composting toilet.

The typical volume of effluent that is generated for disposal into a class 3 system is minimal. There are two typical designs:

1. A square pit constructed with cinder blocks with a patio stone for a cover; or
2. A plastic perforated drum surrounded by stones.

Figure 2 Top View and Sideview of Cesspool



Where the cesspool extends to the ground surface, the required cover must be locked.

NOTES COMMON TO ALL CLASSES OF SEWAGE SYSTEMS

- drainage must be effected around all types of systems
- soil must be mounded up when backfilling to assist drainage
- there must be a minimum 900 mm (3 feet) separation between the bottom of the area where sewage is applied and the high watertable or bedrock.
- it is possible to have a raw sewage pump chamber for greywater systems where the location of the system is uphill from the dwelling
- other materials may be used to construct a greywater system. The Regulation requires that any material used to support or form the sidewalls of the pit shall be open jointed to allow leaching from the pit.

APPLICATIONS AVAILABLE AT THE NORTHWESTERN HEALTH UNIT