

### 8.2.2.3. Septic Tanks

(1) The minimum *working capacity* of a *septic tank* shall be the greater of 3 600 L and,

(a) in *residential occupancies*, twice the daily design *sanitary sewage* flow, or

(b) in *non-residential occupancies*, three times the daily design *sanitary sewage* flow.

(2) Every *septic tank* shall be constructed in such a manner that any *sanitary sewage* flowing through the tank will pass through at least 2 compartments.

(3) The *working capacity* of the compartments required in Sentence (2) shall be sized such that,

(a) the first compartment is at least 1.3 times the daily design *sanitary sewage* flow but in no case less than 2 400 L, and

(b) each subsequent compartment shall be at least 50% of the first compartment.

(4) Where multiple tanks are to be used to meet the requirements of Sentences (2) and (3), the tanks shall be connected in series such that,

(a) the first tank in the series shall have at least a capacity as calculated in Clause (3)(a), however at no time shall a tank having a *working capacity* of less than 3 600 L be used,

(b) all additional tanks after the first tank, excluding pump or dosing tanks shall have at least a *working capacity* equal to the volume required by Clause (3)(b),

(c) the pipe between the outlet of one tank and the inlet of the next tank in the series shall have a minimum slope of 2 per cent,

(d) there shall be no partitions in the tank except where a partition is required to maintain the structural integrity of the tank, in which case openings within the partition shall be provided to allow the free movement of *sanitary sewage* throughout the tank, and

(e) all piping between tanks shall be continuous and shall be connected to the tank through the use of flexible watertight seals that will permit differential movement between the tanks.

(5) Partitions separating the *septic tank* into compartments shall extend at least 150 mm above the liquid level at the outlet, and there shall be one or more openings through or above the partition.

(6) The openings required between compartments referred to in Sentence (2) shall have a total cross-sectional area of at least three times the area of the inlet pipe and be located between the top and a level 150 mm above the liquid level at the outlet to provide for the free flow of air between compartments.

(7) *Sanitary sewage* shall pass from one compartment to another of the *septic tank* as follows:

- (a) by means of a device similar to that described in CSA B66, “Design, Material, and Manufacturing Requirements for Prefabricated Septic Tanks and Sewage Holding Tanks” for outlet devices, or
- (b) through two or more openings through the partition located in a horizontal line, and evenly spaced across the width of the partition, centred at approximately 40% of the liquid depth below the surface of the liquid, and having a total area of between three and five times that of the cross-sectional area of the inlet pipe.

(8) A *septic tank* shall be of such design and construction as will permit the collection and holding of *sanitary sewage* in it to a depth of not less than 1 000 mm, except that a depth of not less than 900 mm is permitted where the excavation is in rock, or to avoid rupture or displacement of the tank due to *ground water* pressure.

(9) Except as provided in Sentences (10) and (11), every *septic tank* shall be installed in such a manner that the access openings are located not more than 300 mm below the ground surface.

(10) Where the top of the *septic tank* is located more than 300 mm below the ground surface, it shall be equipped with risers that extend from the access opening of the *septic tank* to within 300 mm of the ground surface.

(11) Where risers are used they shall conform to the requirements of CSA B66, “Design, Material, and Manufacturing Requirements for Prefabricated Septic Tanks and Sewage Holding Tanks”, and shall have adequate access openings to allow for regular maintenance of the *septic tank*.

#### **8.2.2.4. Holding Tanks**

(1) All *holding tanks* shall be of such design and construction as will allow the complete removal of solid matter that can be expected to settle in the *holding tank* through an apparatus or device suitable for allowing the contents of the *holding tank* to be removed from the *holding tank*.

(2) A *holding tank* shall have a *working capacity* of not less than 9 000 L.

(3) Where two or more tanks are used to meet the requirement of Sentence (2), they shall be deemed to be one *holding tank* provided they are connected in such a manner as will allow the *sanitary sewage* contained in them to flow between the tanks.

(4) The *working capacity* of the tanks described in Sentence (3) shall not include any portion of any tank that cannot be completely drained due to the manner in which the connections are made.

### **Section 8.3. Class 1 Sewage Systems**

### **8.3.1. General Requirements**

#### **8.3.1.1. Scope**

(1) This Section applies to the *construction* of a Class 1 *sewage system*.

#### **8.3.1.2. Application**

(1) Except as provided in Sentence (2), a Class 1 *sewage system* shall be designed to receive only human body waste for disposal.

(2) Where the *sewage system* is specifically designed for the biological decomposition of non-waterborne biodegradable kitchen wastes or requires the addition of small quantities of plant matter to improve the decomposition of human body waste, it may receive such wastes in addition to human body waste.

(3) Where the *sewage system* is designed with a drain for the removal of excess liquid, then the *sewage system* shall drain to a Class 3, 4, or 5 *sewage system*.

### **8.3.2. Superstructure Requirements**

#### **8.3.2.1. Construction Requirements**

(1) A privy as described in Subsections 8.3.3. to 8.3.5. shall be enclosed with a superstructure that,

- (a) is *constructed* of strong durable weatherproof materials,
- (b) has a solid floor supported by a sill *constructed* of treated timber, masonry or other material of at least equal strength and durability,
- (c) is easily sanitized,
- (d) unless it is equipped solely as a urinal, is equipped with one or more seats each having a cover and being supported by an enclosed bench or riser that is lined with an impervious material on all interior vertical surfaces,
- (e) is equipped with a self-closing door,
- (f) has one or more openings for purposes of ventilation, all of which are screened,
- (g) has a ventilation duct that is screened at the top end and that extends from the underside of the bench or riser to a point above the roof of the superstructure, and
- (h) shall not have any openings for the reception of human body waste, other than urinals and those *constructed* in accordance with Clause (1)(d).

### **8.3.3. Earth Pit Privy**

#### **8.3.3.1. Construction Requirements**

(1) An *earth pit privy* shall be *constructed* in the following manner:

- (a) the bottom of the pit shall be at least 900 mm above the *high ground water table*,
- (b) the sides of the pit shall be reinforced so as to prevent their collapse,
- (c) the pit shall be surrounded on all sides and on its bottom by not less than 600 mm of *soil or leaching bed fill*, and
- (d) the *soil or leaching bed fill* around the base of the sides of the superstructure of the *earth pit privy* shall be raised or mounded to a height of at least 150 mm above ground level.

#### **8.3.4. Privy Vaults and Pail Privy**

##### **8.3.4.1. Construction Requirements**

(1) A *privy vault* or a *pail privy* shall be *constructed* in the following manner:

- (a) the container or structure that is to be used for the holding or storage of *sanitary sewage* shall be watertight and made of a material that can be easily cleaned,
- (b) the *soil or leaching bed fill* around the base of the sides of the superstructure shall be raised or mounded to a height of at least 150 mm above ground level, and
- (c) the surface of the ground in the area of the *privy vault* or *pail privy* shall be so graded that surface drainage will be diverted away from the privy.

#### **8.3.5. Portable Privy**

##### **8.3.5.1. Construction Requirements**

(1) A *portable privy* shall be *constructed* in the following manner:

- (a) the *portable privy* shall have a watertight receptacle that shall be suitable for the holding and storage of *any sanitary sewage* deposited in it,
- (b) the receptacle for the holding and storage of sewage shall be designed and *constructed* in such a manner as to allow it to be easily emptied and cleaned, and
- (c) the *portable privy* shall be *constructed* of such material and in such a manner that it can withstand the stresses to which it will be subjected during its transportation to and from sites where it is to be used and during loading and unloading from vehicles used for the transportation of the *portable privy* to and from sites where it is to be used.

### **Section 8.4. Class 2 Sewage Systems**

#### **8.4.1. General Requirements**

##### **8.4.1.1. Scope**

(1) This Section applies to the *construction* of a Class 2 *sewage system*.

#### **8.4.1.2. Application**

(1) A Class 2 *sewage system* shall be designed only for the treatment and disposal of *greywater*.

(2) The total daily design flow for a Class 2 *sewage system* shall be calculated based on the *fixtures* discharging to the system as follows:

(a) 200 L per *fixture unit* where there is a supply of pressurized water, and

(b) 125 L per *fixture unit* where there is no supply of pressurized water.

#### **8.4.2. Design and Construction Requirements**

##### **8.4.2.1. Construction Requirements**

(1) The bottom of the pit shall be at least 900 mm above the *high ground water table*.

(2) The pit shall be *constructed* in such a manner as to prevent the collapse of its sidewalls.

(3) Any material used to support or form the sidewalls of the pit shall be an open jointed material of a type that will permit *leaching* from the pit.

(4) The pit shall be provided with a tight, strong cover that shall remain over the pit except when it is necessary to remove it for purposes of adding *greywater* to or removing *greywater* from the pit or for purposes of maintenance of the pit.

(5) The earth around the perimeter of the pit shall be raised or mounded to a height of at least 150 mm above ground level.

(6) The surface of the ground in the area of the pit shall be so graded that surface drainage in the area will be diverted away from the pit.

(7) The pit shall be surrounded on all sides and on its bottom by at least 600 mm of *soil* having a *percolation time* of less than 50 minutes.

##### **8.4.2.2. Maximum Sewage Flow**

(1) A Class 2 *sewage system* shall not be *constructed* where the daily design *greywater* flow to the system exceeds 1 000 L/day.

##### **8.4.2.3. Sizing**

(1) A Class 2 *sewage system* shall be designed and *constructed* so that the loading rate to the side walls shall be not more than the value calculated using the formula,

$$L_R = \frac{400}{T}$$

where,

$L_R$  = loading rate of the sidewalls in litres per day/m<sup>2</sup>, and  
T = percolation time.

## **Section 8.5. Class 3 Sewage Systems**

### **8.5.1. General Requirements**

#### **8.5.1.1. Scope**

(1) This Section applies to the *construction* of a Class 3 *sewage system*.

#### **8.5.1.2. Application**

(1) A Class 3 *sewage system* shall not be *constructed* where the daily design *sanitary sewage* flow to the system exceeds 1 000 L/day.

(2) A Class 3 *sewage system* shall be designed to receive only the contents of a Class 1 *sewage system* or *effluent* from a Class 1 *sewage system* for disposal.

### **8.5.2. Design and Construction Requirements**

#### **8.5.2.1. Construction Requirements**

(1) The bottom of the cesspool shall be at least 900 mm above the *high ground water table*.

(2) The cesspool shall be *constructed* in such a manner as to prevent the collapse of its sidewalls.

(3) Any material used to support or form the sidewalls of the cesspool shall be an open jointed material of a type that will permit *leaching* from the cesspool.

(4) The cesspool shall be provided with a tight strong cover that shall remain over the cesspool except when it is necessary to remove it for the purposes of adding *sanitary sewage* to or removing *sanitary sewage* from the cesspool or for purposes of maintenance of the cesspool.

(5) Where the cesspool extends to the ground surface, the cover required in Sentence (4) shall be lockable.

(6) The *soil* or *leaching bed fill* around the perimeter of the cesspool shall be raised or mounded to a height of at least 150 mm above ground level.

(7) The surface of the ground in the area of the cesspool shall be graded such that surface drainage in the area will be diverted away from the cesspool.

(8) The cesspool shall be surrounded on all sides and on its bottom by at least 600 mm of *soil* or *leaching bed fill*, except the top where the cesspool extends to the surface of the ground.

## **Section 8.6. Class 4 Sewage Systems**

### **8.6.1. General Requirements**

### 8.6.1.1. Scope

(1) This Section applies to the *construction* of a Class 4 *sewage system*.

### 8.6.1.2. General Requirements

(1) The *treatment unit* shall be connected to a *leaching bed constructed* in accordance with the requirements of Section 8.7.

### 8.6.1.3. Pumps and Siphons

(1) Where the total length of *distribution pipe* required is 150 m or more, the *sewage system* shall have at least one pump or a siphon contained in a dosing tank that may be a separate compartment within the tank structure, for distribution of the *effluent*.

(2) Alternating siphons shall not be installed in a *sewage system*.

(3) Where 2 or more pumps are employed within a dosing tank, the pumps shall be designed such that the pumps alternate dosing, and dosing shall continue in the event that one pump fails.

(4) Where a pump or siphon is required, the pump or siphon shall be designed to discharge a dose of at least 75% of the internal volume of the *distribution pipe* within a time period not exceeding fifteen minutes.

## 8.6.2. Treatment Units

### 8.6.2.1. Septic Tank Systems

(1) An *effluent filter* shall be installed in the outlet flow path of every *septic tank* that discharges *effluent* to a *leaching bed*.

(2) The *septic tank effluent filter* required by Sentence (1) shall,

(a) conform to the requirements of NSF/ANSI 46, "Evaluation of Components and Devices Used in Wastewater Treatment Systems",

(b) be sized to filter particles of 1.6 mm,

(c) have a minimum area of 550 cm<sup>2</sup>, and

(d) be installed in accordance with the manufacturer's recommendations.

(3) A secured access opening to allow for regular maintenance of the *effluent filter* shall be provided at the ground surface.

### 8.6.2.2. Other Treatment Units

(1) Except as provided in Sentence (2), a *treatment unit*, other than a *septic tank*, shall be designed such that the *effluent* does not exceed, for the level of the *treatment unit* set out in Column 1 of Table 8.6.2.2., the maximum concentrations set out opposite it in Columns 2 and 3 of Table 8.6.2.2.

**Table 8.6.2.2.**  
**Other Treatment Unit Effluent Quality Criteria**

Forming Part of Sentences 8.6.2.2.(1) and (2)

Item	Column 1	Column 2	Column 3
	Classification of Treatment Unit <sup>(1)</sup>	Suspended Solids <sup>(2)</sup>	CBOD <sub>5</sub> <sup>(2)</sup>
1.	Level II	30	25
2.	Level III	15	15
3.	Level IV	10	10

**Note to Table 8.6.2.2.:**

<sup>(1)</sup>The classifications of *treatment units* specified in Column 1 correspond to the levels of treatment described in CAN/BNQ 3680-600, “Onsite Residential Wastewater Treatment Technologies”.

<sup>(2)</sup>Maximum concentration in mg/L based on a 30 day average.

(2) A *treatment unit* that is used in conjunction with a *leaching bed constructed as a shallow buried trench, Type A dispersal bed or Type B dispersal bed* shall be designed such that the *effluent* does not exceed the maximum concentrations set out opposite a Level IV *treatment unit* in Columns 2 and 3 of Table 8.6.2.2.

(3) All *treatment units* referred to in Sentences (1) and (2) that contain mechanical components shall be equipped with an audible and visual warning alarm so located to warn the occupants of the *building* served or the operator of the *treatment unit* of a malfunction in the operation of the *treatment unit*.

(4) All *treatment units* referred to in Sentences (1) and (2) shall permit the sampling of the *effluent*.

(5) A *treatment unit* is deemed to comply with Sentences (1) and (2) if it,

(a) is described in MMAH Supplementary Standard SB-5, “Approved Sewage Treatment Units”, or

(b) has been certified to CAN/BNQ 3680-600, “Onsite Residential Wastewater Treatment Technologies” using a temperature condition listed under option a) or b) of Clause 8.2.2. of that standard.

(6) Every operator of a *treatment unit* shall obtain, from the manufacturer or distributor of the *treatment unit*, literature that describes the unit in detail and provides complete instructions regarding the operation, servicing, and maintenance requirements of the unit and its related components necessary to ensure the continued proper operation in accordance with the original design and specifications.

**Section 8.7. Leaching Beds**

**8.7.1. General Requirements**



### **8.7.1.1. Scope**

(1) This Section applies to the *construction of leaching beds*.

### **8.7.1.2. Limitation on Installation**

(1) The design and installation of a *shallow buried trench, Type A dispersal bed* or *Type B dispersal bed* shall be carried out by a person competent in this field of work.

## **8.7.2. Design and Construction Requirements**

### **8.7.2.1. General Requirements**

(1) A *leaching bed* shall not be located,

(a) in an area that has an average slope that exceeds one unit vertically to four units horizontally,

(b) in *soil* or *leaching bed fill* having a *percolation time* of,

(i) less than one minute, or greater than 125 minutes if *constructed as a shallow buried trench*, or

(ii) less than one minute, or greater than 50 minutes for all other *leaching beds*, or

(c) in or on an area that is subject to flooding that may be expected to cause damage to the *leaching bed* or impair the operation of the *leaching bed*.

(2) A *leaching bed* shall not be covered with any material having a hydraulic conductivity less than 0.01 m/day.

(3) The surface of the *leaching bed* shall be shaped to shed water and together with the side slopes of any raised portion, shall be protected against erosion in such a manner as to not inhibit the evaporation and transpiration of waters from the *soil* or *leaching bed fill*, and to not cause plugging of the *distribution pipe*.

(4) No part of a *leaching bed* shall be sloped steeper than 1 unit vertically to 4 units horizontally.

(5) A *leaching bed* shall be designed to be protected from compaction or any stress or pressure that may result in,

(a) the impairment or destruction of any pipe in the *leaching bed*, or

(b) the smearing of the *soil* or *leaching bed fill*.

### **8.7.2.2. Distribution Pipes within Leaching Beds**

(1) Sentence (2) applies to the design and *construction of a leaching bed with distribution pipes used within the leaching bed*.

(2) The *header line and distribution pipes within a leaching bed* shall be designed and *constructed so that they can be detected by*,

(a) magnetic means,

(b) means of a 14 gauge TW solid copper light coloured plastic coated tracer wire,  
or

(c) other means of subsurface detection.

### 8.7.3. Absorption Trench Construction

#### 8.7.3.1. Length of Distribution Pipe

(1) The total length of *distribution pipe* shall,

(a) not be less than 30 m when *constructed as a shallow buried trench*, or

(b) not be less than 40 m for any other *absorption trench*.

(2) Except as provided in Sentences (1), (3), and (4) every *leaching bed constructed* by means of *absorption trenches* shall have a total length of *distribution pipe* not less than the value determined by the formula,

$$L = \frac{QT}{200}$$

where,

L = total length of *distribution pipe* in metres,

Q = the total daily design *sanitary sewage* flow in litres, and

T = the design *percolation time*.

(3) Except as provided in Sentence (1), where a *leaching bed* receives *effluent* from a Level II, Level III or Level IV *treatment unit* as described in Table 8.6.2.2., the *leaching bed* may have a total length of *distribution pipe* not less than the value determined by the formula,

$$L = \frac{QT}{300}$$

where,

L = total length of *distribution pipe* in metres,

Q = the total daily design *sanitary sewage* flow in litres, and

T = the design *percolation time*.

(4) Except as provided in Sentence (1), where the *leaching bed* is *constructed as a shallow buried trench*, the total length of the *distribution pipe* shall not be less than the value determined by Table 8.7.3.1.

**Table 8.7.3.1.**  
**Length of Distribution Pipe in Shallow Buried Trench**

Forming Part of Sentence 8.7.3.1.(4)

Item	Column 1	Column 2
	<i>Percolation Time, (T) of Soil, min</i>	<i>Length of Distribution Pipe, m</i>
1.	$1 < T \leq 20$	$Q/75$
2.	$20 < T \leq 50$	$Q/50$
3.	$50 < T < 125$	$Q/30$

where,

Q = the total daily design *sanitary sewage* flow in litres, and

T = the design *percolation time*.

**8.7.3.2. Absorption Trenches**

- (1) Except as provided in Sentence (2), *absorption trenches* shall be,
- (a) approximately the same length and not more than 30 m in length,
  - (b) not less than 500 mm and not more than 1 000 mm in width,
  - (c) not less than 600 mm and not more than 900 mm in depth,
  - (d) centred not less than 1 600 mm apart,
  - (e) located so that the bottom of the *absorption trench* is not less than 900 mm above the *high ground water table*, rock or soil with a *percolation time* of more than 50 minutes, and
  - (f) backfilled, after the installation of the *distribution pipe* with *leaching bed fill*, so as to ensure that after the *leaching bed fill* settles, the surface of the *leaching bed* will not form any depressions.
- (2) *Absorption trenches constructed as a shallow buried trench* shall be,
- (a) approximately the same length and not more than 30 m in length,
  - (b) not less than 300 mm and not more than 600 mm in width,
  - (c) not less than 300 mm and not more than 600 mm in depth,
  - (d) centred not less than 2 000 mm apart,
  - (e) not less than 900 mm at all points on the bottom of the *absorption trench* above the *high ground water table* or rock, and
  - (f) backfilled, after the installation of the *distribution pipe* with *leaching bed fill*, so as to ensure that after the *leaching bed fill* settles, the surface of the *leaching bed* will not form any depressions.

**8.7.3.3. Distribution Pipe**

(1) Except for a *shallow buried trench*, the *distribution pipe* used in the *construction* of a *leaching bed* shall be,

- (a) not less than 3 in. trade *size* for gravity flow systems,
- (b) installed with a uniform downward slope from the inlet with a drop of not less than 30 mm and not more than 50 mm for each 10 m of *distribution pipe* for gravity flow systems, and
- (c) installed within a layer of stone conforming to Sentence (5).

(2) Prior to backfilling, the stone layer required by Clause (1)(c) shall be protected in such a manner so as to prevent *soil* or *leaching bed fill* from entering the stone by completely covering it with,

- (a) untreated building paper, or
- (b) a permeable geo-textile fabric.

(3) Every pressurized *distribution pipe* shall be self-draining so as to prevent freezing of its contents.

(4) Every pressurized *distribution pipe* shall,

- (a) be not less than 1 in. trade *size*, and
- (b) have orifices of at least 3 mm in diameter, spaced equally along the length of the pipe.

(5) The stone layer required by Clause (1)(c) shall,

- (a) be comprised of washed septic stone, free of fine material, with gradation conforming to Table 8.7.3.3.,
- (b) be not less than 500 mm in width,
- (c) extend not less than 150 mm below the *distribution pipe*, and
- (d) extend not less than 50 mm above the *distribution pipe*.

**Table 8.7.3.3.  
Gradation of Septic Stone**

Forming Part of Sentences 8.7.3.3.(5) and 8.7.8.2.(6)

Item	Column 1	Column 2
	Particle Size	Percent Passing
1.	53 mm	100
2.	19 mm	0-5
3.	75 µm	0-1

#### **8.7.4. Fill Based Absorption Trenches**

##### **8.7.4.1. Loading Requirements**

(1) The area described in Sentence 8.7.4.2.(1) shall be designed such that the *loading rate* does not exceed, for *soil* having a *percolation time* set out in Column 1 of Table 8.7.4.1., the maximum value set out opposite it in Column 2 of Table 8.7.4.1.

**Table 8.7.4.1.**  
**Loading Rates for Fill Based Absorption Trenches and Filter Beds**

Forming Part of Sentences 8.7.4.1.(1) and 8.7.5.2.(2)

Item	Column 1	Column 2
	<i>Percolation Time (T) of Soil, min</i>	<i>Loading Rates, (L/m<sup>2</sup>)/day</i>
1.	1 < T ≤ 20	10
2.	20 < T ≤ 35	8
3.	35 < T ≤ 50	6
4.	T > 50	4

**8.7.4.2. Construction Requirements**

(1) Except for a *shallow buried trench*, a *leaching bed* comprised of *absorption trenches* may be *constructed inleaching bed fill*, if *unsaturated soil* or *leaching bed fill* complying with Subclause 8.7.2.1.(1)(b)(ii) extends,

- (a) to a depth of at least 250 mm over the area covered by the *leaching bed fill*, and
- (b) for at least 15 m beyond the outer *distribution pipes* in any direction in which the *effluent* entering the *soil* or *leaching bed fill* will move horizontally.

(2) If the *unsaturated soil* or *leaching bed fill* described in Sentence (1) has a *percolation time* greater than 15 minutes, any additional *leaching bed fill* added to it to form the *leaching bed* shall have a *percolation time* not less than 75% of the *percolation time* of the *unsaturated soil* or *leaching bed fill* to which it is added.

(3) *Leaching bed fill* that does not meet the requirements of Sentence (2) may be used to form the *leaching bed* if,

- (a) the distance from the bottom of the *absorption trench* to the underlying *soil* is not less than 900 mm, or
- (b) where the distance from the bottom of the *absorption trench* to the underlying *soil* is less than 900 mm, the *percolation time* of the least permeable *soil* or *leaching bed fill* within 900 mm from the bottom of the *absorption trench* is used to calculate the length of the *distribution pipe* under Article 8.7.3.1.

(4) Sentence (2) does not apply to any *leaching bed fill* added as backfill above the stone layer in which the *distribution pipe* is located.

(5) All *leaching bed fill* added shall be stabilized against erosion.

(6) The site to which the *leaching bed fill* is added shall be generally clear of vegetation.

(7) The *leaching bed fill* that is added shall be compacted in layers in such a manner as to avoid uneven settlement of the *distribution pipes*.

(8) Any *distribution boxes, header lines, absorption trenches, or distribution pipes* shall be installed only after the *leaching bed fill* has been compacted in accordance with Sentence (7).

(9) Except as provided in Sentence (10), the sides of the added *leaching bed fill* shall be sloped to ensure stability, but shall not be steeper than one unit vertically to four units horizontally.

(10) The side slope of the *leaching bed fill* may be increased up to one unit vertically to three units horizontally if measures are taken to prevent erosion and ensure stability of the *leaching bed fill*.

(11) The distances set out in Column 2 of Table 8.2.1.6.B. shall be increased by twice the height that the *leaching bed* is raised above the original grade.

### **8.7.5. Filter Beds**

#### **8.7.5.1. Application**

(1) The total daily design *sanitary sewage* flow shall not exceed,

(a) 5 000 L where the *treatment unit* is a *septic tank*, or

(b) 10 000 L where the *treatment unit* is a Level II, Level III or Level IV *treatment unit* as described in Table 8.6.2.2.

#### **8.7.5.2. Loading Requirements**

(1) The effective area of the surface of the filter medium in each filter bed shall be at least 10 m<sup>2</sup> and not more than 50 m<sup>2</sup>.

(2) The area described in Sentence 8.7.4.2.(1) shall be designed such that the *loading rate* does not exceed, for *soil* having a *percolation time* set out in Column 1 of Table 8.7.4.1., the maximum value set out opposite it in Column 2 of Table 8.7.4.1.

(3) Except as provided in Sentence (5), where the total daily design *sanitary sewage* flow does not exceed 3 000 L, the effective area shall be such that the loading on the surface of the filter medium does not exceed 75 L/m<sup>2</sup> per day.

(4) Except as provided in Sentence (5), where the total daily design *sanitary sewage* flow exceeds 3 000 L,

(a) the effective area shall be such that the loading on the surface of the filter medium does not exceed 50 L/m<sup>2</sup> per day, and

(b) the *leaching bed* shall be comprised of more than one filter bed, each of similar size and adjacent to each other.

(5) Where a Level II, Level III or Level IV *treatment unit* as described in Table 8.6.2.2. is used in conjunction with a filter bed, the effective area shall be such that the loading on the surface of the filter medium does not exceed 100 L/m<sup>2</sup> per day.

### 8.7.5.3. Construction Requirements

(1) Sentences 8.7.4.2.(1), (2) and (4) to (11) apply to the *construction* of a filter bed.

(2) The lines of *distribution pipe* shall be evenly spaced over the surface of the filter medium to which the *sanitary sewage* is applied.

(3) The filter medium shall have a minimum depth of 750 mm below the stone layer and shall be clean sand comprised of particles ranging in size between the limits of,

(a) an effective size of 0.25 mm with a uniformity coefficient not less than 3.5,

(b) an effective size of 2.5 mm with a uniformity coefficient not greater than 1.5,  
and

(c) having a uniformity coefficient not greater than 4.5.

(4) The filter medium shall be unsaturated for its entire depth.

(5) Where there is more than one filter bed in a *leaching bed*, the filter beds shall be separated by at least 5 m between the *distribution pipes* of the filter beds.

(6) The base of the filter medium shall extend to a thickness of at least 250 mm over an area meeting the requirements of the following formula:

$$A = \frac{QT}{850}$$

where,

A = the area of contact in square metres between the base of the filter medium and the underlying *soil*,

Q = the total daily design *sanitary sewage* flow in litres, and

T = the lesser of 50 and the *percolation time* of the underlying *soil*.

(7) The stone layer required by Clause 8.7.3.3.(1)(c) shall be not less than 900 mm above the *high ground water table*, rock or *soil* with a *percolation time* of more than 50 minutes.

## 8.7.6. Shallow Buried Trench

### 8.7.6.1. Construction Requirements

(1) The *treatment unit* used in conjunction with a *leaching bed constructed as a shallow buried trench* shall provide *aneffluent* quality that does not exceed the maximum concentrations set out opposite a Level IV *treatment unit* in Columns 2 and 3 of Table 8.6.2.2.

(2) The *effluent* shall be distributed through a *pressurized distribution system* having a pressure head of not less than 600 mm when measured to the most distant point from the pump.

(3) The pump chamber shall be sized to provide sufficient storage volume so that the *effluent* is evenly dosed on an hourly basis over a 24-hour period.

(4) A *shallow buried trench* shall not be *constructed* unless the *soil* or *leaching bed fill* is sufficiently dry to resist compaction and smearing during excavation.

(5) Every *chamber* shall be as wide as the *shallow buried trench* in which it is contained, and the cross-sectional height of the *chamber* at its centre point shall not be less than half the width of the trench.

(6) Every *chamber* shall contain only one *pressurized distribution pipe*.

### 8.7.7. Type A Dispersal Beds

#### 8.7.7.1. Construction Requirements

(1) The *treatment unit* used in conjunction with a *leaching bed constructed as a Type A dispersal bed* shall provide *aneffluent* quality that does not exceed the maximum concentrations set out opposite a Level IV *treatment unit* in Columns 2 and 3 of Table 8.6.2.2.

(2) A *Type A dispersal bed* shall be backfilled with *leaching bed fill* so as to ensure that, after the *leaching bed fill* settles, the surface of the *leaching bed* will not form any depressions.

(3) The combined thickness of the sand layer and the stone layer of a *Type A dispersal bed* shall not be less than 500 mm.

(4) Except as provided in Sentence (5), the sand layer shall,

(a) be comprised of sand that has,

(i) a *percolation time* of at least 6 and not more than 10 min, and

(ii) not more than 5% fines passing through a 0.074 mm (No. 200) sieve,

(b) have a minimum thickness of 300 mm, and

(c) have an area that is not less than the lesser of,

(i) the area of the stone layer determined in accordance with Sentence (6),  
and

(ii) the value determined by the formula,

$$A = \frac{QT}{850}$$

where,



A = the area of contact in square metres between the base of the sand and the underlying *soil*,

Q = the total daily design *sanitary sewage* flow in litres, and

T = the lesser of 50 and the *percolation time* of the underlying *soil*.

(5) Where the underlying *soil* has a *percolation time* of more than 15 min, the sand layer referred to in Sentence (4) shall,

(a) extend to at least 15 m beyond the perimeter of the *treatment unit*, or *distribution pipes* if utilized, in any direction that the *effluent* entering the *soil* will move horizontally, and

(b) have an area that is not less than the value determined by the formula,

$$A = \frac{QT}{400}$$

where,

A = the area of contact in square metres between the base of the sand and the underlying *soil*, or *leaching bed fill* if utilized,

Q = the total daily design *sanitary sewage* flow in litres, and

T = the lesser of 50 and the *percolation time* of the underlying *soil*.

(6) The stone layer shall,

(a) be rectangular in shape with the long dimension parallel to the site contours,

(b) have a minimum thickness of 200 mm,

(c) be protected in the manner described in Sentence 8.7.3.3.(2), and

(d) be *constructed* such that the bottom of the stone layer is at least 600 mm above the *high ground water table*, rock or *soil* with a *percolation time* of 1 min or less or greater than 50 min.

(e) have a minimum area not less than the value determined by the formula,

$$A = Q/B$$

where,

A = the area of the stone layer in square metres,

B = the following amount,

(i) 50, if the total daily design *sanitary sewage* flow exceeds 3 000 litres, or

(ii) 75, if the total daily design *sanitary sewage* flow does not exceed 3 000 litres, and

Q = the total daily design *sanitary sewage* flow in litres.

(7) *Leaching bed fill* with a *percolation time* not exceeding 15 min may be used to satisfy the vertical separation requirements of Clause (6)(d), provided that the *leaching bed fill* conforms to the requirements specified in Sentence (5) regardless of the *percolation time* of the underlying *soil*.

(8) The *effluent* shall be evenly distributed within the stone layer to within 600 mm of the perimeter of the stone layer.

(9) The stone layer shall not be located closer than the minimum horizontal distances set out in Table 8.2.1.6.B. and these distances shall be increased when required by Sentence 8.7.4.2.(11).

### **8.7.8. Type B Dispersal Beds**

#### **8.7.8.1. General Requirements**

(1) Except as provided in Sentence (2) and Sentence 8.7.8.2.(2), a *Type B dispersal bed* shall conform to the requirements of Article 8.7.2.1.

(2) A *Type B dispersal bed* shall not be located in an area that has an average slope that exceeds one unit vertically to seven units horizontally.

#### **8.7.8.2. Construction Requirements**

(1) The *treatment unit* used in conjunction with a *leaching bed constructed as a Type B dispersal bed* shall provide an *effluent* quality that does not exceed the maximum concentrations set out opposite a Level IV *treatment unit* in Columns 2 and 3 of Table 8.6.2.2.

(2) A *Type B dispersal bed* shall be,

- (a) rectangular in shape with the long dimension parallel to the site contours,
- (b) not more than 1 000 mm in depth measured from the bottom of the stone layer to the finished grade when installed in *soil* with a *percolation time* that exceeds 15 min, and
- (c) backfilled with *leaching bed fill* so as to ensure that, after the *leaching bed fill* settles, the surface of the *leaching bed* will not form any depressions.

(3) The bottom of the stone layer shall be at least 600 mm above the *high ground water table*, rock or *soil* with a *percolation time* greater than 50 min.

(4) The *effluent* shall be distributed over the *Type B dispersal bed* through a *pressurized distribution system* having a pressure head of not less than 600 mm when measured to the most distant point from the pump.

(5) The *distribution pipes* shall,

- (a) be self-draining so as to prevent freezing of their contents, and
- (b) have orifices of at least 3 mm in diameter, spaced equally along the length of the pipes.

- (6) The stone layer containing the *distribution pipes* shall,
- (a) be comprised of washed septic stone, free of fine material, with gradation conforming to Table 8.7.3.3.,
  - (b) extend not less than 250 mm below the *distribution pipe*, and
  - (c) extend not less than 50 mm above the *distribution pipe*.

(7) The *distribution pipes* shall be spaced not more than 1.2 m apart with the outermost pipe spaced not more than 600 mm from the edge of the bed.

(8) The pump chamber shall be sized to provide sufficient storage volume so that the *effluent* is evenly dosed on an hourly basis over a 24-hour period.

(9) When there is more than one *Type B dispersal bed* in a *leaching bed*, the *Type B dispersal beds* shall be separated by at least 5 m measured from the edge of the stone layers.

(10) A *Type B dispersal bed* shall not be located closer than the minimum horizontal distances set out in Table 8.2.1.6.B. and these distances shall be increased when required by Sentence 8.7.4.2.(11).

### 8.7.8.3. Design Requirements

(1) The area of a *Type B dispersal bed* shall not be less than the minimum area determined in accordance with Clause (2)(a) or (b).

(2) For the purposes of Sentence (1), the minimum area is either of the following,

- (a) the area calculated based on the *loading rates* for Type 2 effluent set out in the Column headed “Type 2” found in Table 2-8 of the BCMOH, “Sewerage System Standard Practice Manual”, or
- (b) the value determined by the formula,

$$A = \frac{QT}{400}$$

where,

A = the area of contact in square metres between the stone layer and the underlying *soil*,

Q = the total daily design *sanitary sewage* flow in litres, and

T = the *percolation time* of the underlying *soil*.

(3) The linear *loading rates* of the underlying *soil* shall not be greater than,

- (a) the linear *loading rates* set out in Table 2-11 of BCMOH, “Sewerage System Standard Practice Manual”, where the area of the *Type B dispersal bed* is determined in accordance with Clause (2)(a), or

- (b) the following linear *loading rate*, where the area of the *Type B dispersal bed* is determined in accordance with Clause (2)(b),
  - (i) 40 L/m, for *soil* having a *percolation time* equal to or greater than 24 min,  
or
  - (ii) 50 L/m, for *soil* having a *percolation time* less than 24 min.
- (4) The width of a *Type B dispersal bed* shall not exceed 4 m.

## **Section 8.8. Class 5 Sewage Systems**

### **8.8.1. Application**

#### **8.8.1.1. Prohibited Installation**

(1) Except as provided in Article 8.8.1.2., a Class 5 *sewage system* shall not be installed.

#### **8.8.1.2. Acceptable Installation**

(1) A Class 5 *sewage system* may be installed in the following circumstances:

- (a) where the proposed use of the *sewage system* is for a temporary operation, excluding seasonal recreational use, not exceeding 12 months in duration,
- (b) to remedy an unsafe *sewage system* where the remediation of the unsafe condition by the installation of a Class 4 *sewage system* is impracticable,
- (c) to upgrade a *sewage system* serving an existing *building*, where upgrading through the use of a Class 4 *sewage system* is not possible due to lot size, site slope or clearance limitations, or
- (d) as an interim measure for a lot or parcel of land until municipal sewers are available, provided that the municipality undertakes to ensure the continued operation of an approved *hauled sewage system* until the municipal sewers are available.

(2) Where a Class 5 *sewage system* is installed, a written agreement for the disposal of *sanitary sewage* from the *sewage system* shall be entered into with a *hauled sewage system* operator.

### **8.8.2. General Requirements**

#### **8.8.2.1. Construction Requirements**

(1) All Class 5 *sewage systems* shall be equipped with a device that shall produce an audible and visual warning alarm so located to warn that the *sewage system* is nearing capacity.

(2) The device required in Sentence (1) shall be designed to provide suitable advance warning to the *building* occupants considering,

- (a) the total daily design *sanitary sewage* flow,
- (b) the location of the Class 5 *sewage system*, and
- (c) the response time of the *hauled sewage system* contractor.

(3) Except as provided in Sentence (4), all *holding tanks* shall be provided with a vent that,

- (a) is not less than 3 in. trade *size*,
- (b) terminates at least,
  - (i) 300 mm above finished grade with a vent cap, or
  - (ii) 600 mm above finished grade with a vent cap when the *holding tank* is located in an area subject to flooding, and
- (c) terminates at least 3.5 m away from any air inlet, window, or door.

(4) A vent from a *holding tank* may connect into the *venting system* of the *building* served by the *holding tank* provided that,

- (a) the vent is not less than 3 in. trade *size*, and
- (b) the installation of the vent shall conform to the requirements in Part 7.

#### **8.8.2.2. Sizing of Holding Tanks**

(1) All *holding tanks* used in residential dwellings shall have a minimum 7 day holding capacity based on the total daily design *sanitary sewage* flow.

### **Section 8.9. Operation and Maintenance**

#### **8.9.1. General**

##### **8.9.1.1. Scope**

(1) This Section applies to the operation and maintenance of all *sewage systems*.

##### **8.9.1.2. General Requirements for Operation and Maintenance**

(1) Every *sewage system* shall be operated and maintained so that,

- (a) the *sewage system* or any part of it shall not emit, discharge or deposit *sanitary sewage* or *effluent* onto the surface of the ground,
- (b) *sanitary sewage* or *effluent* shall not emit, discharge, seep, leak or otherwise escape from the *sewage system* or any part of it other than from a place or part of the *sewage system* where the system is designed or intended to discharge the *sanitary sewage* or *effluent*, and
- (c) except as provided in Sentence (2), *sanitary sewage* or *effluent* shall not emit, discharge, seep, leak or otherwise escape from the *sewage system* or any part

of it into a piped water supply, well water supply, a watercourse, *ground water* or *surface water*.

(2) Clause (1)(c) does not apply to the use of a *sewage system* designed and operated such that properly treated *effluents* discharged into *soil*.

## **8.9.2. Operation**

### **8.9.2.1. Scope**

(1) The requirements of this Subsection are in addition to the requirements of Subsection 8.9.1.

### **8.9.2.2. General**

(1) Every *sewage system* shall be operated in accordance with,

- (a) the basis on which the *construction* and use of the *sewage system* was approved or required under the Act or predecessor legislation, as the case may be, and
- (b) the requirements of the manufacturer of the *sewage system*.

### **8.9.2.3. Class 4 Sewage Systems**

(1) Every Class 4 *sewage system* shall be operated in accordance with the literature required by Sentence 8.6.2.2.(6).

(2) No person shall operate a *treatment unit* other than a *septic tank* unless the person has entered into an agreement whereby servicing and maintenance of the *treatment unit* and its related components will be carried out by a person who,

- (a) possesses a copy of the literature required by Sentence 8.6.2.2.(6), and
- (b) is authorized by the manufacturer to service and maintain that type of *treatment unit*.

(3) The person authorized by the manufacturer to service and maintain the *treatment unit* and who has entered into the agreement referred to in Sentence (2) with the person operating the *treatment unit* shall notify the *chief building official* if,

- (a) the agreement is terminated, or
- (b) access for service and maintenance of the *treatment unit* is denied by the person operating the *treatment unit*.

### **8.9.2.4. Sampling of Treatment Units**

(1) Every person operating a *treatment unit* that is used in conjunction with a *leaching bed constructed as a shallow buried trench, Type A dispersal bed* or *Type B dispersal bed* shall,

- (a) take a grab sample of the *effluent* to determine the level of CBOD<sub>5</sub> and suspended solids in the *effluent*,

(b) carry out the sampling required by Clause (1)(a) in accordance with the methods described in the APHA/AWWA/WEF, “Standard Methods for the Examination of Water and Wastewater”, and

(c) promptly submit the results of the sampling required by Clause (a) to the *chief building official*.

(2) Except as provided in Sentence (4), the sampling required by Sentence (1) shall be conducted,

(a) initially, once during the first 12 months after the *sewage system* was put into use, and

(b) thereafter, once during every 12 month period, at least 10 months and not more than 18 months after the previous sampling has been completed.

(3) The concentration of CBOD<sub>5</sub> and suspended solids in the grab sample described in Sentences (1) and (4) is deemed to comply with the maximum concentration requirements set out in Table 8.6.2.2. when it does not exceed 20 mg/L for each of these parameters.

(4) If the results of the sampling required by Sentence (1) do not comply with Sentence (3), the person operating the *treatment unit* shall,

(a) resample the *effluent* in accordance with Clauses (1)(a) and (b) within 6 months after the previous sampling has been completed, and

(b) promptly submit the results of the resampling required by Clause (a) to the *chief building official*.

#### **8.9.2.5. Class 5 Sewage Systems**

(1) Every Class 5 *sewage system* shall be operated in accordance with the agreement referred to in Sentence 8.8.1.2.(2).

(2) No Class 5 *sewage system* shall be operated once it is filled with *sanitary sewage* until such time as the *sanitary sewage* is removed from the *sewage system*.

### **8.9.3. Maintenance**

#### **8.9.3.1. Scope**

(1) The requirements of this Subsection are in addition to the requirements of Subsection 8.9.1.

#### **8.9.3.2. General**

(1) Every *sewage system* shall be maintained so that,

(a) the *construction* of the *sewage system* remains in accordance with,

(i) the basis on which the *construction* and use of the *sewage system* was approved or required under the Act or predecessor legislation, as the case may be, and

(ii) the requirements of the manufacturer of the *sewage system*, and

(b) all components of the *sewage system* function in their intended manner.

(2) The land in the vicinity of a *sewage system* shall be maintained in a condition that will not cause damage to, or impair the functioning of, the *sewage system*.

#### **8.9.3.3. Interceptors**

(1) Every grease *interceptor* referred to in Article 8.1.3.1. shall be maintained in accordance with CAN/CSA-B481.4, “Maintenance of Grease Interceptors”.

#### **8.9.3.4. Class 4 Sewage Systems**

(1) *Septic tanks* and other *treatment units* shall be cleaned whenever sludge and scum occupy one-third of the *working capacity* of the tank.

#### **8.9.3.5. Pressurized Distribution Systems**

(1) The pressure head at the furthest point from the pump in all *distribution pipes* shall be checked for compliance with Articles 8.7.6.1. and 8.7.8.2. and the design specification at least every 36 months.