

2012 Ontario Building Code Update Review Part 8 – Sewage Systems

OOWA Central Ontario Regional Meeting
November 17, 2014



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MMAH 2012 OBC Implementation

- The 2012 Building Code (O.Reg. 332/12)
 - www.mah.gov.on.ca
- 2012 Building Code Compendium



- e-Learning Module
- No Part 8 – Sewage System manual

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Effective Dates for 2012 OBC

OBC – 4.4.1.1.

- (1) Subject to Sentences (2) and (3), this Regulation comes into force on January 1, 2014.
- (2) Sentences 4.2.1.1.(1), (4) and (5) come into force on January 1, 2016 [Lake Simcoe Re-Inspection Program].
- (3) Sentences 4.2.1.1.(2), (3) and (6) come into force on January 1, 2017 [CAN/BNQ Certification].

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BCIN Examinations

- Starting Jan 1/14, anyone qualifying for the first time, or qualifying in a new category will be required to pass the new 2012 OBC examinations
- Effective Nov 17/14, examinations by George Brown College (no longer MMAH).

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Knowledge Maintenance

- Knowledge maintenance assessments not yet a requirement.
- MMAH to advise on details / dates

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Building Code Training

- BCIN Self-Study Manuals / Training Courses
- Downloaded by MMAH
- Building code training is now developed by George Brown College, and is being delivered by Ontario's colleges
- Many colleges – George Brown, Humber, Seneca, Georgian, Algonquin, and others
- Other Approved Organizations – U of Guelph (ORWC), Building Official Assoc & others

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Future Code Updates

- MMAH – Code updates (Director’s rulings);
- Mid-rise building (up to 6 storeys)
- Enhanced barrier free requirements
- Future code updates – glass balcony railings, Elliot Lake mall collapse
- Effective Jan 1/15 – Part 8 update to include for new definitions (per, Joseph Rogers – MMAH)

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Effluent Filters

OBC – 8.6.2.1. (2)(b)(c)

Effluent filters in accordance with NSF/ANSI 46, “Evaluation of Components and Devices Used in Wastewater Treatment Systems” must now be sized to filter out particles of 1.6 mm [1/16”] and have a minimum area of 550 cm²[85 in.²], in addition to being installed in accordance with the manufacturers requirements.

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Effluent Filters

OBC – 8.6.2.1. (2)(b)(c)

- Purpose: to filter out particles > 1/16”
- Confusion on calculation of 550 cm²[85 in.²] area
- It is the 'flow' area, through the filter
- Manufacturers - linear length of 1/16 inch filter slots
- Consistent with the new CSA B65, Flow Area
- No - Tuf-Tite EF-4 effluent filter
- No - Zabel A1801 effluent filter
- No Polylok PL – 68 effluent filter
- Precast manufacturers

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BMEC Area Bed Authorizations

- Existing BMEC Authorizations – Area Beds
- All currently in force
- Confusion - introduction of Type 'A' Dispersal Fields
- BMEC has corresponded with treatment firms
- Likely in near future – cancellation of BMECs
- Most manufacturers – no problem
- Waterloo Biofilter - sheds, flat beds
- Ecoflo Biofilters, Puraflo treatment modules

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CAN/BNQ 3680-600, “Onsite Residential Wastewater Treatment Technologies”

- CAN/BNQ 3680-600, “Onsite Residential Wastewater Treatment Technologies” is the new national standard for testing wastewater residential treatment technologies.
- This standard will replace the current criteria for treatment units set out in the Ontario Building Code, and the list of treatment units found in Supplementary Standard SB-5 which are deemed to meet these Code requirements. [to be revoked Jan 1/17]
- Manufacturer’s TESTING –BNQ (Quebec) & Alfred College

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Distribution Pipes within Leaching Beds

OBC – 8.7.2.2. (2)

The header and distribution pipes within leaching beds must be designed and built in such a way that they can be detected by one of the following:

- Magnetic means.
- 14 gauge TW solid copper light colored plastic coated tracer wire.
- Any other type of subsurface detection.

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Type 'A' Dispersal Beds

OBC – 8.7.7.

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 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 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.

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OBC – 8.7.7.

- (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, $A = QT/850$

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OBC – 8.7.7.

(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, $A = QT/400$

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*.

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OBC – 8.7.7.

(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.

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Continued...**OBC – 8.7.7.**

(e) have a minimum area not less than the value determined by the formula, $A = Q/B$

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.

(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. & these distances shall be increased when required by Sentence 8.7.4.2.(11).

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Type 'B' Dispersal Beds**OBC – 8.7.8.****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 [14.3% slope].

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.

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OBC – 8.7.8.

- (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.

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OBC – 8.7.8.

- (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*.

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OBC – 8.7.8.

- (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).

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OBC – 8.7.8.

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, $A = QT/400$
- 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*.

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Continued...

OBC – 8.7.8.

- (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.

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Sewerage System Standard Practice Manual Version 2

Table 2-8 Soil Hydraulic Loading Rates for Residential Strength Wastewater

TEXTURE (USDA)	SOIL CHARACTERISTICS ¹		PERCOLATION RATES (MIN/2.54 CM)	FIELD SATURATED HYDRAULIC CONDUCTIVITY (KFS) MM/DAY	WASTEWATER LOADING RATES IMPERIAL GALLONS/FT ² /DAY (LITRES/M ² /DAY)		
	SHAPE	GRADE			TYPE 1	TYPE 2	TYPE 3
Gravelly sand	—	Single grain	< 2	>3,500	0.7 (34)	1.4 (68)	2.1 (103)
Coarse to medium sand/loamy sand	—	Single grain	2 – 5	1,500 – 3,500	0.6 (29)	1.2 (59)	1.8 (88)
Fine sand/fine loamy sand	—	Single grain	5 – 15	250 – 1,500	0.5 (25)	1.0 (49)	1.5 (75)
Sandy loam	Massive	structureless	20 – 30	125 – 250	0.3 (15)	0.45 (22)	0.6 (29)
		weak			0.3 (15)	0.45 (22)	0.6 (29)
	Platy	moderate, strong	10 – 20	250 – 500	not recommended	not recommended	not recommended
		weak			0.4 (20)	0.7 (34)	1.0 (49)
Loam	massive	structureless	30 – 40	60 – 125	0.5 (25)	1.0 (49)	1.5 (74)
		weak			0.2 (10)	0.3 (15)	0.4 (20)
	Platy	moderate, strong	20 – 30	125 – 250	0.2 (10)	0.3 (15)	0.4 (20)
		weak			not recommended	not recommended	not recommended
Silt loam, silt	prismatic, blocky, granular	moderate, strong	40 – 60	30 – 60	0.3 (15)	0.5 (24)	0.7 (34)
		weak			0.4 (20)	0.8 (39)	1.2 (59)
	massive	structureless	20 – 40	60 – 250	0.2 (10)	0.3 (15)	0.4 (20)
		weak			0.2 (10)	0.3 (15)	0.4 (20)
Clay loam, sandy clay loam, silty clay loam	platy	moderate, strong	60 – 90	15 – 30	not recommended	not recommended	not recommended
		weak			not suitable	not suitable	not suitable
	prismatic, blocky, granular	moderate, strong	40 – 60	30 – 60	0.2 (10)	0.3 (15)	0.4 (20)
		weak			0.3 (15)	0.45 (22)	0.6 (29)
Sandy clay, silty clay, clay	massive	structureless	90 – > 120	< 5.0 – 60	not suitable	not suitable	not suitable
		weak			not recommended	not recommended	not recommended
	platy	moderate, strong	90 – > 120	< 5.0 – 60	not suitable	not suitable	not suitable
		weak			0.15 (7)	0.18 (9)	0.25 (13)
prismatic, blocky, granular	moderate, strong	90 – > 120	< 5.0 – 60	not suitable	not suitable	not suitable	
	weak			0.15 (7)	0.18 (9)	0.25 (13)	

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Sewerage System Standard Practice Manual Version 2

Table 2-11 Linear Loading Rates for Wastewater

SOIL CHARACTERISTICS			SLOPE 3-4%					SLOPE 5-9%					SLOPE 10% AND OVER							
			SOIL DEPTH BELOW INFILTRATIVE SURFACE					SOIL DEPTH BELOW INFILTRATIVE SURFACE					SOIL DEPTH BELOW INFILTRATIVE SURFACE							
SOIL TEXTURE	SOIL STRUCTURE SHAPE	STRUCTURE STRENGTH/ GRADE	8" TO <12"	12" TO <24"	24"	8" TO <12"	12" TO <24"	24"	8" TO <12"	12" TO <24"	24"	8" TO <12"	12" TO <24"	24"						
			g/day/ft ²	L/day/m	g/day/ft ²	L/day/m	g/day/ft ²	L/day/m	g/day/ft ²	L/day/m	g/day/ft ²	L/day/m	g/day/ft ²	L/day/m						
Gravelly sand Coarse to medium sand/loamy sand	---	Single grain	3.3	49.7	4.2	62.1	5.0	74.5	4.2	62.1	5.0	74.5	5.8	86.9	5.0	74.5	5.8	86.9	6.7	99.3
		massive	3.3	49.7	4.2	62.1	5.0	74.5	4.2	62.1	5.0	74.5	5.8	86.9	5.0	74.5	5.8	86.9	6.7	99.3
Fine sand and fine loamy sand	---	Single grain	2.9	43.5	3.7	55.9	4.6	68.3	3.3	49.7	4.2	62.1	5.0	74.5	4.2	62.1	5.0	74.5	5.8	86.9
		massive	2.5	37.3	2.9	43.5	3.3	49.7	3.0	44.7	3.4	50.9	3.8	57.1	3.3	49.7	4.2	62.1	5.0	74.5
Sandy loam	platy	structureless	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		weak	2.5	37.3	2.9	43.5	3.3	49.7	3.0	44.7	3.4	50.9	3.8	57.1	3.3	49.7	4.2	62.1	5.0	74.5
	moderate, strong	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
	prismatic, blocky, granular	weak	2.9	43.5	3.7	55.9	4.6	68.3	3.3	49.7	4.2	62.1	5.0	74.5	4.2	62.1	5.0	74.5	5.8	86.9
moderate, strong		2.9	43.5	3.7	55.9	4.6	68.3	3.3	49.7	4.2	62.1	5.0	74.5	4.2	62.1	5.0	74.5	5.8	86.9	
Loam	massive	structureless	1.7	24.8	1.9	28.6	2.2	32.3	2.0	29.8	2.2	33.5	2.7	39.7	2.2	33.5	2.7	39.7	3.1	45.9
		platy	1.2	18.6	1.4	21.4	1.6	24.2	1.5	22.4	1.7	25.1	2.0	29.8	1.7	25.1	2.0	29.8	2.3	34.5
	moderate, strong	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
	prismatic, blocky, granular	weak	2.5	37.3	2.9	43.5	3.3	49.7	2.7	41.0	3.2	47.2	3.6	53.4	3.0	44.7	3.4	50.9	3.8	57.1
moderate, strong		2.7	41.0	3.2	47.2	3.6	53.4	3.0	44.7	3.4	50.9	3.8	57.1	3.2	48.4	3.7	54.6	4.1	60.8	
Silt loam, silt	massive	structureless	1.7	24.8	2.1	31.0	2.5	37.3	1.8	27.3	2.2	33.5	2.7	39.7	2.0	29.8	2.4	36.0	2.8	42.2
		platy	1.2	18.6	1.6	23.3	1.9	27.9	1.4	20.5	1.7	25.1	2.0	29.8	1.5	22.4	1.8	27.0	2.1	31.7
	moderate, strong	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
	prismatic, blocky, granular	weak	2.0	29.8	2.2	33.5	2.5	37.3	2.2	33.5	2.5	37.3	2.7	41.0	2.5	37.3	2.9	43.5	3.3	49.7
moderate, strong		2.2	33.5	2.5	37.3	2.7	41.0	2.5	37.3	2.9	43.5	3.3	49.7	2.7	41.0	3.2	47.2	3.6	53.4	
Clay loam, sandy clay loam, silty clay loam	massive	structureless	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		platy	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	moderate, strong	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
	prismatic, blocky, granular	weak	1.7	24.8	2.1	31.0	2.5	37.3	1.8	27.3	2.2	33.5	2.7	39.7	2.0	29.8	2.4	36.0	2.8	42.2
moderate, strong		2.0	29.8	2.4	36.0	2.8	42.2	2.2	33.5	2.5	37.3	2.7	41.0	2.5	37.3	2.9	43.5	3.3	49.7	
Sandy clay, silty clay, clay	massive	structureless	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		platy	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	moderate, strong	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
	prismatic, blocky, granular	weak	1.2	17.4	1.5	21.7	1.7	26.1	1.3	19.1	1.6	23.5	1.9	27.8	1.4	20.9	1.7	25.2	2.0	29.6
moderate, strong		1.7	24.8	2.1	31.0	2.5	37.3	1.8	27.3	2.2	33.5	2.7	39.7	2.0	29.8	2.4	36.0	2.8	42.2	

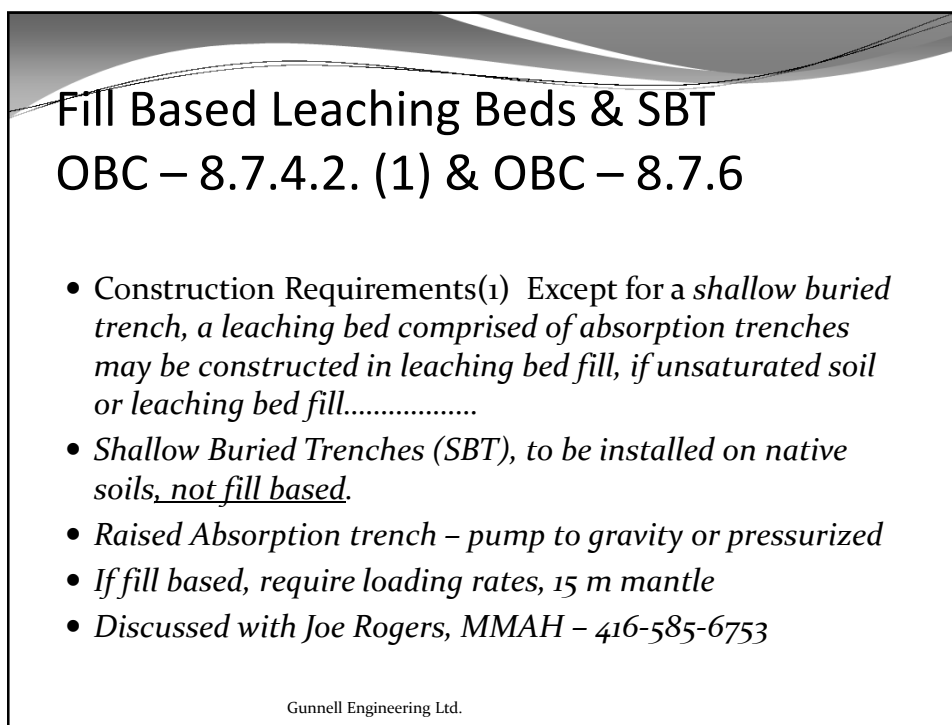
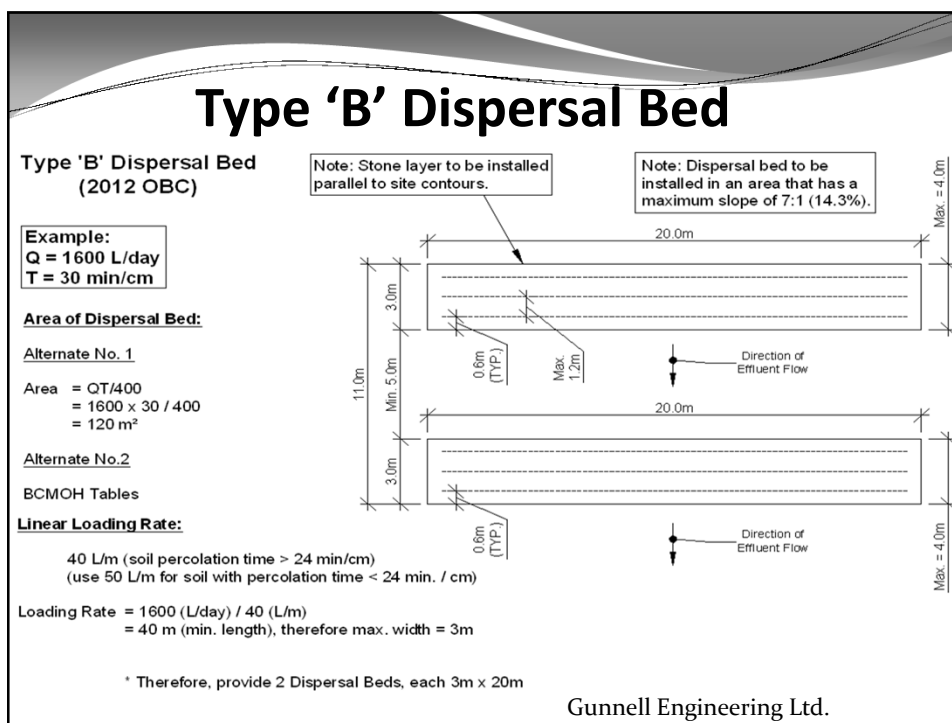
Maximum LLRs: For sites where flow of effluent away from the discharge area will be predominately vertical, to address oxygen flux use a maximum LLR of 99 to 124 L/day/ft². Reduce for soils finer than well structured silt loam/silt (clay textured soils) to maximum 45 to 60 L/day/ft².

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Type 'B' Dispersal Bed

- APPLICATIONS:
- Small daily design sewage flows
- Restricted area – cannot accommodate 15 m mantle
- Restricted sites – tree preservation areas, no disturbance areas, Conservation Authority setback requirements, maximum 40% lot disturbance
- 15 m mantle requirements??

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Sampling of & Maintenance of Treatment Units

- Requirements for maintenance agreements
- Sampling and submittal of effluent sampling to CBO

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Sampling of Treatment Units

OBC – 8.9.2.4.(3) &(4)(a)(b)

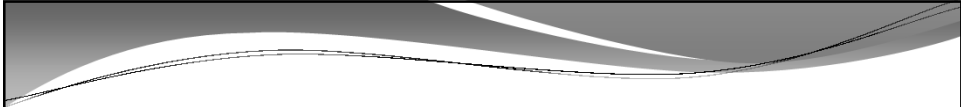
(3) The concentration of CBOD₅ and suspended solids in the grab sample described in Sentences (1) and (4) is deemed to comply with the maximum concentration requirements set out in Table 8.6.2.2. when it does not exceed 20 mg/L for each of these parameters.

(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*.

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Thank you - Questions ??

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