Manitoba

Supplementary Information

for

Onsite Wastewater Management System Installations

Metric Units

Updated July 2026

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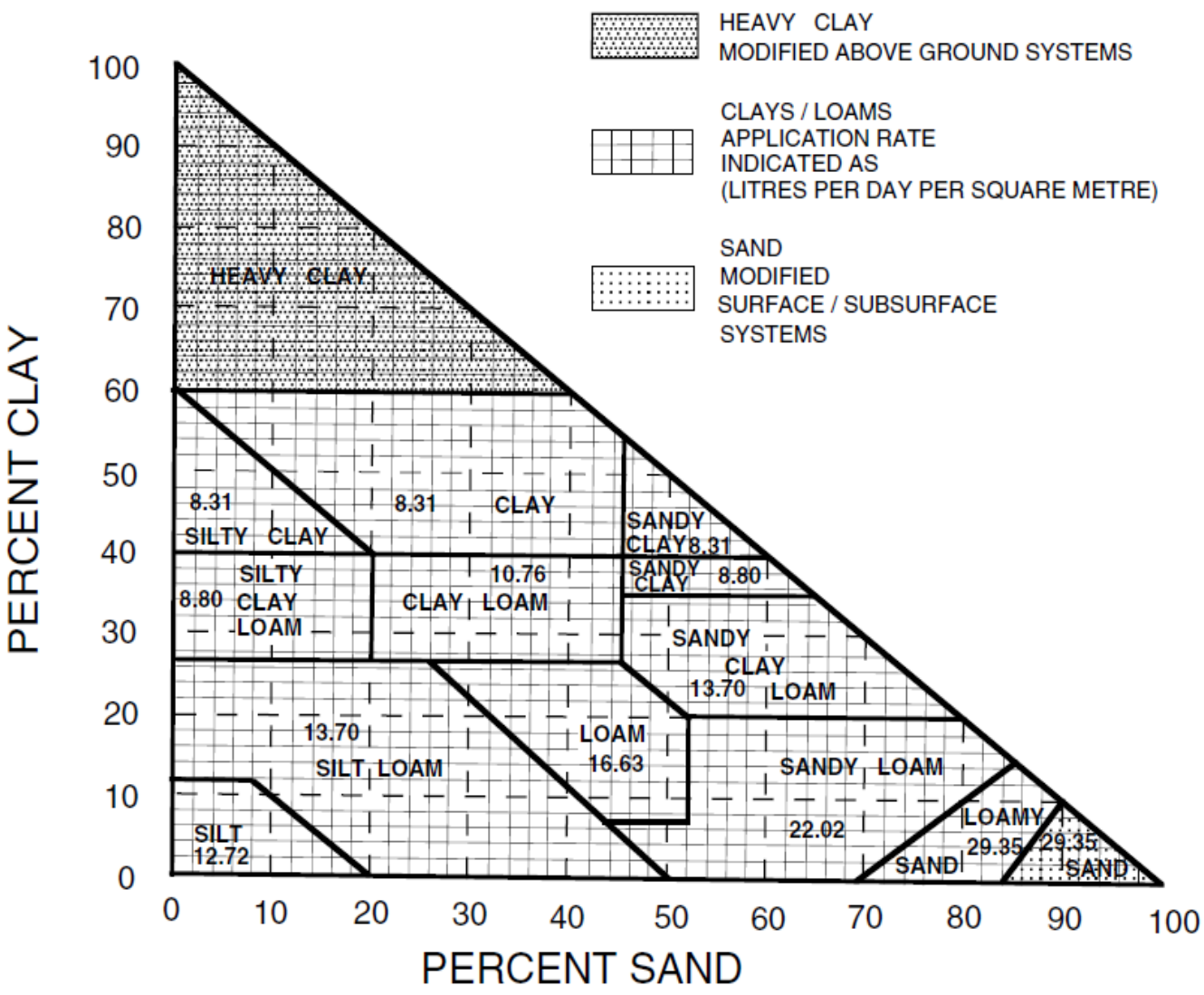
Figure 1: Soil Texture Classification Triangle



Application Rate: Litres per day per square metre (lpd/m^2)

Table 1: Application Rates

When using the results of a soil texture classification to size a system, the disposal field shall be sized using the application rates applicable for the soil type. The application rate is the volume of effluent that can be applied to the given soil type per day. Application rates per day for various soil types are as follows:

Soil Type	Application Rate (lpd/m^2)
Sand/Loamy Sand (85 - 100% Sand)	Modified systems See Table 3 29.35
Loamy Sand (<85% Sand)	29.35
Sandy Loam	22.02
Loam	16.63
Silt Loam/Sandy Clay Loam	13.70
Silt	12.72
Clay Loam	10.76
Sandy Clay (<40% Clay)/Silty Clay Loam	8.80
Clay/Silty Clay/Sandy Clay (40 - 60% Clay)	Modified systems See Table 3 8.31
Heavy Clay (>60 - 100% Clay)	Modified aboveground systems No subsurface systems See Table 3

Table 2: Average Daily Effluent Flows

The daily effluent flow rate is required to calculate the area of the disposal field or the length of trench required. In Manitoba flow rates are based on the number of bedrooms in the dwelling. Flow rates for non-residential facilities (commercial, institutional, recreational) are shown in Table 10.

Manitoba effluent flow for dwellings is listed as follows:

Number of Bedrooms	Effluent Flow (Litres per day)
2	1000
3	1500
4	2000
5	2500

Note:

Manitoba Environment and Climate Change may consider the use of metered flow volumes for larger dwellings or other facilities (i.e., commercial, institutional, recreational)

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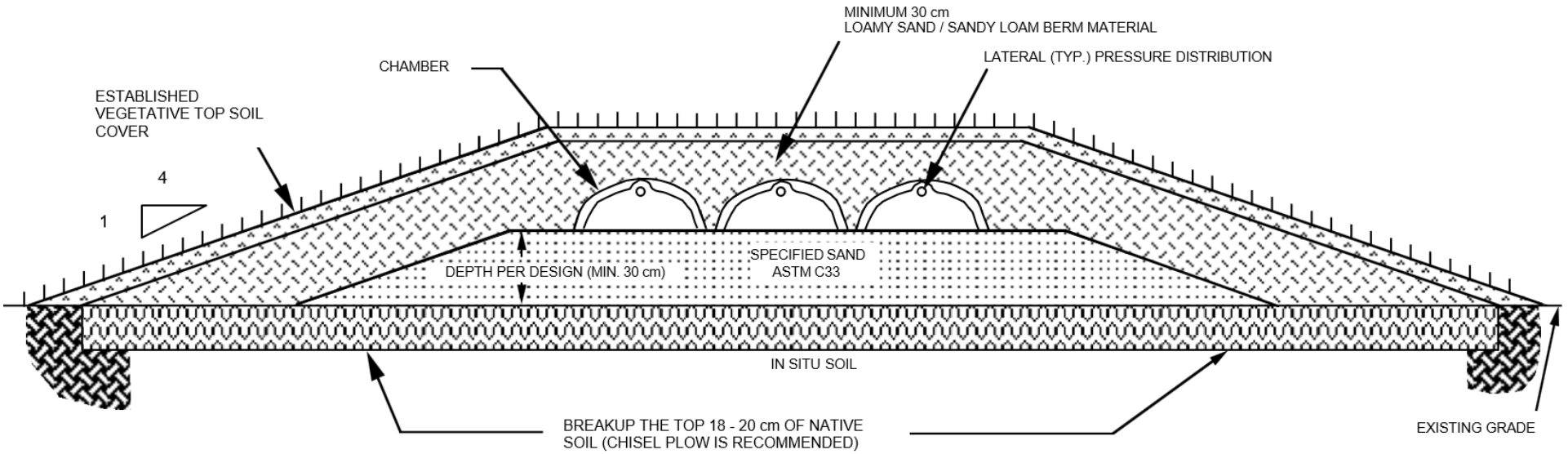
Table 3: Soil Texture Classification Matrix

Soil Type	Type of System	Minimum Requirements	Intent
>60 - 100% heavy clay	• holding tank • package sewage treatment plant to aboveground field • peat system • pressurized sand treatment mound • sand filter • modified aboveground total area field	• NO SUBSURFACE SYSTEMS • 80% clay – sand treatment mound – pressure distribution 70% clay – minimum 120 m^3 stone (236 m^2) minimum 144 m^3 sand 60% clay – minimum 192 m^3 stone (236 m^2) minimum 72 m^3 sand (effluent must be pumped to the distribution box or laterals) • perforated distribution pipe must be equally distributed over the total area of the field • loamy topsoil to be used as final cover material (based on 1500 L/day – 3 bedroom home)	• to provide alternative systems in heavy clay soils as subsurface systems have insufficient evapotranspiration and absorption qualities • field sizing shall increase per each additional bedroom • Note: modified aboveground total area fields may be an alternative to sand treatment mounds
40 - 60% clay	• modified total area (MTA) • modified trenches - stone (MTS) - chamber (MTC) • holding tank • package sewage treatment plant to a modified field • peat system • pressurized sand treatment mound • sand filter • modified aboveground total area field	• MTA - 147 m^3 stone (180 m^2) - 55 m^3 sand (high quality, clean, graded sand) - maximum depth 30 cm • MTS - maximum depth 60 cm - minimum amount of stone under pipe is 36 cm (using – 60/90 cm bucket) - length of trench in tables for 8.31 app. rate - 169 m for 60 cm W x 46 cm H - 131 m for 90 cm W x 46 cm H • MTC - maximum depth 30 cm - minimum amount of chamber 169 m EQ 36/ARC 24 • loamy material to be used as cover (based on 1500 L/day – 3 bedroom home)	• to allow for shallow depth subsurface system installations in clay soils • to minimize the depth of the subsurface system to allow for adequate evapotranspiration and infiltration in these types of soils • to use application rate of 8.31 • high quality, clean, graded sand with less than 5% No. 200 and must pass the jar test for fines
<40% clay <85% sand	• traditional subsurface systems	• minimum requirements as set out in regulation • application rates vary from 8.8 to 29.35 • loamy material to be used as cover	• Note: the base of all fields must be 1 m above the bedrock or high water table
85 - 100% sand	• holding tank • modified subsurface systems - lined trenches - stone - chamber - lined total area field - pressurized sand treatment mound - peat system - package plant to modified aboveground field	• application rate 29.35 • the base of fields must be 1 m above bedrock or high water table • all systems must be pressurized • lined trenches (stone) - 30 cm minimum layer of ASTM C33 sand or loamy sand • lined trenches (chamber) - 30 cm minimum layer of ASTM C33 sand or loamy sand on bottom and sides • lined total area field - 30 cm minimum layer of ASTM C33 sand or loamy sand - minimum of 48 m^3 of stone (102 m^2) • loamy material to be used as cover • saturated zones - sand treatment mounds – pressurized	• to provide alternative systems in coarse grained soils • to protect ground water sources • to slow the percolation rate and to facilitate treatment, lined trenches and total area fields are to be used • to provide alternate system in saturated soil conditions

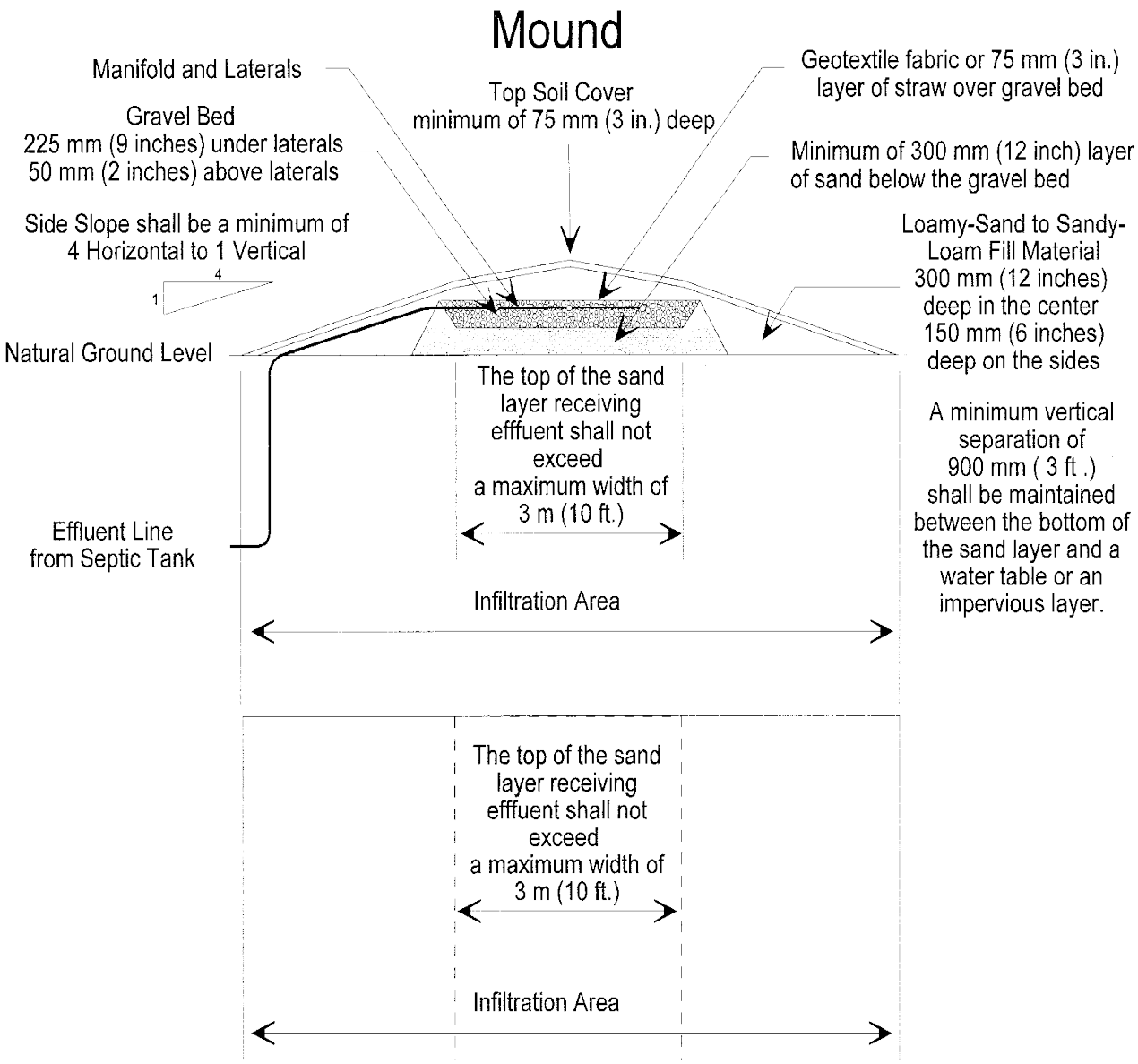
Figure 2: Pressurized Sand Treatment Mound System - Chambers



*FOR ILLUSTRATIVE PURPOSE ONLY, NOT TO SCALE

NOTE: INTENDED FOR >60 - 100% HEAVY CLAY SOILS
NOTE: BERM MATERIAL MUST BE LOAMY SAND / SANDY LOAM OR ASTM C33 SAND.

Figure 3: Pressurized Sand Treatment Mound - Stone

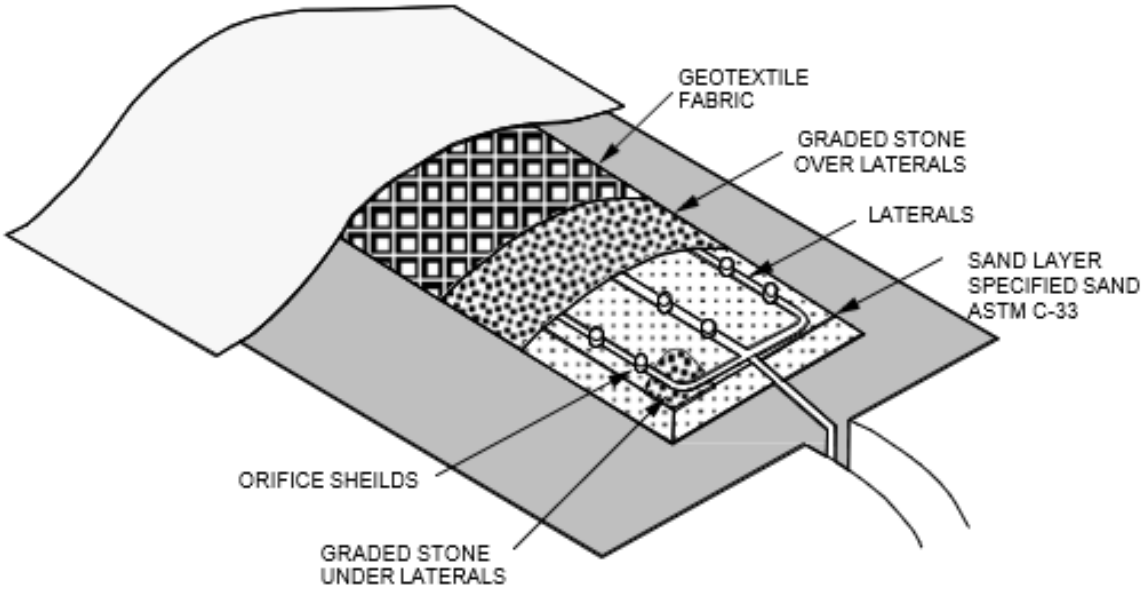


*FOR ILLUSTRATIVE PURPOSES ONLY, NOT TO SCALE

Note: Wastewater Effluent Chambers may also be used.
Intended for use in heavy clay soils

Source: Alberta Private Sewage Systems Standard of Practice 1999 Handbook, Alberta Municipal Affairs, page 198

Figure 4: Pressurized Sand Treatment Mound System - Stone

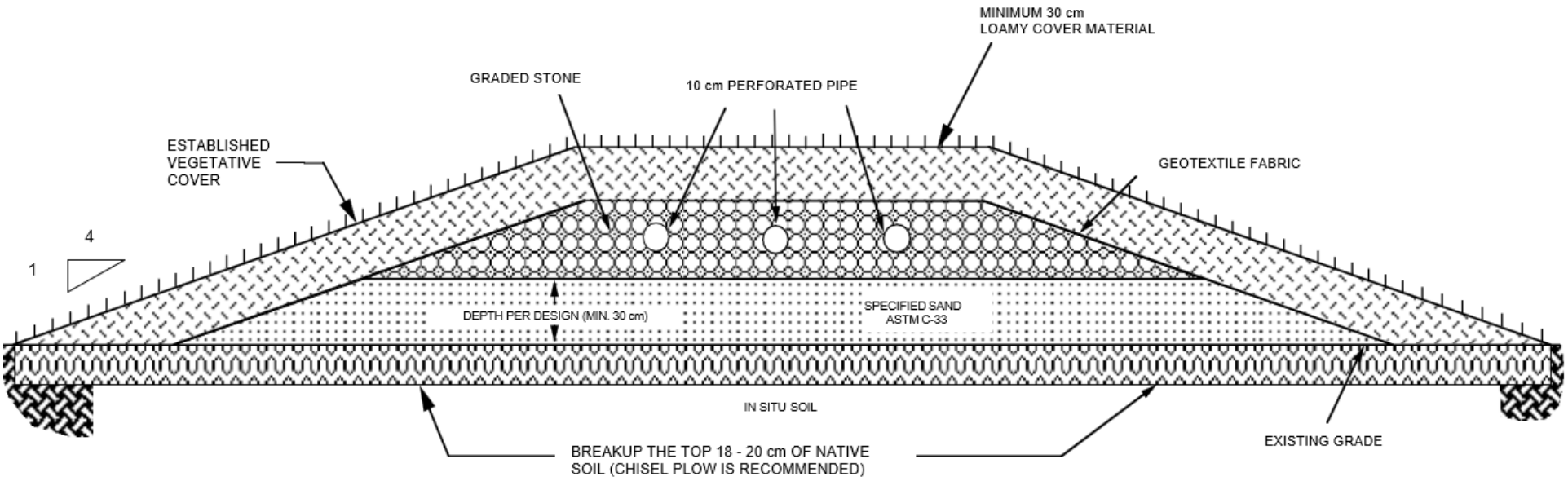


* FOR ILLUSTRATIVE PURPOSE ONLY, NOT TO SCALE

NOTE: INTENDED FOR >60%-100% HEAVY CLAY SOILS

NOTE: ALL SEPTIC FIELDS MUST BE BERMED WITH SUITABLE MATERIAL.

Figure 5: Modified Aboveground Total Area Field - Stone

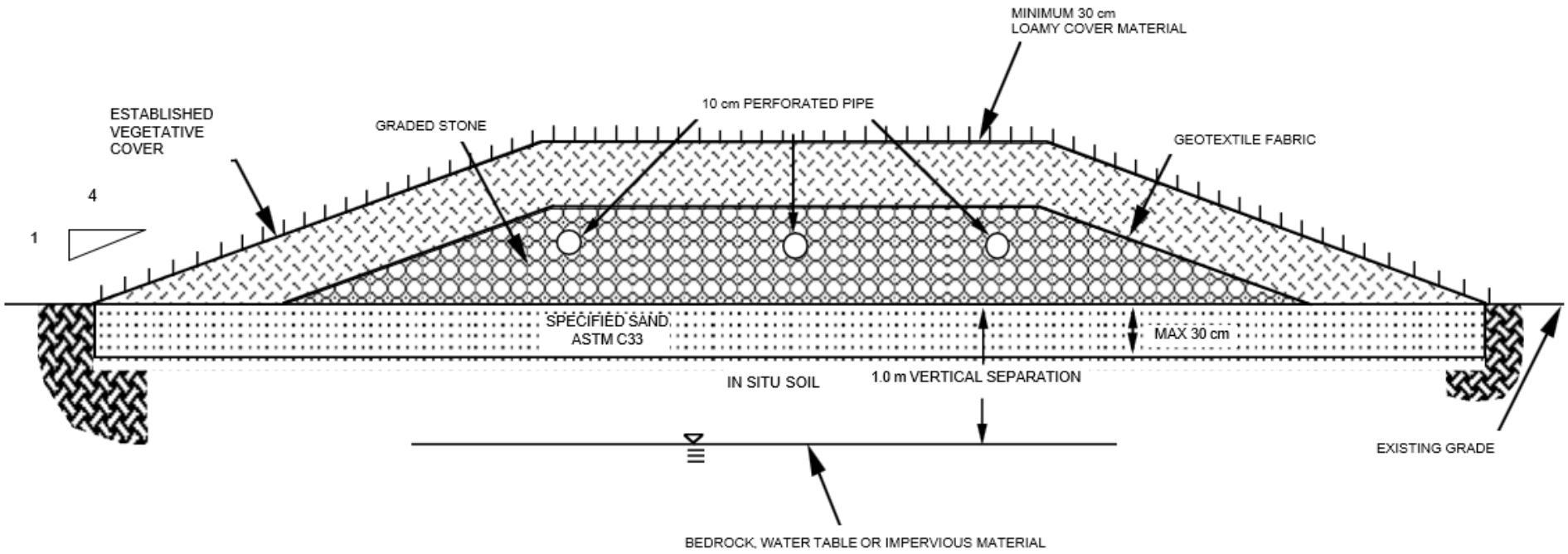


*FOR ILLUSTRATIVE PURPOSE ONLY, NOT TO SCALE

NOTE: INTENDED FOR > 60 - 100% HEAVY CLAY SOILS

NOTE: ALL SEPTIC FIELDS MUST BE BERMED WITH SUITABLE MATERIAL.

Figure 6: Modified Total Area Field (MTA) - Stone



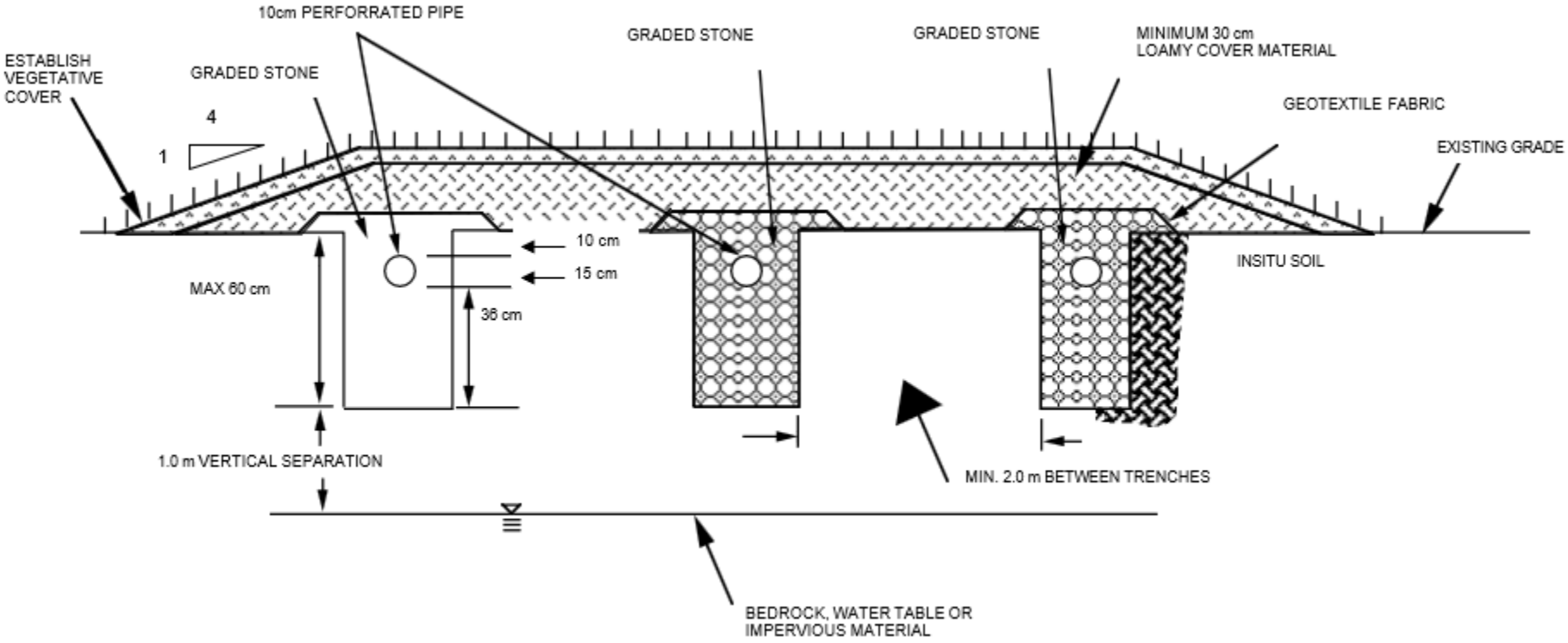
*FOR ILLUSTRATIVE PURPOSE ONLY, NOT TO SCALE

NOTE: INTENDED FOR 40 - 60% CLAY SOILS

NOTE: ALL SEPTIC FIELDS MUST BE BERMED WITH SUITABLE MATERIAL.

Figure 7: Modified Trench - Stone (MTS)

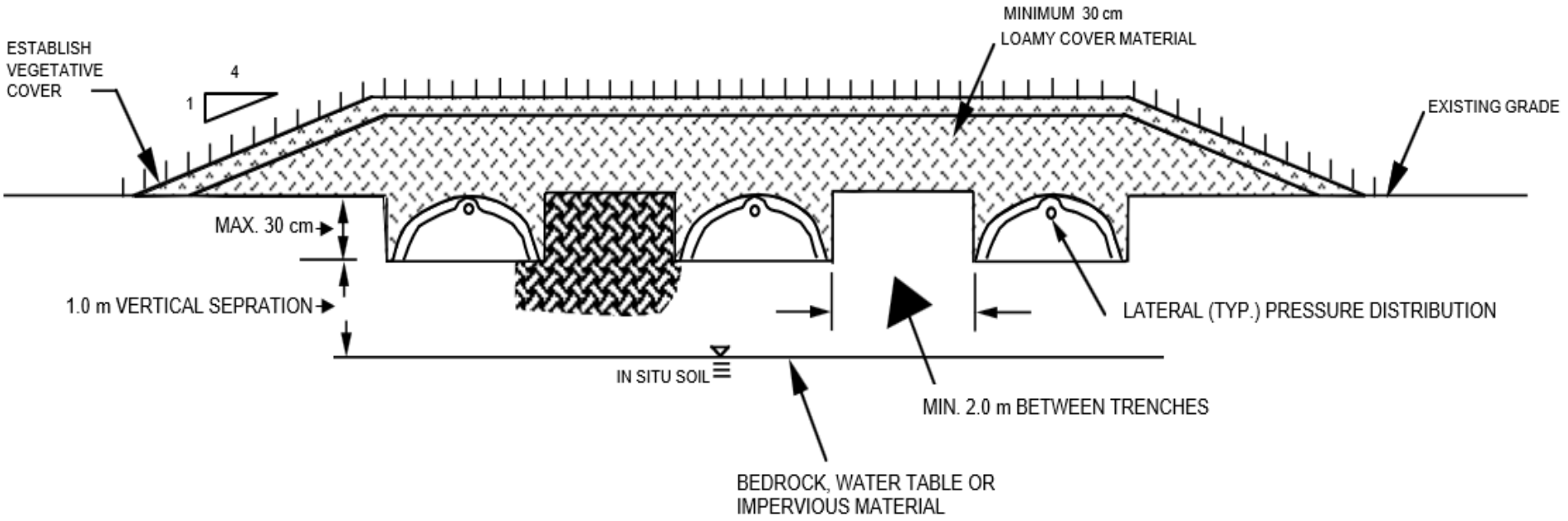
Shallow In-Ground System



* FOR ILLUSTRATIVE PURPOSE ONLY, NOT TO SCALE

NOTE: INTENDED FOR 40 - 60% CLAY SOILS

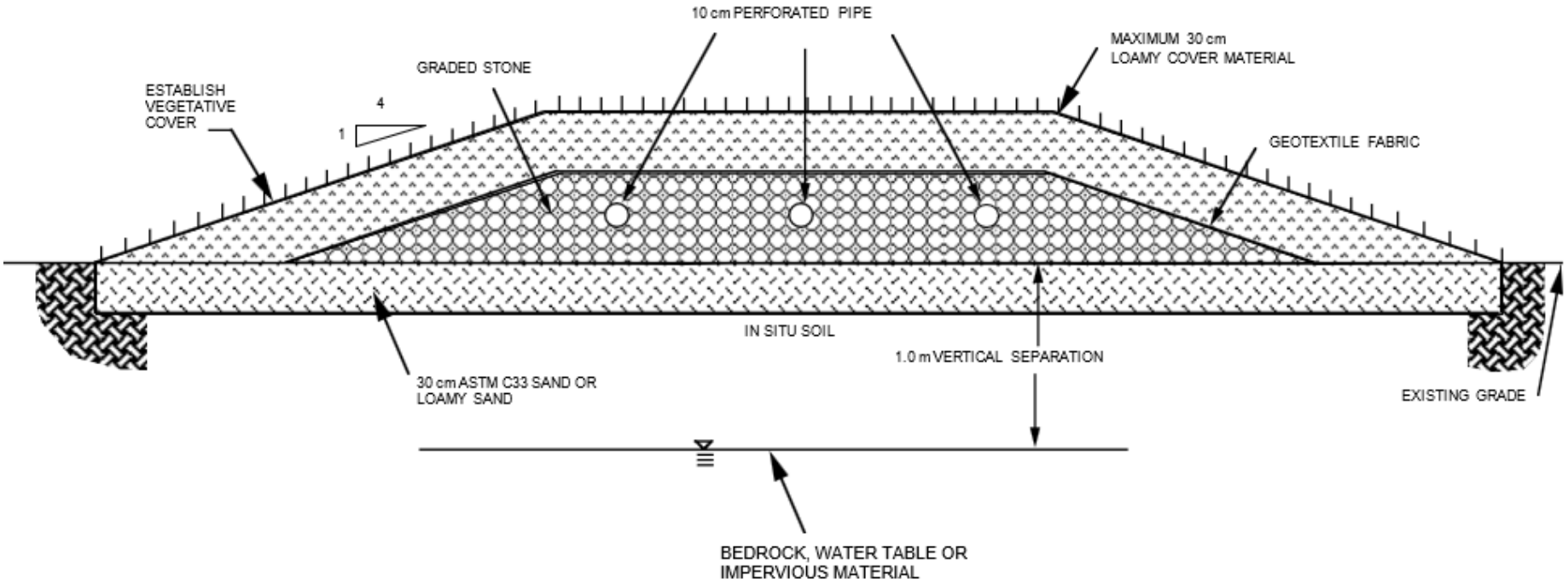
Figure 8: Modified Trench - Chamber (MTC)



*FOR ILLUSTRATIVE PURPOSE ONLY, NOT TO SCALE

NOTE: INTENDED FOR 40 - 60% CLAY SOILS

Figure 9: Lined Total Area Field - Stone

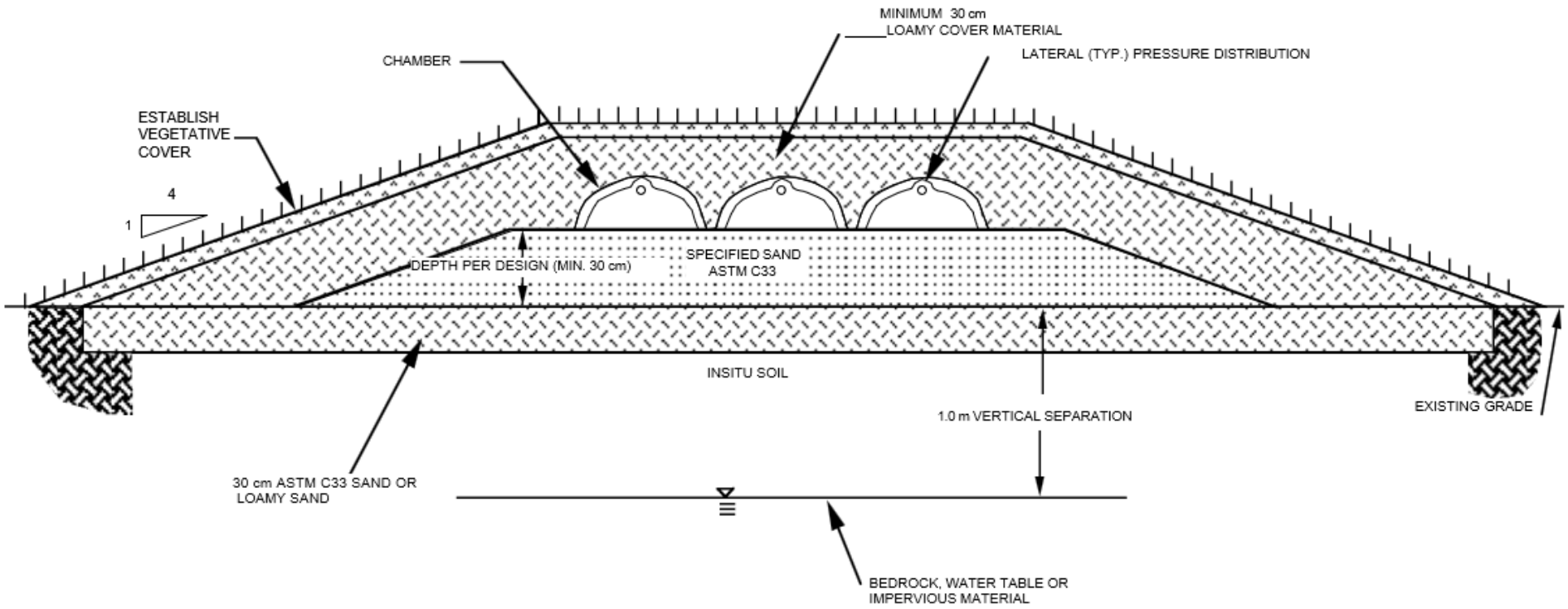


*FOR ILLUSTRATIVE PURPOSE ONLY, NOT TO SCALE

NOTE: INTENDED FOR 85 - 100% SAND

NOTE: ALL SEPTIC FIELDS MUST BE BERMED WITH SUITABLE MATERIAL.

Figure 10: Lined Total Area Field - Chambers



*FOR ILLUSTRATIVE PURPOSE ONLY, NOT TO SCALE

NOTE: INTENDED FOR 85 - 100% SAND

NOTE: ALL SEPTIC FIELDS MUST BE BERMED WITH SUITABLE MATERIAL.

Lined Trenches for Porous Soils

FOR INSTALLATIONS WHERE THE EXISTING SOIL HAS A SOIL ANALYSIS GREATER THAN OR EQUAL TO 85% SAND THE TRENCH MAY BE OVER EXCAVATED AND A 30 cm LAYER OF ASTM C33 SAND OR LOAMY SAND IS INSTALLED ACROSS THE BOTTOM, AND UP THE SIDES OF THE TRENCH.

THIS LAYER OF SOIL IS INTENDED TO SLOW THE MOVEMENT OF THE EFFLUENT AND PREVENT SATURATED FLOW OF EFFLUENT THROUGH THE MORE POROUS SURROUNDING SOILS.

LEAVE THE SOIL MOUNDED OVER THE TRENCH TO ALLOW FOR SETTLEMENT.

PRESSURE DISTRIBUTION LATERALS SHALL BE USED TO ENSURE EVEN DISTRIBUTION OF THE EFFLUENT AND REDUCE THE POSSIBILITY THAT EFFLUENT WILL QUICKLY ESCAPE THROUGH CRACKS IN THE IMPORTED SOILS.

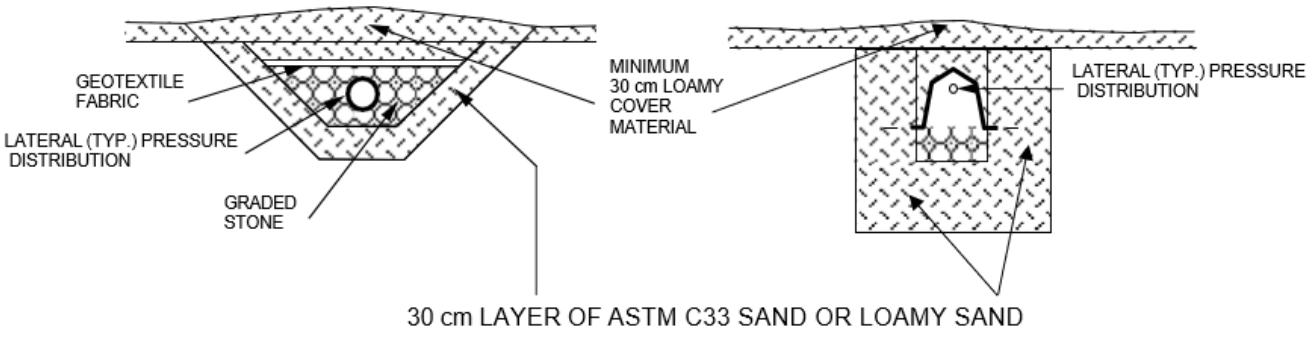
Figure 11: Lined Trenches for Porous Soils

GRAVEL FILLED TRENCH

NORMAL WEEPING LATERAL TRENCH WITH GRAVEL, PERFORATED PIPING AND GEOTEXTILE FABRIC COVERING THE GRAVEL

TRENCH USING CHAMBERS

NORMAL WEEPING LATERAL TRENCH WITH CHAMBER INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS



*FOR ILLUSTRATIVE PURPOSE ONLY, NOT TO SCALE

NOTE: INTENDED FOR 85 - 100% SAND

Table 4: Sizing for 60 cm Wide Trench Fields - Stone

		Number of Bedrooms (lpd shown below bedrooms) - Length of Trench (metres)														
		Stone Trench (60 cm W x 30 cm H)					Stone Trench (60 cm W x 45 cm H)					Stone Trench (60 cm W x 60 cm H)				
Soil Type	App. Rate (lpd/m^2)	2 1000	3 1500	4 2000	5 2500	Each Add. BR	2 1000	3 1500	4 2000	5 2500	Each Add. BR	2 1000	3 1500	4 2000	5 2500	Each Add. BR
Sand/Loamy Sand (85-100% Sand) See Table 3	29.35	37	56	75	93	18	32	48	64	80	16	28	42	56	70	14
Loamy Sand (<85% Sand)	29.35	37	56	75	93	18	32	48	64	80	16	28	42	56	70	14
Sandy Loam	22.02	50	75	99	124	25	43	64	85	106	21	37	56	75	93	18
Loam	16.63	66	99	131	164	33	56	85	113	141	28	49	74	99	123	25
Silt Loam/ Sandy Clay Loam	13.70	80	120	160	200	40	68	103	137	171	34	60	90	120	150	30
Silt	12.72	86	129	172	215	43	74	111	147	184	37	64	97	129	161	32
Clay Loam	10.76	102	152	203	254	51	87	131	174	218	44	76	114	152	190	38
Sandy Clay (<40% Clay)/ Silty Clay Loam	8.80	124	186	248	310	62	106	160	213	266	53	93	140	186	233	47
Clay/Silty Clay/Sandy Clay (40-60% Clay)	8.31	131	197	263	329	66	113	169	225	282	56	99	148	197	247	49
Heavy Clay (>60-100% Clay)	Modified aboveground systems. See Table 3.															

Notes:

1. Application areas for stone trench systems are listed below:
   - Stone Trench Rating (60 cm W x 30 cm H) = 0.91 m^2/m
   - Stone Trench Rating (60 cm W x 45 cm H) = 1.07 m^2/m
   - Stone Trench Rating (60 cm W x 60 cm H) = 1.22 m^2/m
2. The minimum size home for wastewater system design shall be a 2 bedroom house.
3. Length of System Based upon the following: Length of Trench = (Daily Effluent Flow)/[(Application Rate) x (Application Area)]
   - Length of Trench (m) - lineal metre length of trench required for field
   - Daily Effluent Flow (lpd) - volume produced on a daily basis, 500 lpd/bedroom
   - Application Rate (lpd/m^2) – See Figure 1 or Table 1
   - Application Area (m^2) - area of base of trench plus area of 0.5 of height of trench

Table 5: Sizing for 90 cm Wide Trench Fields - Stone

Soil Type	App. Rate (lpd/m^2)	Number of Bedrooms (lpd shown below bedrooms) - Length of Trench (metres)														
		Stone Trench (90 cm W x 30 cm H)					Stone Trench (90 cm W x 45 cm H)					Stone Trench (90 cm W x 60 cm H)				
		2 1000	3 1500	4 2000	5 2500	Each Add. BR	2 1000	3 1500	4 2000	5 2500	Each Add. BR	2 1000	3 1500	4 2000	5 2500	Each Add. BR
Sand/Loamy Sand (85-100% Sand) See Table 3	29.35	28	42	56	70	14	25	37	50	62	12	22	34	45	56	11
Loamy Sand (<85% Sand)	29.35	28	42	56	70	14	25	37	50	62	12	22	34	45	56	11
Sandy Loam	22.02	37	56	75	93	18	33	50	66	83	16	30	45	60	75	15
Loam	16.63	49	74	99	123	25	44	66	88	110	22	39	59	79	99	20
Silt Loam/Sandy Clay Loam	13.70	60	90	120	150	30	53	80	106	133	26	48	72	96	120	24
Silt	12.72	64	97	129	161	32	57	86	115	143	29	52	77	103	129	26
Clay Loam	10.76	76	114	152	190	38	68	102	135	169	34	61	91	122	152	30
Sandy Clay (<40% Clay)/ Silty Clay Loam	8.80	93	140	186	233	47	83	124	166	207	41	75	112	149	186	37
Clay/Silty Clay/Sandy Clay (40-60% Clay)	8.31	99	148	197	247	49	88	131	175	219	44	79	118	158	197	39
Heavy Clay (>60-100% Clay)	Modified aboveground systems. See Table 3.															

Notes:

1. Application Areas for stone trench systems are listed below
   - Stone Trench Rating (90 cm W x 30 cm H) = 1.22 m^2/m
   - Stone Trench Rating (90 cm W x 45 cm H) = 1.37 m^2/m
   - Stone Trench Rating (90 cm W x 60 cm H) = 1.52 m^2/m
2. The minimum size home for wastewater system design shall be a 2-bedroom house.
3. Length of System Based upon the following: Length of Trench = (Daily Effluent Flow)/ [(Application Rate) x (Application Area)]
   - Length of Trench (m) - lineal metre length of trench required for field
   - Daily Effluent Flow (lpd) - volume produced on a daily basis, 500 lpd/bedroom
   - Application Rate (lpd/m^2) – See Figure 1 or Table 1
   - Application Area (m^2) - area of base of trench plus area of 0.5 of height of trench

Table 6: Sizing for Trench Fields - Chambers

		Number of Bedrooms (lpd shown below bedrooms) - Length of Trench (metres)														
		Quick 4 Equalizer® 36/ARC 24					Quick 4 Standard/ARC 36					Quick 4 High Capacity/ARC 36 HC				
Soil Type	App. Rate (lpd/m^2)	2 1000	3 1500	4 2000	5 2500	Each Add. BR	2 1000	3 1500	4 2000	5 2500	Each Add. BR	2 1000	3 1500	4 2000	5 2500	Each Add. BR
Sand/Loamy Sand (85-100% Sand) See Table 3	29.35	32	48	64	80	16	26	39	52	65	13	23	35	47	58	12
Loamy Sand (<85% Sand)	29.35	32	48	64	80	16	26	39	52	65	13	23	35	47	58	12
Sandy Loam	22.02	43	64	85	106	21	35	52	69	87	17	31	47	62	78	16
Loam	16.63	56	85	113	141	28	46	69	92	115	23	41	62	82	103	21
Silt Loam/Sandy Clay Loam	13.70	68	103	137	171	34	56	84	111	139	28	50	75	100	125	25
Silt	12.72	74	111	147	184	37	60	90	120	150	30	54	81	107	134	27
Clay Loam	10.76	87	131	174	218	44	71	106	142	177	35	64	95	127	159	32
Sandy Clay (<40% Clay)/ Silty Clay Loam	8.80	106	160	213	266	53	87	130	173	217	43	78	116	155	194	39
Clay/Silty Clay/Sandy Clay (40-60% Clay)	8.31	113	169	225	282	56	92	138	183	229	46	82	123	164	205	41
Heavy Clay (>60-100% Clay)	Modified aboveground systems. See Table 3.															

Notes:

1. Application Areas for chamber systems are listed below:
   Q4 EQ36 / ARC 24 Rating = 1.07 m^2/m
   Q4 Standard / ARC 36 Rating = 1.31 m^2/m
   Q4 High Capacity / ARC 36 HC = 1.46 m^2/m
2. The minimum size home for wastewater system design shall be a 2 bedroom house.
3. Length of System Based upon the following: Length of Trench = (Daily Effluent Flow)/ [(Application Rate) x (Application Area)]
   Length of Trench (m) - lineal metre length of trench required for field
   Daily Effluent Flow (lpd) - volume produced on a daily basis, 500 lpd/bedroom
   Application Rate (lpd/m^2) – See Figure 1 or Table 1
   Application Area (m^2) - area of base of trench plus area of 0.5 of height of trench

Table 7: Sizing for Subsurface Total Area Fields - Chambers

Soil Type	App. Rate (lpd/m^2)	Number of Bedrooms (lpd shown below bedrooms) - Area of Field (m^2)				
		Quick 4/ARC Chamber				
		2 1000	3 1500	4 2000	5 2500	Each Add. BR
Sand/Loamy Sand (85-100% Sand) See Table 3	29.35	51	77	102	128	26
Loamy Sand (<85% Sand)	29.35	51	77	102	128	26
Sandy Loam	22.02	68	102	136	170	34
Loam	16.63	90	135	180	225	45
Silt Loam/Sandy Clay Loam	13.70	109	164	219	274	55
Silt	12.72	118	177	236	295	59
Clay Loam	10.76	139	209	279	348	70
Sandy Clay (<40% Clay)/Silty Clay Loam	8.80	170	255	341	426	85
Clay (40-60% Clay)	Modified systems. See Table 3.					
Heavy Clay (>60-100% Clay)	Modified aboveground systems. See Table 3.					

Notes:

1. Application Areas for chamber systems are listed below:
   Q4 EQ36 / ARC 24 Rating = 1.07 m^2/m
   Q4 Standard / ARC 36 Rating = 1.31 m^2/m
   Q4 High Capacity / ARC 36 HC = 1.46 m^2/m
2. Area of Field = $\frac{\text{Daily Effluent Flow x Safety Factor}}{\text{Application Rate}}$
3. Area of Field (m^2) – total required disposal field surface area
   Daily Effluent Flow (lpd) – volume produced on a daily basis, 500 lpd/bedroom
   Application Rate (lpd/m^2) – See Figure 1 or Table 1
   Safety factor –1.5 for chamber/aggregate-free systems

Table 8: Sizing for Subsurface Total Area Fields - Stone

Soil Type	App. Rate (lpd/m^2)	Number of Bedrooms (lpd shown below bedrooms) Area of Field (m^2) Volume of stone (m^3) Volume of ASTM C33 sand required (m^3)				
		2 1000	3 1500	4 2000	5 2500	Each Add. BR
Sand/Loamy Sand (85-100% Sand) See Table 3	29.35	68 55 21	102 83 31	136 111 42	170 139 52	34 28 10
Loamy Sand (<85% Sand)	29.35	68 55	102 83	136 111	170 139	34 28
Sandy Loam	22.02	91 74	136 111	182 148	227 185	45 37
Loam	16.63	120 98	180 147	240 196	301 245	60 49
Silt Loam/Sandy Clay Loam	13.70	146 119	219 178	292 238	365 297	73 59
Silt	12.72	157 128	236 192	314 256	393 320	79 64
Clay Loam	10.76	186 151	279 227	372 302	465 378	93 76
Sandy Clay (<40% Clay)/ Silty Clay Loam	8.8	227 185	341 277	454 370	568 462	114 92
Clay (40-60% Clay)	Modified systems. See Table 3.					
Heavy Clay (>60-100% Clay)	Modified aboveground systems. See Table 3.					

Notes:

1. The minimum size home for wastewater system design shall be a 2 bedroom house.
2. Area of Field = (Daily Effluent Flow) x (Safety Factor) / (Application Rate)

   Area of Field (m^2) - total required disposal field surface area

   Daily Effluent Flow (lpd) - volume produced on a daily basis, 500 lpd/bedroom

   Application Rate (lpd/m^2) – See Figure 1 or Table 1

   Safety Factor - is a factor of 2.0 for graded stone and pipe systems

Table 9: Sizing for Modified Aboveground Total Area Fields - Stone

Soil Type	App. Rate (lpd/m^2)	Number of Bedrooms (lpd shown below bedrooms) Area of Field (m^2) Volume of stone required (m^3) Volume of ASTM C33 sand required (m^3) 2 1000	3 1500	4 2000	5 2500	Each Add. BR
Sand/Loamy Sand (85-100% Sand) See Table 3	29.35	68 55 21	102 83 31	136 111 42	170 139 52	34 28 10
Loamy Sand (<85% Sand)	29.35	34 28 14	51 42 16	68 55 21	85 69 26	17 14 5
Sandy Loam	22.02	45 37 14	68 55 21	91 74 28	114 92 35	23 18 7
Loam	16.63	60 49 18	90 73 27	120 98 37	150 122 46	30 24 9
Silt Loam/Sandy Clay Loam	13.70	73 59 22	109 89 33	146 119 44	182 149 56	36 30 11
Silt	12.70	79 64 24	118 96 36	157 128 48	197 160 60	39 32 12
Clay Loam	10.76	93 76 28	139 113 42	186 151 57	232 189 71	46 38 14
Sandy Clay (<40% Clay)/ Silty Clay Loam	8.8	114 92 35	170 139 52	227 185 69	284 231 87	57 46 17
Clay/Silty Clay/Sandy Clay (40-60% Clay)	8.31	120 98 37	180 147 55	240 196 73	301 245 92	60 49 18
Heavy Clay (>60-69% Clay)	6.36	157 128 48	236 192 72	314 256 96	393 320 120	79 64 24
Heavy Clay (70-100% Clay)	6.36	157 80 96	236 120 144	314 160 192	393 200 240	79 40 48

Notes:

1. The minimum size home for wastewater system design shall be a 2 bedroom house.
2. Area of Field = (Daily Effluent Flow) / (Application Rate)

   Area of Field (m^2) - total required disposal field surface area

   Daily Effluent Flow (lpd) - volume produced on a daily basis, 500 lpd/bedroom

   Safety Factor - is a factor of 2.0 for graded stone for 85-100% sand/loamy sand
3. Minimum Depth of Stone and ASTM C33 Sand:

% Clay	Min. Depth of Graded Stone	Min. Depth of ASTM C33 Sand
<60% and >60 - 69%	Total depth = 80 cm (0.80 m) 60 cm below pipes + 10 cm to top of pipes + 10 cm to cover pipes	30 cm (0.3 m)
70 - 100%	Total depth = 50 cm (0.50 m) 30 cm below pipes + 10 cm to top of pipes + 10 cm to cover pipes	60 cm (0.6 m)

Soil Sampling Protocol for Onsite Wastewater Management Systems

Soil types can vary from region to region within the province and from one sampling point to another within a few metres of one another. **Never assume soil is uniform**.

Soil properties can change dramatically over a very short distance. There may be clay at one point and sandy soil just a few metres away. Soil properties change dramatically with depth as well; surface soil is usually very different than the material present a metre below the surface.

Step 1. Site Assessment and Suitability

► Assess the property for a suitable septic field location.

- Septic fields should be located on high ground in a well drained area.
- Do not locate the septic field near trees as tree roots may eventually penetrate and damage the field.
- Locate the field in an area that will allow adequate space for future repairs or expansion.
-

Step 2. Obtaining the Soil Sample

► Dig or augur a hole to a depth of 1.0 m near the centre of the proposed septic field area.
- A 5 cm hand auger is beneficial in helping to locate an appropriate test area.

► Record the soil colour and texture, noting the different layers.
- Watch for evidence of saturation or standing water. These are signs that the water table is too near the surface.
- In some instances, it may be necessary to obtain more than one soil sample to determine the soil type in the area.
- The Environment Officer or Onsite Wastewater Inspector may request that an additional test hole be dug using a backhoe to determine depth to high groundwater level.
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Step 3. Collecting the Soil Sample

► Collect approximately 500 grams of soil from the base of the hole at the 1.0 m depth. Place the soil in a plastic zip lock bag or in a bag that has been supplied by the laboratory.

- Some laboratories may require more than one sample. Check with the laboratory that you are using.

Step 4. Laboratory Analysis

► Have the laboratory conduct a particle size analysis. ASTM Standard Test Method for Particle-Size Analysis of Soils D422-63 (2002).

Notes:

Soil samples are required for treatment mounds, modified aboveground systems and subsurface systems.

The holes you make during an investigation should not interfere with the operation of the system when it is installed. They should be strategically placed and not located where the trenches for the system will be dug. Alternatively, they may be filled with bentonite to ensure they do not become conduits for effluent flow.

Table 10: Minimum Expected Volume of Effluent Per Day for Non-Residential Facilities

Typical Wastewater Flow Rates from Commercial Sources

Facility	Unit	Expected Effluent Volume (litres per day)
Boarding House	person	150
Automobile Service Station	vehicle served	45
	employee	49
Bar	customer	11
	employee	49
Hotel	guest	190
	employee	38
Industrial Building (sanitary waste only)	employee	49
Laundry (self-service)	machine	2100
	wash	190
Office	employee	49
Public lavatory	user	19
Restaurant (w/toilet)	meal	11
	conventional - customer	34
	short order - customer	23
	bar/cocktail lounge - customer	11
Theatre	seat	11

Source: USEPA Onsite Wastewater Treatment Systems Manual, 2002

Typical Wastewater Flow Rates from Institutional Sources

Facility	Unit	Expected Effluent Volume (litres per day)
Assembly Hall	seat	11
Hospital, medical	bed	630
	employee	38
Hospital, mental	bed	380
	employee	38
Rest Home	resident	340
	employee	38
School, day only	w/cafeteria, gym, showers - per student	95
	w/cafeteria only - per student	57
	w/o cafeteria, gym or showers - per student	42

Source: USEPA Onsite Wastewater Treatment Systems Manual, 2002

Typical Wastewater Flow Rates from Recreational Sources

Facility	Unit	Expected Effluent Volume (litres per day)
Bowling alley	alley	760
Cabin, resort	person	150
Cafeteria	customer	8
	employee	38
Camps	pioneer type - person	95
	children's, w/central toilet/bath - person	170
	day, w/meals - person	57
	day, w/o meals - person	49
	luxury, private bath - person	340
	trailer camp - trailer	470
Campground - developed	person	110
Cocktail lounge	seat	76
Coffee shop	customer	23
	employee	38
Country club	guest's onsite	380
	employee	49
Dining hall	meal served	26
Fairground	visitor	8
Hotel, resort	person	190
Picnic park, flush toilets	visitor	30
Store, resort	customer	11
	employee	38
Swimming pool	customer	38
	employee	38
Theatre	seat	11
Visitor centre	visitor	19

Source: USEPA Onsite Wastewater Treatment Systems Manual, 2002

Additional Typical Wastewater Flow Rates

Facility	Unit	Expected Effluent Volume (litres per day)
Car Wash	hand wash - per car	200
	truck wash - per truck	400
Recreational vehicle park	per space	180