



Leaching System Sizing

Technical Standards
Pg. 43


 Connecticut Department of Public Health
 Keeping Connecticut Healthy
 

Leaching System: Credit Rating

- * Leaching System Credit Ratings
- * Leaching trenches, leaching galleries, and proprietary leaching products are credited based on a specified effective leaching area (ELA) credit per linear foot
- * Leaching pits are credited based on side wall wetted perimeter

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Effective Leaching Area Credit

- * A credit rating is assessed for every foot of a particular leaching product (except for leaching pits)
- * Galleries
 - * The higher/taller the gallery the larger the credit
- * Trenches
 - * The higher and wider the trench the larger the credit

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Leaching System Sizing

- * Design flows for residential buildings are based on the number of bedrooms in the dwelling
- * A design flow of 150 gallons per day (GPD) per bedroom, except for additional bedrooms beyond 3 in a single-family home which have a 75 GPD per bedroom design flow.

Percolation Rate (Minutes to Drop One Inch)	Square Feet of Required Effective Leaching Area (ELA)			
	2-Bedroom Building	3-Bedroom Building	For Each Bedroom Above 3	
			Single Family	Multi-family
LESS THAN 10.1	375	495	82.5	165
10.1-20.0	500	675	112.5	225
20.1-30.0	565	750	125	250
30.1-45.0	675	900	150	300
45.1-60.0	745	990	165	330

Table 6 Pg. 43

Leaching System Sizing (pg. 43)

- * Residential Buildings
 - * Sized using Table 6 - Residential Building
 - * Sizing based on percolation rate and the number of bedrooms
 - * 150 GPD/Bedroom up to 3 and 75 GPD for each bedroom thereafter (single family only)
 - * No reduction for multi-family homes

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Perc rate 8min 3 Bedroom

Percolation Rate (Minutes to Drop One Inch)	Square Feet of Required Effective Leaching Area (ELA)			
	2-Bedroom Building	3-Bedroom Building	For Each Bedroom Above 3	
			Single Family	Multi-family
LESS THAN 10.1	375	495	82.5	165
10.1-20.0	500	675	112.5	225
20.1-30.0	565	750	125	250
30.1-45.0	675	900	150	300
45.1-60.0	745	990	165	330

DPH **Sizing Residential Buildings**

* Determine the minimum required ELA for a 3-bedroom house. Percolation rate = 15 min/inch.

Percolation Rate (Minutes to Drop One Inch)	Square Feet of Required Effective Leaching Area (ELA)			
	2-Bedroom Building	3-Bedroom Building	For Each Bedroom Above 3	
			Single Family	Multi-family
LESS THAN 10.1	375	495	82.5	165
10.1-20.0	500	675	112.5	225
20.1-30.0	565	750	125	250
30.1-45.0	675	900	150	300
45.1-60.0	745	990	165	330

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DPH **Sizing Residential Buildings**

* Determine the minimum required ELA for a 5 bedroom single family house with a percolation rate of 25 min/inch

■ ELA = 750 + 125 + 125 = 1000

Percolation Rate (Minutes to Drop One Inch)	Square Feet of Required Effective Leaching Area (ELA)			
	2-Bedroom Building	3-Bedroom Building	For Each Bedroom Above 3	
			Single Family	Multi-family
LESS THAN 10.1	375	495	82.5	165
10.1-20.0	500	675	112.5	225
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*** Restaurants/Laundromats/
Residential Institutions with
Problematic Sewage**

* Sized per Table 7 (Page 43)

* Sizing based on percolation rate and daily design flow

* Required ELA = $\frac{\text{Design Flow}}{\text{Application Rate}}$

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*** Restaurants/Laundromats/
Residential Institutions with
Problematic Sewage**

* Calculate the ELA required for a 25-seat restaurant w/toilets (breakfast/lunch only) and percolation rate of 25 min/inch

* Design flow = 25 seats x 30 GPD = 750 GPD
(Flow from Table 4)

* Required ELA = Design Flow / Application Rate =
750 GPD / (0.6 GPD/SF) = 1250 SF
(Application Rate from Table 7)

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*** Non-Residential Buildings
with Non-Problematic Sewage**

* Sized in accordance with Table 8 (Pg 43)

* Sizing based on daily design flow and percolation rate (Application rates are higher in Table 8 than in Table 7)

* Required ELA = $\frac{\text{Design Flow}}{\text{Application Rate}}$

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DPH **Non-Residential Buildings**

* Calculate the ELA required for an office building with a daily design flow of 1000 GPD and percolation rate of 17 min/inch

ELA = Design Flow / Application Rate
1000 GPD / (1.2 GPD/SF) = 833.3 SF
↑
Table 8

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Effective Leaching Area Determination

Connecticut Department of Public Health
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- * ' = feet 66' = 66 feet
- * " = inch 8" = 8 inches
- * LF - Linear feet
- * SF - Square feet
- * ELA - Effective leaching area

Leaching Product Credit Tables

- * Every approved leaching product is in a table, except for pits
- * Find the product in the appropriate table
- * The product name and sizing must be the same as in the table as indicated on the plan.
- * Not finding a product, check our website for new product approvals.

Proprietary Leaching System

Proprietary Leaching System

Product Name	Depth (inches)	Width (inches)	Effective Leaching Credit (SF/LF)	Center to Center Spacing (feet)
Proprietary Leaching System	18	18	2.1	7
Proprietary Leaching System	18	24	2.4	7
Proprietary Leaching System	18	30	2.7	7
Proprietary Leaching System	18	36	3.0	7
Proprietary Leaching System	12	48	3.0	8

Completed Leaching System Listed on our Website

Product Name	Depth (inches)	Width (inches)	Effective Leaching Credit (SF/LF)	Center to Center Spacing (feet)
Completed Leaching System	18	18	2.1	7
Completed Leaching System	18	24	2.4	7
Completed Leaching System	18	30	2.7	7
Completed Leaching System	18	36	3.0	7
Completed Leaching System	12	48	3.0	8

Leaching Trenches pg. 37

FIGURE NO. 11 - LEACHING TRENCHES

For the purposes of Section VIII F & G, the effective leaching area of leaching trenches and corresponding minimum center to center spacing between trenches shall be as follows:

Trench Depth (inches)	Trench Width (inches)	Effective Leaching Credit (SF/LF)	Center to Center Spacing (feet)
18	18	2.1	7
18	24	2.4	7
18	30	2.7	7
18	36	3.0	7
12	48	3.0	8

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Leaching Trenches: Calculations

- * Calculate the ELA provided by a 75' long, 18" high x 36" wide leaching trench

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Leaching Trenches pg.37

FIGURE NO. 11 - LEACHING TRENCHES

For the purposes of Section VIII F & G, the effective leaching area of leaching trenches and corresponding minimum center to center spacing between trenches shall be as follows:

Trench Depth (inches)	Trench Width (inches)	Effective Leaching Credit (SF/LF)	Center to Center Spacing (feet)
18	18	2.1	7
18	24	2.4	7
18	30	2.7	7
18	36	3.0	7
12	48	3.0	8

75 LF x 3 SF / LF = 225 SF

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DPH **Leaching Trenches: Calculations**

*How much ELA would be provided if there are 3 rows of these trenches?

$75 \text{ LF} \times 3 \text{ SF} / \text{LF} = 225 \text{ SF}$

$225 \times 3 = 675$

Number of rows

75'

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DPH **Section VIII C: Leaching Pits**

- *Hollow structures w/ perforated or open joint walls
- *Backfilled with 12"-24" of approved aggregate around structure
- *Structure shall be 5'-10' in diameter and bottom no deeper than 8' below final grade
- *Cannot be used if perc rate is slower than 20 min/inch

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DPH **Leaching Pits**

- *Minimum center-to-center spacing: 4 x diameter of the structure (not including aggregate)
- *ELA = diameter of excavation x 3.14 x pit depth (maximum height pit can be flooded)
- *No. 4 stone only

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DPH **Leaching Pits: Calculations**

*Calculate the ELA of a 6 feet deep and 6 feet diameter leaching pit, surround by 1 foot of aggregate. Pit can be fully utilized

Diameter of excavation = 1' + 6' + 1' = 8 feet

$8 \times 3.14 \times 6 = ?$

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DPH **Leaching Pits: Calculations**

*What is the minimum center-to-center spacing of 2 leaching pits sized per previous example?

Center-to-center spacing = 4 x diameter of structure

$4 \times 6 \text{ feet} = 24 \text{ feet}$

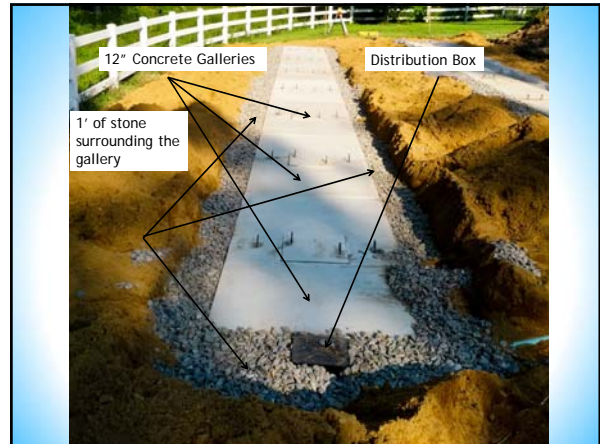
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DPH **Section VIII D: Leaching Galleries**

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DPH Typical 12" Leaching Gallery

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DPH Leaching Galleries

- *12" of aggregate (stone) required on gallery sides and ends
- *Minimum width of concrete structure is 4'
- *Up to 6" of stone can be placed on top of the gallery or the distribution pipe can be placed on top of the stone to increase the credit rating
- *If the gallery distribution pipe is placed on top of the stone, it must be high strength pipe and cradled within the stone for the additional ELA credit

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Pipe cradled in stone to prevent fabric from obstructing perforations

DPH 12" Gallery w/ 6" of stone

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DPH Leaching Galleries

Gallery Height (inches)	Effective Leaching Credit (SF/LF)	Center to Center Spacing (feet)
48	9.2	12
36	8.0	12
30	7.4	12
27	7.1	12
24	6.8	12
18	6.2	12
12	5.9	12

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Leaching Galleries

Calculate ELA of 66' gallery row of 36" high units

Gallery Height (inches)	Effective Leaching Credit (SF/LF)	Center to Center Spacing (feet)
48	9.2	12
36	8.0	12
30	7.4	12
27	7.1	12
24	6.8	12
18	6.2	12
12	5.9	12

$$ELA = 66 \text{ lf} \times 8.0 \text{ sf/lf} = 528 \text{ sf}$$

What is the center to center spacing?

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Gallery Configuration

*Plastic proprietary leaching chambers can be installed side by side in a gallery configuration (see figure #16, Page 38)

*Must be installed in a 6 foot wide excavation surrounded with stone to receive equivalent gallery credit



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