

LUMEN Architectural Engineering, P.C.

Design Construction Development Consulting

Robert Lee, P.E., LEED, Assoc. AIA,

Drainage Calculation Report

Address:

**110 County Rd,
Demarest, NJ 07627**



LUMEN
Architects & Engineers

Drainage Calculation for

Tax Lot No. 307, Block No. 91

Borough of Demarest, County of Bergen, and State of New Jersey

Lot Area 7,500 s.f.
0.172 Acers

$((890+158+1,258+359) / 4,050 \times 0.95) + (1,385 / 4,050 \times 0.35) =$

Existing Impervious Surfaces	Item	Area(sq ft)	Area(acres)	Surf. Mat.	c'
	Existing Building	500	0.0115	roof	0.95
	Existing porch & steps & shed	649	0.0149	conc	0.95
	Existing driveway	745	0.0171	conc	0.95
	Existing paver	47	0.0011	conc&brick	0.95
	Total Exist. Imper	1,941	0.0446	imper	0.95
	Pervious Surface	5,559	0.1276	Lawn	0.35

Existing 'c' = $(1,941 / 7,500 \times 0.95) + (5,559 / 7,500 \times 0.35) = 0.505$

Q=CiA;

	i= 1.35 in./hr. 2 Year Storm	i= 1.95 in./hr. 10 Year Storm	i= 2.85 in./hr. 100 Year Storm
Tc=	60 minutes	60 minutes	60 minutes
Q	0.117 cfs	0.170 cfs	0.247 cfs
	x 0.5	x 0.75	x 0.8
Permitted Q	0.06	0.13	0.20
Max. Allow CF	211.41	458.06	711.59
Max. Allow Gallon	1,581.46	3,426.49	5,323.07

Proposed Impervious Surfaces

Item	Area(sq ft)	Area(acres)	Surf. Mat.	c'
Proposed Building	1,500	0.0344	roof	0.95
Proposed porch & steps	40	0.0009	conc	0.95
Proposed driveway	567	0.0130	conc	0.95
Proposed paver	80	0.0018	conc&brick	0.95
Proposed Equipment pads	35	0.0008	conc	0.95
Total Exist. Imper	2,222	0.0510	imper	0.95
Pervious Surface	5,278	0.1212	Lawn	0.35

Existing 'c' = $(2,222 / 7,500 \times 0.95) + (5,278 / 7,500 \times 0.35) = 0.528$

Q=CiA;

	i= 1.35 in./hr. 2 Year Storm	i= 1.95 in./hr. 10 Year Storm	i= 2.85 in./hr. 100 Year Storm
Tc=	60 minutes	60 minutes	60 minutes
Q	0.123 cfs	0.177 cfs	0.258 cfs
	x 0.5	x 0.75	x 0.8
Permitted Q	0.06	0.13	0.21
Max. Allow CF	220.81	478.42	743.23
Max. Allow Gallon	1,651.76	3,578.82	5,559.71

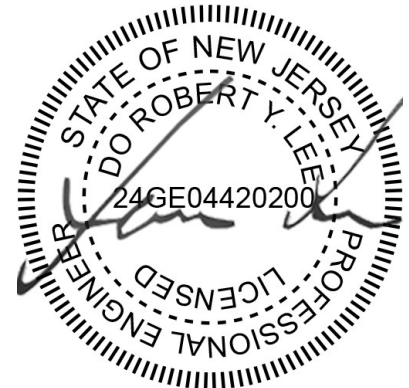
PROPOSED Storage volume calculation

Volume of seepage pit

Height of pit	=	3	ft
Outside diameter of pit	=	7	ft
Inside diameter of pit	=	6.5	ft
Capacity of seepage pit	=	500.00	gal
Number of pit in trench	=	1	
Volume of seepage pit	=	863.21	gal

Volume of stone trench

Width	=	12	ft
Length	=	12	ft
Depth	=	6.5	ft
Trench volume	=	936	cf
Seepage pit volume	=	115.40	cf
Net volume	=	820.605	cf
Void ratio	=	0.4	
Volume of stone voids	=	328.242	cf
	=	2,455	gal
Total volume of pit & stone	=	2,955.42	gal
Number of pit	=	2	
Total pit volume provided	=	5,910.84	GAL > 5,559.71 Gal



08.13.2025