

212 Allview Ave
Brewster, NY
(T) Southeast

DRIVEWAY SWALE
CALCULATIONS
Triangular 1 ft Deep

Prepared by:

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Coverage Chart

212 Allview Ave

Square Footage Chart

	Existing			Total Existing	Proposed			Total Proposed
	Lot #1	Lot #2	Lot #3		Lot #1	Lot #2	Lot #3	
Pavement	6,497	0	2,590	9,087	7,440	2,000	2,590	12,030
Building	4,816	0	4,598	9,414	4,816	2,200	4,598	11,614
Lawn	80,889	N/A	56,634	137,523	79,946	47,661	56,634	184,241
Brush	8,500	36,818	43,409	88,727	8,500	23,299	43,409	75,208
Forest	11,683	59,306	21,707	92,696	11,683	18,291	21,707	51,681
Gravel	N/A	N/A	N/A	0	N/A	2,673	N/A	2,673
Total	112,385	96,124	128,938	337,447	112,385	96,124	128,938	337,447

Lot #1 112,385 Total Area

Lot #2 96,124 Total Area

Lot #3 128,938 Total Area

Impervious Calcs

Lot #1 3,946 + 870

Lot #2 2,000 + 2,200

Lot #3 3,026 + 230 + 430 + 180 + 732

Acreeage Chart

	Existing			Total Existing	Proposed			Total Proposed
	Lot #1	Lot #2	Lot #3		Lot #1	Lot #2	Lot #3	
Pavement	0.15	0.00	0.06	0.21	0.17	0.05	0.06	0.28
Building	0.11	0.00	0.11	0.22	0.11	0.05	0.11	0.27
Lawn	1.86	N/A	1.30	3.16	1.84	1.09	1.30	4.23
Brush	0.20	0.85	1.00	2.04	0.20	0.53	1.00	1.73
Forest	0.27	1.36	0.50	2.13	0.27	0.42	0.50	1.19
Gravel	N/A	N/A	N/A	0.00	N/A	0.06	N/A	0.06
Total	2.58	2.21	2.96	7.75	2.58	2.21	2.96	7.75

PIPE ANALYSIS WORKSHEET

PROJECT: Alukew
 DRAINAGE AREA #: Swi
 STRUCTURE: CB # _____

RATIONAL METHOD

TOWN: Southeast DATE: 8/21/19

Return Frequency: 2, 10, 25, 100 Years

Collection
SWALE

MH# _____ HW# _____ YD# _____

I) AVERAGE C CALCULATION

USE	C		AREA	C(A)	
	2/10	25/100		2/10	25/100
Event					
<u>Driveway</u>		<u>98</u>	<u>.045</u>		<u>4.41</u>
<u>Building Foot</u>		<u>98</u>	<u>.135</u>		<u>13.2</u>
<u>Grass B</u>		<u>26</u>	<u>0.50</u>		<u>13.0</u>
<u>Grass C</u>		<u>32</u>	<u>1.09</u>		<u>34.88</u>
<u>Woods C</u>		<u>20</u>	<u>.06</u>		<u>1.20</u>
<u>Gravel</u>		<u>89</u>	<u>.06</u>		<u>5.34</u>
Sum C(A)					<u>72.03</u>
Sum (A)			<u>1.89</u>		

RECOMMENDED VALUES

USE	C VALUE			
	A	B	C	D
Hydraulic Soil Groups				
Building Roofs	0.98	0.98	0.98	0.98
Pavement: Asphalt	0.98	0.98	0.98	0.98
Gravel	0.72/0.79	0.74/0.84	0.76/0.89	0.78/0.95
Driveways & Walks	0.72/0.79	0.74/0.84	0.76/0.89	0.78/0.95
Residential Areas (Lot size = 0.5 acre)	0.24/0.32	0.28/0.36	0.32/0.42	0.37/0.48
Woods, Brush:				
Flat (0-2%)	0.05/0.08	0.08/0.10	0.10/0.12	0.12/0.15
Average (2-6%)	0.08/0.11	0.11/0.14	0.13/0.16	0.16/0.20
Steep (6%+)	0.11/0.14	0.14/0.18	0.16/0.20	0.20/0.25
Lawns:				
Flat (0-2%)	0.05/0.11	0.08/0.14	0.12/0.18	0.16/0.22
Average (2-6%)	1.10/0.16	0.13/0.16	0.17/0.23	0.21/0.22
Steep (6%+)	0.14/0.20	0.19/0.26	0.24/0.32	0.28/0.39

C (Weighted) = $\Sigma CA / \Sigma A = \frac{72.03}{1.89} = .38$

REFER TO EXTENDED CHARTS AS NECESSARY.
 VALUES SHOWN ARE 2, 10 YEAR STORM ON LEFT
 25, 100 YEAR STORM ON RIGHT
 IE (2.10/25.100)

Tc Analysis Calculations

A) Sheet Flow:
 Flow Length: 334
 Tc: 20 Min. Slope: 4.3
 Cover: LAWN

B) Shallow Conc. Flow: Unpaved Paved
 Tc: .62 Min. Length: 187
 Slope: 1/4
V=5 FPS

C) Pipe or Swale Flow:
 Description: _____
 Tc: _____ Min. Length: _____
 Slope: _____
 Cross Section: _____

D) Total Tc = 20.62 Minutes

Contributing Watersheds

Area: _____
 C: _____
 Tc: _____ Tt: _____
 Total Design A: _____ Acres
 Total Design C: _____ Acres
 Tc (Governing): _____ Minutes

	2	10	25	100
I			<u>4.5</u>	<u>5.6</u>
Q			<u>3.24</u>	<u>4.02</u>

Calculate Q_{25 Year} Per Equation Q = CIA

Where $I_{25} = 230 / (tc + 30) =$ _____ In/Hr
 $Q_{25} =$ _____ CFS

DESIGN FOR 25 year Storm
 Depth = .76 inch
 100 year - Depth = .78 inch

DRIVEWAY SWALE
Worksheet for Triangular Channel

Project Description	
Project File	z:\programs\flowmaster\allview avenue\new swal.fm2
Worksheet	DRIVEWAY LOT 2
Flow Element	Triangular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data	
Mannings Coefficient	0.075
Channel Slope	0.080000 ft/ft
Left Side Slope	2.000000 H : V
Right Side Slope	2.000000 H : V
Discharge	3.20 cfs

Results		
Depth	0.76	ft
Flow Area	1.17	ft ²
Wetted Perimeter	3.42	ft
Top Width	3.06	ft
Critical Depth	0.69	ft
Critical Slope	0.135450	ft/ft
Velocity	2.74	ft/s
Velocity Head	0.12	ft
Specific Energy	0.88	ft
Froude Number	0.78	
Flow is subcritical.		

Manning's n value

The roughness coefficient, n, varies with the type of vegetative cover and flow depth. At very shallow depths, where the vegetation height is equal to or greater than the flow depth, the n value should be approximately 0.15. This value is appropriate for flow depths up to 4 inches typically. For higher flow rates and flow depths, the n value decreases to a minimum of 0.03 for grass channels at a depth of approximately 12 inches. The n value must be adjusted for varying flow depths between 4" and 12" (see Figure L.1).

Figure L.1 Manning's n Value with Varying Flow Depth (Source: Claytor and Schueler, 1986)

