

Swale Velocity Worksheet
Exhibit #4

PROJECT: 3196 Aalseth Ln
FILE NUMBER: OD-03-18
LOCATION: Swale East

Enter the channel characteristics (see Diagram 1):

Channel Slope (S): 0.161 feet/feet
100-Year Design Flow (Q): 1.05 CFS
Bottom Width (W): 0.5 feet
Avg. Side Slope (X): 4 horiz./vert.
Depth of Channel (Y): 1 feet
Retardance Class: C
Manning's Number (N): 0.025

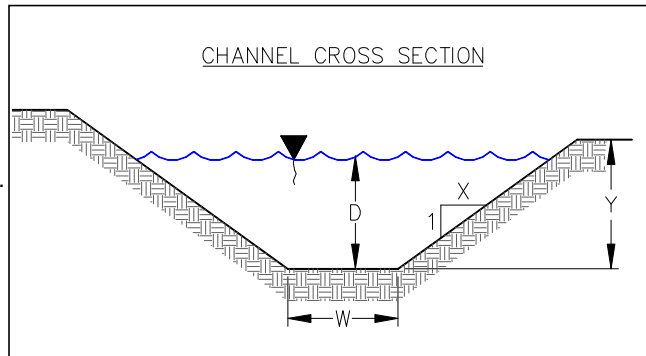


Diagram 1

The channel will behave as follows:

Hydraulic Radius (R): 0.10 feet
Depth (D): 0.17 feet
Velocity (V): 5.30 feet/second

100-Year Peak Flow Rate:

Using the Rational Method:

$$Q_{100} = CIA = 0.26 \quad 6.39 \quad 0.63 = 1.05 \text{ cfs}$$

C = 0.26 Low Density Residential, >6% slope, HSG "B"
 I_{100} = 6.39 in/hr per Stoughton rainfall intensity for 15 minute T_c ;
A = 0.63 acres;

* The rational method runoff coefficient was determined using the Wisconsin Department of Transportation Facilities Development Manual Procedure 13-10-5 Figure 2.

* The 100-year rainfall intensity for Stoughton, WI was determined using NOAA Atlas 14.

Designed By:	BLB
Date:	10/2/2018
Checked By:	AFF
Date:	10/2/2018

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PROJECT: 3196 Aalseth Ln
FILE NUMBER: OD-03-18
LOCATION: Swale West

Enter the channel characteristics (see Diagram 1):

Channel Slope (S): 0.223 feet/feet
100-Year Design Flow (Q): 1.05 CFS
Bottom Width (W): 0.5 feet
Avg. Side Slope (X): 3.5 horiz./vert.
Depth of Channel (Y): 1 feet
Retardance Class: C
Manning's Number (N): 0.025

The channel will behave as follows:

Hydraulic Radius (R): 0.10 feet
Depth (D): 0.16 feet
Velocity (V): 6.15 feet/second

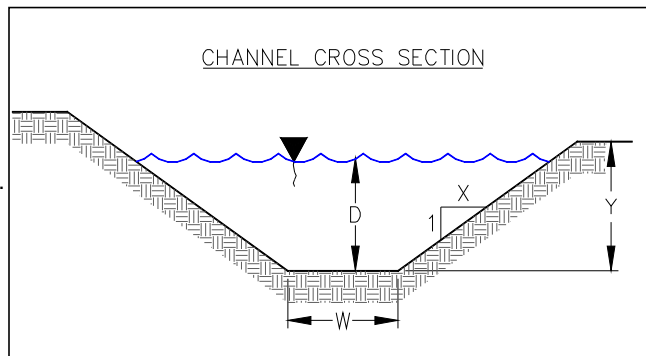


Diagram 1

100-Year Peak Flow Rate:

Using the Rational Method:

$$Q_{100} = CIA = 0.26 \quad 6.39 \quad 0.63 = 1.05 \text{ cfs}$$

C = 0.26 Low Density Residential, >6% slope, HSG "B"
 I_{100} = 6.39 in/hr per Stoughton rainfall intensity for 15 minute T_c ;
A = 0.63 acres;

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