

File.... \\S10svr01\M\p\0403734\STORM\BASHER_KILL_PROPOSED.PPW

Tc Equations used...

==== SCS TR-55 Sheet Flow =====

$$Tc = (.007 * ((n * Lf)**0.8)) / ((P**.5) * (Sf**.4))$$

Where: Tc = Time of concentration, hrs
n = Mannings n
Lf = Flow length, ft
P = 2yr, 24hr Rain depth, inches
Sf = Slope, %

==== SCS TR-55 Shallow Concentrated Flow =====

Unpaved surface:

$$V = 16.1345 * (Sf**.5)$$

Paved surface:

$$V = 20.3282 * (Sf**.5)$$

$$Tc = (Lf / V) / (3600sec/hr)$$

Where: V = Velocity, ft/sec
Sf = Slope, ft/ft
Tc = Time of concentration, hrs
Lf = Flow length, ft

Type.... Tc Calcs
Name.... SUBAREA 1H

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==== SCS Channel Flow =====

$R = Aq / Wp$
 $V = (1.49 * (R^{2/3}) * (Sf^{-0.5})) / n$

$Tc = (Lf / V) / (3600\text{sec/hr})$

Where: R = Hydraulic radius
Aq = Flow area, sq.ft.
Wp = Wetted perimeter, ft
V = Velocity, ft/sec
Sf = Slope, ft/ft
n = Mannings n
Tc = Time of concentration, hrs
Lf = Flow length, ft

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TIME OF CONCENTRATION CALCULATOR
.....

Segment #1: Tc: TR-55 Sheet

Mannings n .1500
Hydraulic Length 100.00 ft
2yr, 24hr P 3.5000 in
Slope .170000 ft/ft

Avg.Velocity .42 ft/sec

Segment #1 Time: .0663 hrs

Segment #2: Tc: TR-55 Shallow

Hydraulic Length 79.00 ft
Slope .114000 ft/ft
Unpaved

Avg.Velocity 5.45 ft/sec

Segment #2 Time: .0040 hrs

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Total Tc: .0704 hrs

Calculated Tc < Min.Tc:
Use Minimum Tc...
Use Tc = .0833 hrs
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Tc Equations used...

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Where: Tc = Time of concentration, hrs
n = Mannings n
Lf = Flow length, ft
P = 2yr, 24hr Rain depth, inches
Sf = Slope, %

==== SCS TR-55 Shallow Concentrated Flow =====

Unpaved surface:

$$V = 16.1345 * (Sf^{0.5})$$

Paved surface:

$$V = 20.3282 * (Sf^{0.5})$$

$$Tc = (Lf / V) / (3600sec/hr)$$

Where: V = Velocity, ft/sec
Sf = Slope, ft/ft
Tc = Time of concentration, hrs
Lf = Flow length, ft

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.....
TIME OF CONCENTRATION CALCULATOR
.....

Segment #1: Tc: TR-55 Sheet

Mannings n .1500
Hydraulic Length 100.00 ft
2yr, 24hr P 3.5000 in
Slope .125000 ft/ft

Avg.Velocity .37 ft/sec

Segment #1 Time: .0750 hrs

Segment #2: Tc: TR-55 Shallow

Hydraulic Length 311.00 ft
Slope .095000 ft/ft
Unpaved

Avg.Velocity 4.97 ft/sec

Segment #2 Time: .0174 hrs

Segment #3: Tc: TR-55 Shallow

Hydraulic Length 56.00 ft
Slope .069000 ft/ft
Paved

Avg.Velocity 5.34 ft/sec

Segment #3 Time: .0029 hrs

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Segment #4: Tc: TR-55 Channel

Flow Area 1.2270 sq.ft
Wetted Perimeter 3.93 ft
Hydraulic Radius .31 ft
Slope .033000 ft/ft
Mannings n .0130
Hydraulic Length 220.00 ft

Avg.Velocity 9.59 ft/sec

Segment #4 Time: .0064 hrs

Segment #5: Tc: TR-55 Channel

Flow Area 1.2270 sq.ft
Wetted Perimeter 3.93 ft
Hydraulic Radius .31 ft
Slope .147000 ft/ft
Mannings n .0130
Hydraulic Length 299.00 ft

Avg.Velocity 20.24 ft/sec

Segment #5 Time: .0041 hrs

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Total Tc: .1058 hrs
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==== SCS TR-55 Shallow Concentrated Flow =====

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$$V = 16.1345 * (Sf**.5)$$

Paved surface:

$$V = 20.3282 * (Sf**.5)$$

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Where: V = Velocity, ft/sec
Sf = Slope, ft/ft
Tc = Time of concentration, hrs
Lf = Flow length, ft

Type.... Tc Calcs
Name.... SUBAREA 1J

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==== SCS Channel Flow =====

$$R = Aq / Wp$$
$$V = (1.49 * (R^{2/3}) * (Sf^{*-0.5})) / n$$

$$Tc = (Lf / V) / (3600\text{sec/hr})$$

Where: R = Hydraulic radius
Aq = Flow area, sq.ft.
Wp = Wetted perimeter, ft
V = Velocity, ft/sec
Sf = Slope, ft/ft
n = Mannings n
Tc = Time of concentration, hrs
Lf = Flow length, ft

Type.... Tc Calcs
Name.... SUBAREA 1K

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TIME OF CONCENTRATION CALCULATOR

Segment #1: Tc: TR-55 Sheet

Mannings n .1500
Hydraulic Length 100.00 ft
2yr, 24hr P 3.5000 in
Slope .346000 ft/ft

Avg.Velocity .56 ft/sec

Segment #1 Time: .0499 hrs

Segment #2: Tc: TR-55 Shallow

Hydraulic Length 307.00 ft
Slope .200000 ft/ft
Unpaved

Avg.Velocity 7.22 ft/sec

Segment #2 Time: .0118 hrs

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Total Tc: .0617 hrs

Calculated Tc < Min.Tc:
Use Minimum Tc...
Use Tc = .0833 hrs
=====

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Unpaved surface:

$$V = 16.1345 * (Sf**0.5)$$

Paved surface:

$$V = 20.3282 * (Sf**0.5)$$

$$Tc = (Lf / V) / (3600sec/hr)$$

Where: V = Velocity, ft/sec
Sf = Slope, ft/ft
Tc = Time of concentration, hrs
Lf = Flow length, ft