

Type.... Tc Calcs
Name.... SUBAREA 1L

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

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TIME OF CONCENTRATION CALCULATOR
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Segment #1: Tc: TR-55 Sheet

Mannings n .1500
Hydraulic Length 100.00 ft
2yr, 24hr P 3.5000 in
Slope .140000 ft/ft

Avg.Velocity .39 ft/sec

Segment #1 Time: .0717 hrs

Segment #2: Tc: TR-55 Shallow

Hydraulic Length 1247.00 ft
Slope .160000 ft/ft
Unpaved

Avg.Velocity 6.45 ft/sec

Segment #2 Time: .0537 hrs

Segment #3: Tc: TR-55 Shallow

Hydraulic Length 72.00 ft
Slope .055000 ft/ft
Paved

Avg.Velocity 4.77 ft/sec

Segment #3 Time: .0042 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 .069000 ft/ft
Mannings n .0130
Hydraulic Length 543.00 ft

Avg.Velocity 13.87 ft/sec

Segment #4 Time: .0109 hrs

Segment #5: Tc: TR-55 Channel

Flow Area 1.2270 sq.ft
Wetted Perimeter 3.93 ft
Hydraulic Radius .31 ft
Slope .175000 ft/ft
Mannings n .0130
Hydraulic Length 78.50 ft

Avg.Velocity 22.09 ft/sec

Segment #5 Time: .0010 hrs

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Total Tc: .1414 hrs
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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:

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

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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==== 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
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Segment #1: Tc: TR-55 Sheet

Mannings n .1500
Hydraulic Length 100.00 ft
2yr, 24hr P 3.5000 in
Slope .135000 ft/ft

Avg.Velocity .38 ft/sec

Segment #1 Time: .0727 hrs

Segment #2: Tc: TR-55 Shallow

Hydraulic Length 496.00 ft
Slope .035000 ft/ft
Unpaved

Avg.Velocity 3.02 ft/sec

Segment #2 Time: .0456 hrs

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Total Tc: .1184 hrs
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Where: Tc = Time of concentration, hrs
n = Mannings n
Lf = Flow length, ft
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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

Type.... Tc Calcs
Name.... SUBAREA 1N

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

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TIME OF CONCENTRATION CALCULATOR
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Segment #1: Tc: TR-55 Sheet

Mannings n .1500
Hydraulic Length 100.00 ft
2yr, 24hr P 3.5000 in
Slope .095000 ft/ft

Avg.Velocity .33 ft/sec

Segment #1 Time: .0837 hrs

Segment #2: Tc: TR-55 Shallow

Hydraulic Length 168.00 ft
Slope .034000 ft/ft
Unpaved

Avg.Velocity 2.98 ft/sec

Segment #2 Time: .0157 hrs

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Total Tc: .0994 hrs
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Tc Equations used...

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

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:

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

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

Type.... Tc Calcs
Name.... SUBAREA 10

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

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TIME OF CONCENTRATION CALCULATOR
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Segment #1: Tc: TR-55 Sheet

Mannings n .1500
Hydraulic Length 100.00 ft
2yr, 24hr P 3.5000 in
Slope .228000 ft/ft

Avg.Velocity .47 ft/sec

Segment #1 Time: .0590 hrs

Segment #2: Tc: TR-55 Shallow

Hydraulic Length 900.00 ft
Slope .036000 ft/ft
Unpaved

Avg.Velocity 3.06 ft/sec

Segment #2 Time: .0817 hrs

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Total Tc: .1407 hrs
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==== SCS TR-55 Sheet Flow =====

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