

Type.... Tc Calcs
Name.... SUBAREA 1E

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 .200000 ft/ft

Avg.Velocity .45 ft/sec

Segment #1 Time: .0622 hrs

Segment #2: Tc: TR-55 Shallow

Hydraulic Length 304.00 ft
Slope .178000 ft/ft
Unpaved

Avg.Velocity 6.81 ft/sec

Segment #2 Time: .0124 hrs

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Total Tc: .0746 hrs

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

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

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

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

Mannings n .4000
Hydraulic Length 150.00 ft
2yr, 24hr P 3.5000 in
Slope .440000 ft/ft

Avg.Velocity .30 ft/sec

Segment #1 Time: .1375 hrs

Segment #2: Tc: TR-55 Shallow

Hydraulic Length 3927.00 ft
Slope .040000 ft/ft
Unpaved

Avg.Velocity 3.23 ft/sec

Segment #2 Time: .3380 hrs

Segment #3: Tc: TR-55 Channel

Flow Area 30.0000 sq.ft
Wetted Perimeter 50.50 ft
Hydraulic Radius .59 ft
Slope .066000 ft/ft
Mannings n .0350
Hydraulic Length 1236.00 ft

Avg.Velocity 7.73 ft/sec

Segment #3 Time: .0444 hrs

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Segment #4: Tc: TR-55 Shallow

Hydraulic Length 838.00 ft
Slope .024000 ft/ft
Unpaved

Avg.Velocity 2.50 ft/sec

Segment #4 Time: .0931 hrs

Segment #5: Tc: TR-55 Channel

Flow Area 164.6000 sq.ft
Wetted Perimeter 115.30 ft
Hydraulic Radius 1.43 ft
Slope .005000 ft/ft
Mannings n .0350
Hydraulic Length 3232.00 ft

Avg.Velocity 3.82 ft/sec

Segment #5 Time: .2352 hrs

Segment #6: Tc: TR-55 Channel

Flow Area 164.6000 sq.ft
Wetted Perimeter 115.30 ft
Hydraulic Radius 1.43 ft
Slope .005000 ft/ft
Mannings n .0350
Hydraulic Length 5070.00 ft

Avg.Velocity 3.82 ft/sec

Segment #6 Time: .3690 hrs

Total TC: 1.2173 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 .075000 ft/ft
Avg.Velocity .30 ft/sec

Segment #1 Time: .0920 hrs

Segment #2: Tc: TR-55 Shallow

Hydraulic Length 806.00 ft
Slope .123000 ft/ft
Unpaved
Avg.Velocity 5.66 ft/sec

Segment #2 Time: .0396 hrs

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Total Tc: .1316 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:

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

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

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

Mannings n .4000
Hydraulic Length 100.00 ft
2yr, 24hr P 3.5000 in
Slope .025000 ft/ft

Avg.Velocity .09 ft/sec

Segment #1 Time: .3130 hrs

Segment #2: Tc: TR-55 Shallow

Hydraulic Length 217.00 ft
Slope .097000 ft/ft
Unpaved

Avg.Velocity 5.03 ft/sec

Segment #2 Time: .0120 hrs

Segment #3: Tc: TR-55 Shallow

Hydraulic Length 192.00 ft
Slope .085000 ft/ft
Paved

Avg.Velocity 5.93 ft/sec

Segment #3 Time: .0090 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 .104000 ft/ft
Mannings n .0130
Hydraulic Length 235.00 ft

Avg.Velocity 17.03 ft/sec

Segment #4 Time: .0038 hrs

Segment #5: Tc: TR-55 Channel

Flow Area 1.2270 sq.ft
Wetted Perimeter 3.93 ft
Hydraulic Radius .31 ft
Slope .110000 ft/ft
Mannings n .0130
Hydraulic Length 176.00 ft

Avg.Velocity 17.51 ft/sec

Segment #5 Time: .0028 hrs

Segment #6: Tc: TR-55 Channel

Flow Area 1.2270 sq.ft
Wetted Perimeter 3.93 ft
Hydraulic Radius .31 ft
Slope .077000 ft/ft
Mannings n .0130
Hydraulic Length 213.00 ft

Avg.Velocity 14.65 ft/sec

Segment #6 Time: .0040 hrs

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Total Tc: .3447 hrs
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