Time of concentration (Tc) or travel time (Tt)

Project : Oak Creek South Development **By:** JEH **Date:** 2/23/2009
Location : Wichita, Kansas **Checked:** **Date:**

Circle One: [Present] Developed

Circle One: [Tc] Tt through subarea

NOTES: Space for as many as two segments per flow type can be used for each worksheet.
Include map, schematic, or description of flow segments.

Sheet flow (Applicable to Tc only)

	Segment ID			
1. Surface description (Table 3-1)	AB			
2. Mannings roughness coeff., n (Table 3-1)	Short Grass			
3. Flow length, L (total L < 300 ft.)	0.06			
4. Two-yr 24-hr rainfall, P2	ft 700			
5. Calculated Land slope, s	in 3.50			
5a. Land Elevation For Upper End Of Flow Path	ft/ft 0.023			
5b. Land Elevation For Lower End Of Flow Path	1390.0			
6. Compute Tt	1374.0			
	hr 0.34		=	0.34

Sheet flow (Applicable to Tc only)

	Segment ID			
1. Surface description (Table 3-1)	BC			
2. Mannings roughness coeff., n (Table 3-1)	Concrete			
3. Flow length, L (total L < 300 ft.)	0.017			
4. Two-yr 24-hr rainfall, P2	ft 1			
5. Calculated Land slope, s	in 3.50			
5a. Land Elevation For Upper End Of Flow Path	ft/ft 7.100			
5b. Land Elevation For Lower End Of Flow Path	1344.1			
6. Compute Tt	1337.0			
	hr 0.00		=	0.00

Shallow concentrated flow

	Segment ID			
7. Surface description (Paved or Unpaved)	CD			
8. Flow length, L	Unpaved			
9. Calculated Watercourse slope, s	ft 1			
9a. Land Elevation For Upper End Of Flow Path	ft/ft 9.000			
9b. Land Elevation For Lower End Of Flow Path	1337.0			
10. Average velocity, V (Figure 3-1)	1328.0			
11. Tt = L/3600V Compute Tt	ft/s 48.40			
	hr 0.00		=	0.00

Channel Flow

	Segment ID			
12. Cross sectional flow area, a				
13. Wetted perimeter, Pw	sf			
14. Hydraulic radius, r = a/Pw Compute r	ft			
15. Channel slope, s	ft			
16. Manning's roughness coeff., n	ft/ft			
17 V = 1.49(r^0.667)(s^0.50)/n Compute V				
18. Flow length, L	ft/s			
19. Tt = L/3600V Compute Tt	ft			
20. Watershed or subarea Tc or Tt (add Tt in steps 6,11, and 19)	hr		=	0.00
			hr	0.34

Reference: Urban Hydrology for Small Watersheds
Technical Release 55, Soil Conservation Service
U.S. Department of Agriculture, June 1986

Use Time Of Concentration = **20.2 Minutes**