



1. FIND EXTERNAL #1, USING THE FOLLOWING FORMULA:
EXTERNAL #1 = R#1 X EXSEC $\frac{1}{2}$ DELTA
2. ADD WIDENING W TO EXTERNAL #1
THIS WILL BE EXTERNAL #2.
3. FIND RADIUS #2, USING THE FOLLOWING FORMULA:
R#2 = EXTERNAL #2
EXSEC $\frac{1}{2}$ DELTA

EXAMPLE:

GIVEN:

CENTERLINE RADIUS = 100'
 DELTA = 90°
 NORMAL PAVEMENT WIDTH = 30' (R/W = 50')
 REQUIRED WIDENING FOR CENTERLINE RADIUS OF 100' = 7' (TO BE APPLIED AT THE MIDPOINT OF THE INSIDE EDGE OF PAVEMENT)

REQUIRED:

RADIUS OF WIDENING (R#2)

SOLUTION:

RADIUS OF INSIDE EDGE OF PAVEMENT

$$R\#1 = 100' - 15' = 85'$$

$$\text{EXTERNAL \#1} = 85 \times \text{EXSEC } \frac{1}{2} \text{ DELTA} = 85 \times .41421 = 35.21$$

$$\text{EXTERNAL \#2} = 35.21 + 7 = 42.21$$

$$R\#2 = \frac{\text{EXTERNAL \#2}}{\text{EXSEC } \frac{1}{2} \text{ DELTA}} = \frac{42.21}{.41421} = 101.9'$$

$$\text{EXSEC } \frac{1}{2} \text{ DELTA} \quad .41421$$

CENTERLINE RADIUS OF CURVE	MINIMUM LENGTH CURVE*	WIDENING AT MIDPOINT
500' - 451'	400'	3'
450' - 351'	350'	4'
350' - 251'	300'	5'
250' - 151'	200'	6'
150' - 100'	150'	7'

* CURVES LESS THAN THIS LENGTH WILL NOT REQUIRE WIDENING

NOTE:

THE RADIUS OF THE INSIDE PROPERTY LINE IN THIS EXAMPLE WILL BE 91.9' (101.9-10.0)

CECIL COUNTY DEPARTMENT OF PUBLIC WORKS	STANDARD ROAD & STREET DETAILS	REVISED
	WIDENING COMPUTATIONS	05/07
		R-36