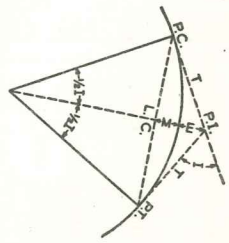


Established Cor on line between Center of Cur & W Cor  
at fence line South which has been a boundary line  
since before 1880 - See Survey Rec 1 page 6

# CURVE AND REDUCTION TABLES

Published by Eugene Dietzgen Co.



## CURVE FORMULAS

1. Radius :  $R = \frac{50}{\sin D/2}$
2. Degree of Curve:  $D = 100 \frac{1}{T}$  Also,  $\sin D/2 = \frac{50}{R}$
3. Tangent :  $T = R \tan \frac{1}{2} I$  Also,  $T = \frac{T \text{ for } 1^\circ \text{ curve}}{D} + C$ .
4. Length of Curve:  $L = 100 \frac{L}{D}$
5. Long Chord :  $L.C. = 2R \sin \frac{1}{2} I$ .
6. Middle Ordinate:  $M = R (1 - \cos \frac{1}{2} I)$
7. External :  $E = \frac{R}{\cos \frac{1}{2} I} - R$  Also,  $E = T \tan \frac{1}{4} I$ .

## EXPLANATION AND USE OF TABLES

Given P.I. Sta. 83+40.7, I = 45° 20' and D = 6° 30' find:

**Stations** - P.C. = P.I. - T. T for 1° Curve + C. From Tables V and VI

$T = \frac{2392.8}{6.5} + .197 = 368.32 + 68.32$ . Sta. P.C. = 83+40.7 - (3+68.32) = 79+72.38.

$P.T. = P.C. + L$ , and  $L = 100 \frac{L}{D} = 100 \frac{45.33}{6.5} = 697.38$  Therefore, P.T. = (79+72.38) + (6+97.38) = 86+69.76.

**Offsets** - Tangent offsets vary (approximately) directly with D and with the square of the distance. From Table III Tangent Offset for 100 feet = 5.669 feet. Distance = 80 - Sta. P.C. = 27.62. Hence offset =  $5.66 \times \left(\frac{27.62}{100}\right)^2 = .432$  ft. Also, square of any distance, divided by twice the radius equals (approximately) the distance from tangent to curve. Thus  $(27.62)^2 \div (2 \times 881.95) = .432$  ft.

**Deflections** - Deflection angle =  $\frac{1}{2} D$  for 100 ft.,  $\frac{1}{4} D$  for 50 ft., etc. For "X" ft., Deflection Angle (in minutes) =  $\frac{3}{8} \times X \times D$ . For Sta. 80 of above curve Deflection Angle =  $.3 \times 27.62 \times 6.5 = 53.86'$ . Also Deflection Angle =  $d \sin I$ , for 1 ft., from Table III  $X \times X = 1.35$   $\times 27.62 = 53.86'$ . For Sta. 181 Deflection Angle =  $53.86' + \frac{6^\circ 30'}{2} = 4^\circ 8.86'$ .

**Externals** - From Table V for 1° curve, with central angle of 45° 20', E = 479.6. Therefore, for 6° 30' curve,  $E = \frac{479.6}{6.5} + \text{Correction from Table VI} = 7.378 + .039 = 7.417$ .