Ch. Sec. 27-75-21
Found Oct 18-1956
R.C.V.r

24" Oak — 25.73

0.65

8.78

Brace po
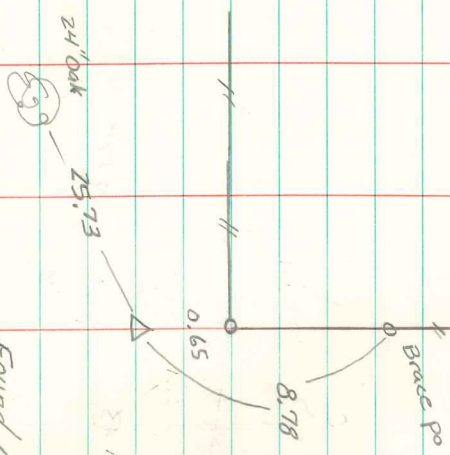
Found 6"x6"x12"
Stone, Set 5/8" x 18"
Orange plastic capped rebar
7995 on North side
Brian Morrissey. 8/3/01

CURVE AND REDUCTION TABLES

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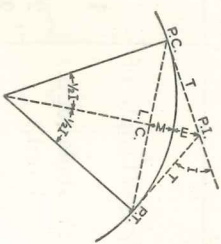
CURVE FORMULAS

1. Radius : $R = \dfrac{50}{\sin D/2}$

2. Degree of Curve: $D = 100\,\dfrac{I}{L}$. Also, $\sin D/2 = \dfrac{50}{R}$

3. Tangent : $T = R \tan \tfrac{1}{2} I$. Also, $T = \dfrac{T \text{ for } 1° \text{ curve}}{D} + C.$

4. Length of Curve: $L = 100\,\dfrac{I}{D}$

5. Long Chord : $L. C. = 2R \sin \tfrac{1}{2} I.$

6. Middle Ordinate: $M = R (1 - \cos \tfrac{1}{2} I)$

7. External : $E = \dfrac{R}{\cos \tfrac{1}{2} I} - R.$ Also, $E = T \tan \tfrac{1}{4} I.$

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

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

P. T. = P. C. + L, and L = 100 $\dfrac{I}{D}$ = 100 $\dfrac{45.33}{6.5}$ = 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 × $\left(\dfrac{27.62}{100}\right)^2$ = .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 = ¼ D for 100 ft., ⅛ D for 50 ft., etc. For "X" ft., Deflection Angle (in minutes) = .3 × X × D. For Sta. 80 of above curve Deflection Angle = .3 × 27.62 × 6.5 = 53.86′. Also Deflection Angle = dfl. for 1 ft. from Table III × X = 1.95 × 27.62 = 53.86′. For Sta. 181 Deflection Angle = 53.86′ + $\dfrac{6°\,30′}{2}$ = 4° 8.86′.

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

1