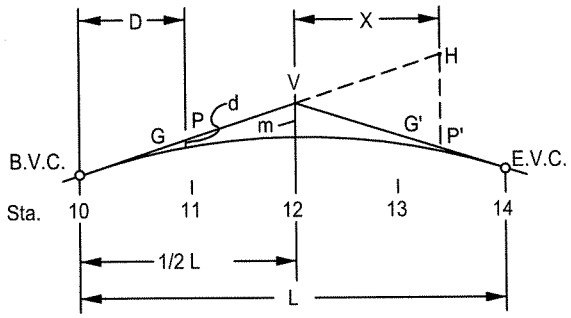

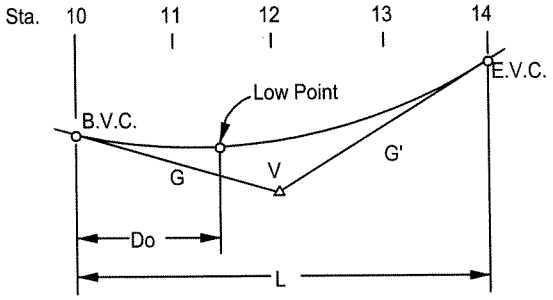

IN ANY VERTICAL CURVE

$$m = \frac{(G' - G)L}{8}$$

$$m = \frac{1}{2}\left(\frac{\text{Elev. B.V.C.} + \text{Elev. E.V.C.}}{2} - \text{Elev. V}\right)$$

$$d = m\left(\frac{D}{L/2}\right)^2 = \frac{4m}{L^2}D^2$$

$$d = \frac{D^2(G'-G)}{2L}$$

$$X = \frac{100\,(H-P')}{(G-G')}$$

$$S = G - D\left(\frac{G-G'}{L}\right)$$

$$Do = \frac{LG}{G-G'}$$

WHERE

L = Length of curve-100 ft. units or stations.

G and G' = Grade rates - percent.

m = Middle ordinate-ft.

d = Correction from grade line to curve-ft.

D = Distance from B.V.C. or E.V.C. to any point on curve - stations.

S = Slope of the tangent to the curve at any point - precent.

X = distance from P' to V-ft.

H = Elevation of grade G produced to station of P'.

P and P' = Elevation on respective grades.

Do = Distance to low or high point from extremity of curve - stations.

V = Elevation of intersection point of approach grades.

NOTES:

1. Vertical curve is required where difference in road grade is greater than 0.5 %, or where sum of grade breaks within 200' exceeds 0.5 %.
2. Minimum vertical curve length "L" (in feet) shall be 3 times the design speed (in mph). A rising grade carries a plus sign while a falling grade carries a minus sign. Thus in a crest vertical curve as above, G carries a plus sign and G' a minus sign when progressing in the direction of he stationing. When progressing in the opposite direction, G becomes a minus grade and G' a plus grade.

CHG	DESCRIPTION	DATE	INITIAL

APPROVED _____ CITY ENGINEER 5/20/02 DATE

CITY OF THOUSAND OAKS
PUBLIC WORKS DEPARTMENT

STANDARD
VERTICAL CURVES

PLATE NO.
3-8