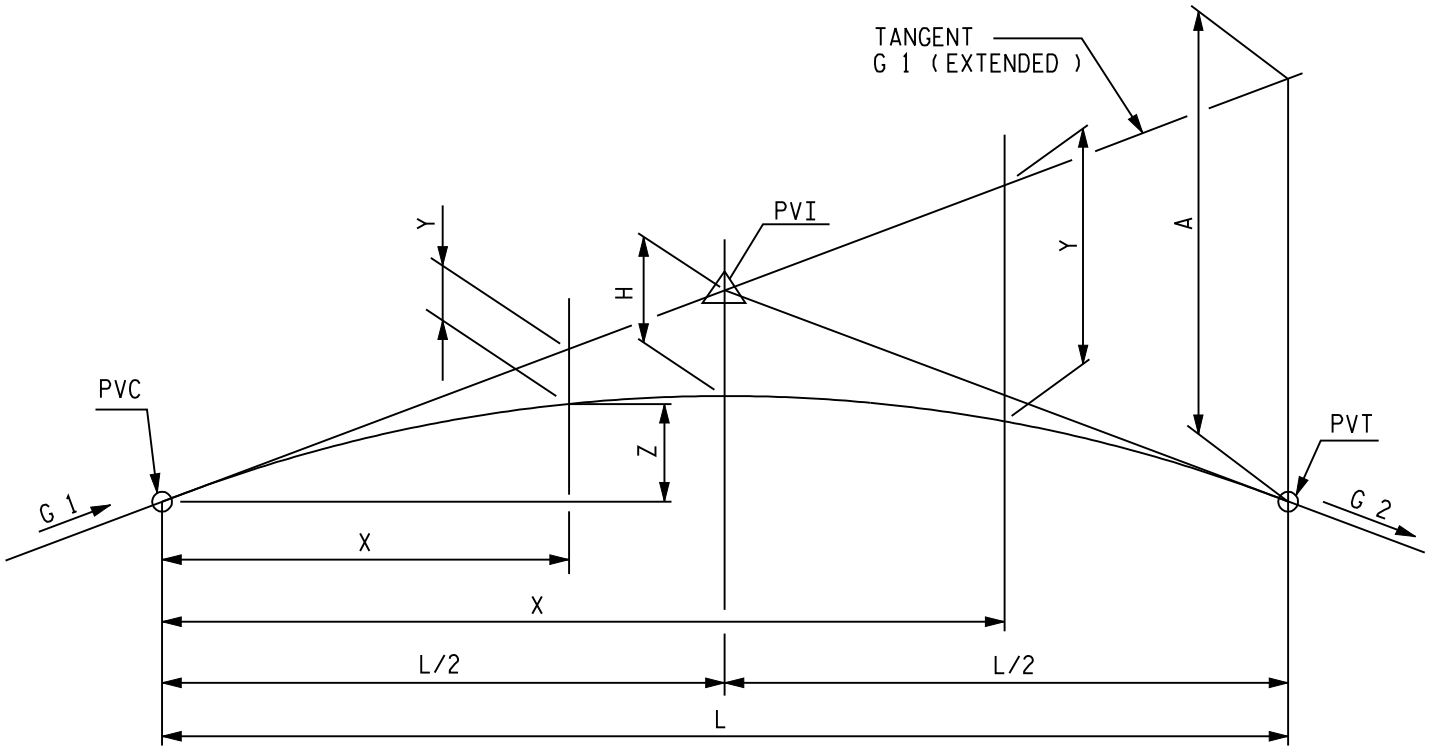

L = LENGTH OF VERTICAL CURVE. (100m = 1 STATION)

G1 = % GRADE OF BACK TANGENT } (+) FOR ASCENDING GRADES

G2 = % GRADE OF AHEAD TANGENT } (-) FOR DESCENDING GRADES

G3 = GRADE OF TANGENT AT ANY POINT

R = RATE OF CHANGE

X = DISTANCE FROM THE PVC TO ANY POINT ON THE CURVE, X < L

Y = VERTICAL OFFSET FROM G1 (TANGENT EXTENDED) TO THE CURVE AT ANY DISTANCE X FROM THE PVC, Y < A

Z = HEIGHT OF V.C. ABOVE PVC

H = MIDDLE ORDINATE

G2 - G1 = ALGEBRAIC DIFFERENCE IN GRADES

$$H = \frac{(G2 - G1) \times L \text{ (STATIONS)}}{8}$$

$$A = 4M$$

$$Y = \frac{M \times X^2}{(L/2)^2}$$

$$R = \frac{G2 - G1}{}$$

$$Z = G1\,X + \frac{RX^2}{2}$$

$$G3 = G1 + RX$$

VALUES OF M, A & Y ARE:

(+) FOR CURVES CONCAVE UPWARDS. (SAG VERTICAL)

(-) FOR CURVES CONCAVE DOWNWARDS. (SKETCH)

DIMENSIONS L, L/2 AND X ARE IN STATIONS

VERTICAL PARABOLIC CURVE - EQUAL TANGENT

FIGURE 1 – 9