Bridge Design Details 2B June 2025
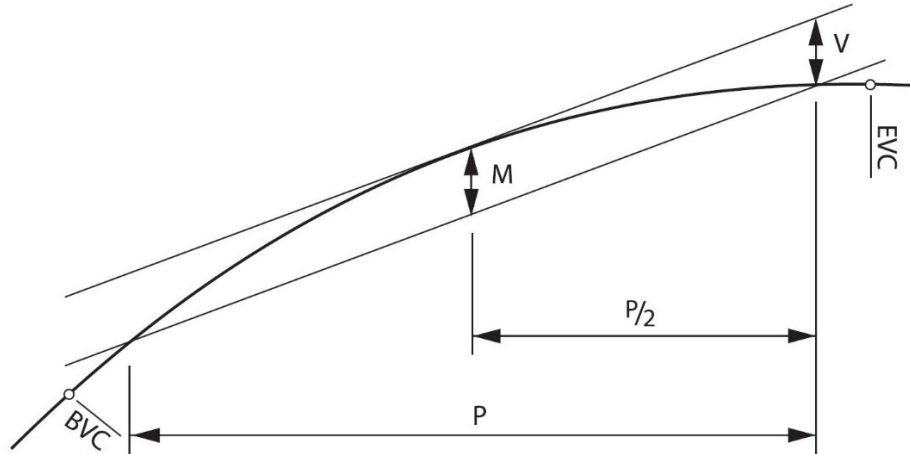

Figure 2A.B.1 Middle Ordinate Formula

Combining equations (1) and (2) given in 2A – Vertical Curve Formula – Attachment A, the Middle Ordinate is derived, and equation (4) is as follows:

(4) $\qquad V = \dfrac{\left(R/C\right)(L)^2}{2}$

For Length = $P/2$, then: $V = \dfrac{\left(R/C\right)\left(P/2\right)^2}{2}$

Using the figure and equation above, set M equal to V to get the following:

$$V = \frac{\left(R/C\right)\left(P/2\right)^2}{2} = M$$

Then simplify to get: $M = \dfrac{\left(R/C\right)P^2}{8}$

(P) measured horizontally

(M) measured vertically