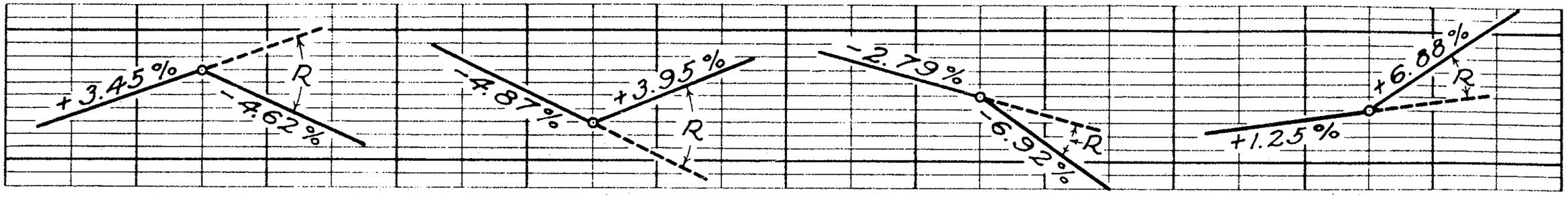
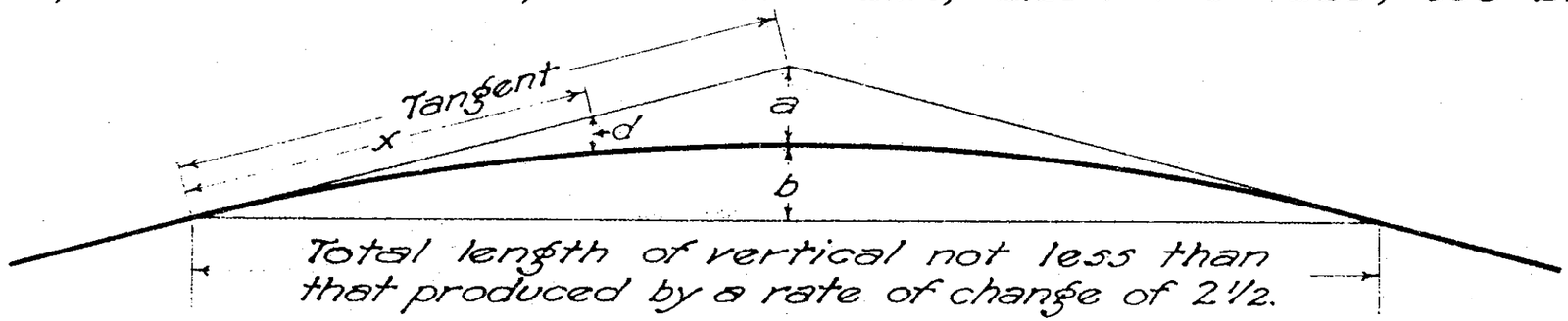


Case I Case II Case III Case IV

TO DETERMINE LENGTH OF VERTICAL CURVE

Let R equal rate of change in grade. Divide rate of change by 2½ and multiply result by 100'.

Example, Case I, 3.45 + 4.62 = 8.07, 8.07 ÷ 2½ = 3.23, 3.23 x 100' = 323', Use 350' or more.
Example, Case II, 4.87 + 3.95 = 8.82, 8.82 ÷ 2½ = 3.53, 3.53 x 100' = 353', Use 350' or less.
Example, Case III, 6.92 - 2.79 = 4.13, 4.13 ÷ 2½ = 1.65, 1.65 x 100' = 165', Use 200' or more.
Example, Case IV, 6.88 - 1.25 = 5.63, 5.63 ÷ 2½ = 2.25, 2.25 x 100' = 225', Use 225' or less.



Where concave curves are contemplated and visibility is not a factor the length of the vertical curves may be decreased.

TO DETERMINE THE PARABOLIC CURVE:

Make a=b, then any ordinate as d is obtained by the proportion, $x^2 : \text{tangent}^2 :: d : a$, All grade elevations should be calculated on the tangents and the grade of the vertical curve for that point be determined by the addition or subtraction of the ordinate applicable at that point.

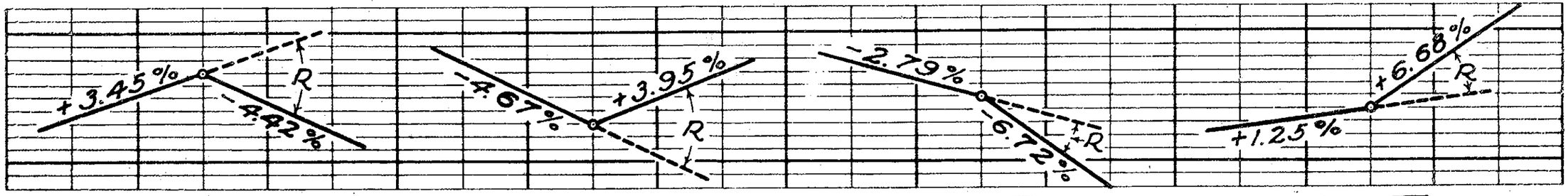
BUREAU OF CONSTRUCTION
OHIO
DEPARTMENT OF HIGHWAYS

VERTICAL CURVES
FOR GRADE LINES

STANDARD
CONSTRUCTION DRAWING 109
APRIL 4, 1930

APPROVED R.S.B. CHIEF ENGR CONST.

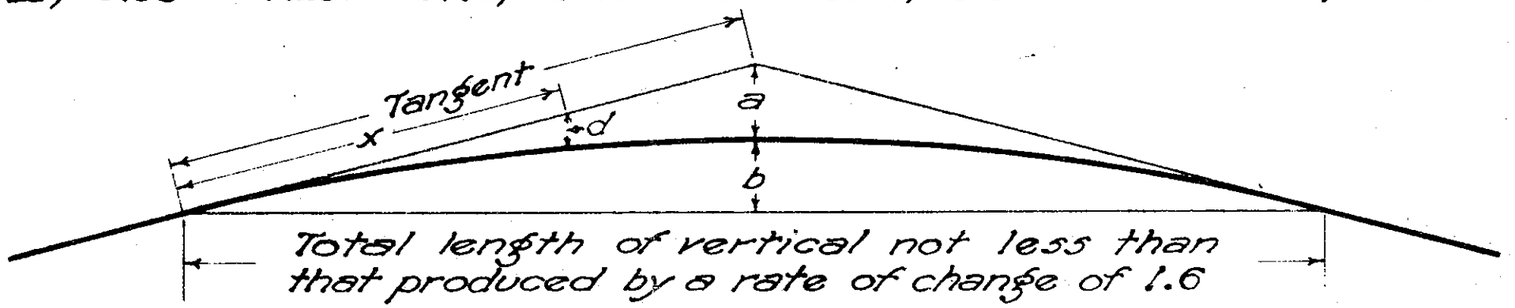
REVISED



Case I Case II Case III Case IV

TO DETERMINE LENGTH OF VERTICAL CURVE

Let R equal rate of change in grade. Divide rate of change by 1.6 and multiply result by 100'.
Example, Case I, 3.45 + 4.42 = 7.87, 7.87 ÷ 1.6 = 4.92, 4.92 x 100' = 492', Use 500' or more.
Example, Case II, 4.67 + 3.95 = 8.62, 8.62 ÷ 1.6 = 5.39, 5.39 x 100' = 539', Use 550' or more
Example, Case III, 6.72 - 2.79 = 3.93, 3.93 ÷ 1.6 = 2.46, 2.46 x 100' = 246', Use 250' or more.
Example, Case IV, 6.68 - 1.25 = 5.43, 5.43 ÷ 1.6 = 3.39, 3.39 x 100' = 339', Use 350' or more.



In no case shall a vertical curve be less than 200 feet in length.

TO DETERMINE THE PARABOLIC CURVE:

Make a=b, then any ordinate as d is obtained by the proportion, x^2 : tangent^2 :: d : a, All grade elevations should be calculated on the tangents and the grade of the vertical curve for that point be determined by the addition or subtraction of the ordinate applicable at that point.

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VERTICAL CURVES
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REVISED
12-30-32