Memorandum

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Coefficient of discharge curve for Palisades-type gate

Attached is a tentative coefficient of discharge curve for the Palisades-type gate for use in determining the discharge curve for Vaquero outlet works.

This coefficient curve was made up from data obtained from the 1:19 scale model of the Palisades gate, the 1:5 sectional gate model of the Palisades gate, and Corps of Engineers' gates with 45° lips. The 1:19 scale model data were obtained at model heads varying from 6.5 to 35 feet and gate openings of 20 to 100 percent. The four points shown as 1:5 model are points taken from an adjusted curve based on coefficients measured for standard slots, tapered slots, and slots moved 12 inches upstream. Most of the coefficients obtained from the 1:5 model were measured at model heads of 120 feet, but three calibration points were obtained with the standard slots at a 3 percent gate opening and low heads from 0.5 to 5.5 feet (model). It should be noted that the 1:5 model had the small lip extension on the gate leaf while the 1:19 model gate lip intersected the 45° slope.

All heads are measured to the center of the gate opening.

The coefficient curve is considered tentative until more data are obtained for the Palisades-type gate, especially in the range of small gate openings and low heads. To accurately describe the curve for gate openings between 0 and 30 percent and low heads, a model specifically built for calibration at very low heads would be required.

Enclosure