

## SUBMERGED CROSS-JET CONTROL OF HYDRAULIC JUMP <sup>15</sup>

by

T. Y. Kao

Assistant Professor of Civil Engineering  
University of Kentucky

A new method of controlling a hydraulic jump is developed in this study. Utilizing a submerged cross-jet, instead of solid chute blocks and baffle piers, to furrow and lift the supercritical approaching flow, a hydraulic jump is produced which requires a shorter length of jump or a smaller conjugate depth. The analytical analysis of the characteristics of the jet-forced hydraulic jump is based on the basic momentum and continuity principles and the conservation of energy. The results are verified experimentally. In the case when the jet flow is provided by the same source which provides the approaching flow, better control of the jump and greater energy dissipation by the jump are obtained.

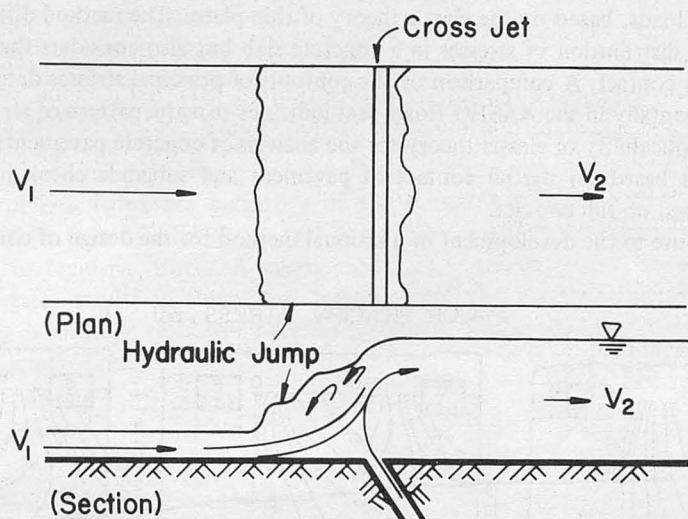


Figure 20. Definition of Cross-Jet

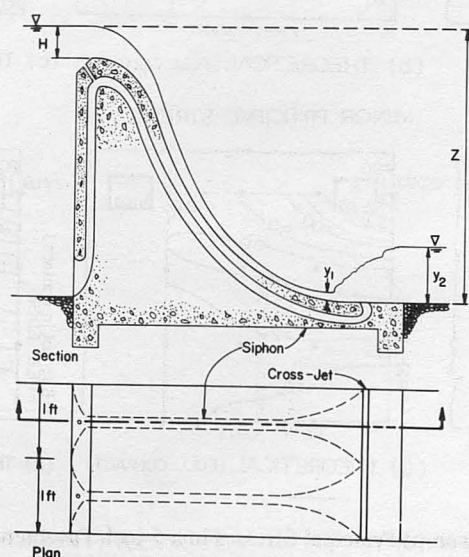


Figure 21. Conceptual Drawing of Overflow Spillway and Siphon-Cross-Jet Flow Arrangement