

Tail Erosion and Piping Problem*

by

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After going through the short communication an impression is created that the study undertaken is intended to throw more light on the problem of ensuring safety of structures against piping and to understand the interplay of several factors more fully, which at present is covered only by a large factor of safety applied to critical gradients in design practice. In such a case following circumstances will have to be kept in view while experimenting and generalising the results to avoid risk of misinterpretation.

The study undertaken by the author is of still-pond condition while during a flood when scour is taking place the situation is dynamic and hence more severe in following respects :

- (a) The changes in the flownet will lag behind the boundary changes near the flow region.
- (b) The forces on the boundary will be hydrodynamic tangential and normal forces due to roller action.
- (c) The progressive slips undermining the foundations will have to be considered whereas only particle stability is considered in the communication.

The really large factor of safety 5 to 10 is applied to cover the effect of these understood factors.

AUTHOR'S REPLY

In the design of weirs and barrages on permeable foundations for safety against seepage flow, critical condition for design are considered to be the following :

- (i) F.S.L. upstream (i.e., maximum pool elevation with no surface flow), and
- (ii) Tail water at the apron level on the downstream.

The author's study was for these conditions plus the additional condition that the bed near the toe might be at a slope due to tail erosion. The seepage conditions (i.e., the flownet) are assumed to have become steady.

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