

NUMERICAL INVESTIGATION OF LOAD TRANSFER MECHANISM  
IN SLOPES REINFORCED WITH PILES

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**ABSTRACT**

The objective of the work is to use numerical analyses to evaluate the limit soil pressure on piles, to evaluate the load transfer mechanism, and to evaluate alternative means for estimating mobilized and limit loads on piles in piled-slope problems. It is found that limit forces predicted using 2-D, plane strain and 3-D analyses differ substantially. The computed limit force on piles in piled-slopes is sensitive to the interface roughness, pile spacing, modeling techniques, and constitutive model. For the 3-D model, which includes both the sliding and anchorage zones, the limit soil pressure calculated for the “flow” failure mode is approximately equal to that predicted by the Broms (1964) method. It is concluded that 2-D analyses of a horizontal slice is not suitable for evaluation of mobilized or limit lateral loads on piles. The 3-D model analysis is a better method for modeling the actual piled-slope problems.