

Influence of Boundary Conditions on the Behavior of an Anchored Reinforced Earth Wall

ABSTRACT

The finite element model is used to simulate the behavior of the full scale instrumented anchored reinforced wall. The validated finite element model is then used to carry out parametric studies to ascertain the influence of the boundary conditions on the behavior of the wall. The boundaries at the crest, facing and base of the wall are varied to study their effects. At the crest of the wall, slope surcharge of various geometrical dimensions are imposed. At the facing of the wall, the boundary is allowed to yield laterally by inserting a compressible geoinclusion at the back face of the wall panels. Meanwhile, at the base, the boundary is allowed to yield vertically by allowing the wall to sit on a compressible foundation soil. The behavior of the wall is determined in terms of the tensile stress distribution developed in the reinforcing bars, the summation of the maximum tension in the reinforcing bars, the summation of the tensions developed at the connection to the facing panels, the lateral movement at the facing and the vertical movement at the base.

Keyword: Anchor blocks, computer simulation, instrumentation, reinforced earth