

## Cantilever Secant Pile Constructed in Sand: Capping Beam-Piles Bending Moments Interaction

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**Abstract :** this paper is an extension to previously published two papers; all share the first part of their titles. The papers theme is soil-structure interaction in the ground of soil retaining structures. The secant pile wall is the concern, while the focus is its capping beam. The earlier papers suggested a technique to structurally analyze capping beam. It has been proved that; pile rigidity shares the capping beam rigidity to resist the wall deformations. The current paper explains how the beam-pile integration re-distributes the pile's bending moment for the benefits of wall deformations. It is concluded that re-distribution of pile bending moment is completely different than the calculated by plain strain analysis, values, and distributions. The pile diameter, beam rigidity, pile spacing, and the 3D-analysis-effect individually or all together affect the pile bending moment. The Plaxis-2D and STAAD-Pro 3D are the used software's. Throughout this study, three sand densities, various pile and beam rigidities, and three excavation depths, i.e., 3.0-m, 4.0-m and 5.0-m have been considered.

**Keywords :** bending moment, capping beam, numerical analysis, secant pile, sandy soil

**Conference Title :** ICSRD 2020 : International Conference on Scientific Research and Development

**Conference Location :** Chicago, United States

**Conference Dates :** December 12-13, 2020