

## Cantilever Secant Pile Constructed in Sand: Capping Beam Analysis and Design - Part I

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**Abstract :** The paper theme is soil retaining structures. Cantilever secant-pile wall is triggering scientific point of curiosity. Specially the capping beams structural analysis and its interaction with secant piles as one integrated matrix. It is believed that straining actions of this integrated matrix are most probably induced due to a combination of induced line load and non-uniform horizontal pile tips displacement. The strategy that followed throughout this study starts by converting the pile head horizontal displacements generated by Plaxis-2D model to a system of concentrated line load acting per meter run along the capping beam. Then, those line loads are the input data of Staad-Pro 3D-model. Those models tailored to allow the capping beam and the secant piles interacting as one matrix, i.e. a unit. It is believed that the suggested strategy presents close to real structural simulation. The above is the paper thought and methodology. Three sand densities, one pile rigidity and one excavation depth, "h = 4.0-m," are completely sufficient to achieve the paper's objective.

**Keywords :** secant piles, capping beam, analysis, design, plaxis 2D, staad pro 3D

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