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# Settlement Analysis of Back-To-Back Mechanically Stabilized Earth Walls

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**Abstract :** Back-to-back Mechanically Stabilized Earth (MSE) walls are cost-effective soil-retaining structures that can tolerate large settlements compared to conventional gravity retaining walls. They are also an economical way to meet everyday earth retention needs for highway and bridge grade separations, railroads, commercial and residential developments. But, existing design guidelines (FHWA/BS/ IS codes) do not provide a mechanistic approach for the design of back-to-back reinforced retaining walls. The settlement analysis of such structures is limited in the literature. A better understanding of the deformations of this wall system requires an analytical tool that incorporates the properties of backfill material, foundation soil, and geosynthetic reinforcement, and account for the soil–structure interactions in a realistic manner. This study was conducted to investigate the effect of reinforced back-to-back MSE walls on wall settlements and facing deformations. Back-to-back reinforced retaining walls were modeled and compared using commercially available finite difference package FLAC 2D. Parametric studies were carried out for various angles of shearing resistance of backfill material and foundation soil, and the axial stiffness of the reinforcement. A 6m-high wall was modeled, and the facing panels were taken as full-length panels with nominal thickness. Reinforcement was modeled as cable elements (two-dimensional structural elements). Interfaces were considered between soil and wall, and soil and reinforcement.

**Keywords :** back-to-back walls, numerical modeling, reinforced wall, settlement
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