Analyzing Permanent Drift Due to Cyclic Loads

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Abstract: An analytical model has been developed to predict permanent stresses and strains in sands under cyclic loading for general drainage and boundary conditions. Here the model is combined with the finite element method to predict the permanent displacement of a storm barrier under combined tidal and wave loading. The results are compared with predictions from previous analyses, yielding a good correlation. The effects of drainage conditions and soil densification on permanent displacement are evaluated. The results demonstrate the importance of including in the pore pressure calculation the effects of both the tendency for volume change and the change in the average total stress.

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