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Methodology: A Review in Modelling and Predictability of Embankment in Soft Ground

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Abstract : Transportation network development in the developing country is in rapid pace. The majority of the network belongs to railway and expressway which passes through diverse topography, landform and geological conditions despite the avoidance principle during route selection. Construction of such networks demand many low to high embankment which required improvement in the foundation soil. This paper is mainly focused on the various advanced ground improvement techniques used to improve the soft soil, modelling approach and its predictability for embankments construction. The ground improvement techniques can be broadly classified in to three groups i.e. densification group, drainage and consolidation group and reinforcement group which are discussed with some case studies. Various methods were used in modelling of the embankments from simple 1-dimensional to complex 3-dimensional model using variety of constitutive models. However, the reliability of the predictions is not found systematically improved with the level of sophistication. And sometimes the predictions are deviated more than 60% to the monitored value besides using same level of erudition. This deviation is found mainly due to the selection of constitutive model, assumptions made during different stages, deviation in the selection of model parameters and simplification during physical modelling of the ground condition. This deviation can be reduced by using optimization process, optimization tools and sensitivity analysis of the model parameters which will guide to select the appropriate model parameters.

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