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A Numerical Study for Mixing Depth and Applicability of Partial Cement Mixing Method Utilizing Geogrid and Fixing Unit

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Abstract : The demand for new technique in soft ground improvement continuously increases as general soft ground methods like PBD and DCM have a application problem in soft grounds with deep depth and wide distribution in Southern coast of Korea and Southeast. In this study, partial cement mixing method utilizing geogrid and fixing unit(CMG) is suggested and Finite element analysis is performed for analyzing the depth of surface soil and deep soil stabilization and comparing with DCM method. In the result of the experiment, the displacement in DCM method were lower than the displacement in CMG, it's because the upper load is transferred to deep part soil not treated by cement in CMG method case. The differential settlement in DCM method was higher than the differential settlement in CMG, because of the effect load transfer effect by surface part soil treated by cement and geogrid. In conclusion, CMG method has the advantage of economics and constructability in embankment road, railway, etc in which differential settlement is the important consideration.

Keywords : soft ground, geogrid, fixing unit, partial cement mixing, finite element analysis
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