

عنوان مقاله:

Study of Finite element analysis of Depth of influence of rolling dynamic compaction

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خلاصه مقاله:

One of the ancient ways to improve the characteristics of loose soils is the use of dynamic compaction, which means pounding the soil with a heavy tool. Experimental research has shown that the effect of impact on the soil in compacting it is greater than the effect of vibrating the soil. Experiments have shown that the soils under vibrating rollers are less compacted than the soils under impact pentagonal rollers. But numerical research in this field is extremely limited. Recently, field research has been conducted to investigate the effect of four-cornered impact roller in some parts of the world, but no comprehensive numerical research has been done for this purpose. In this paper, the research done by the previous researchers about dynamic compaction and impact rollers has been investigated. Next, ways to detect soil improvement after dynamic compaction were studied and prediction of depth of influence was more carefully studied. Methods like descriptive pattern of improvement, surface settlement value, settlement profile, surface stress and stress profile investigation were studied that the last ones used in for determination of depth of influence. In the next step, all details of modeling of dynamic compaction by 4 sided impact roller were mentioned and next, presented model was validated by the results of field test of previous researchers. Finally, the most important parameter i.e. depth of influence verified by the results of researchers in ۲۰۱۹ and ۲۰۲۱. So, the presented model has the ability of using in the field tests.

کلمات کلیدی:

Finite Element Analysis; Impact Roller; Loose Sand; Dynamic Compaction

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