

عنوان مقاله:

Numerical Study of the Geocell Performance in the Transition Zone

محل انتشار:

ششمین کنفرانس بین المللی پیشرفتهای اخیر در مهندسی راه آهن (سال: 1398)

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خلاصه مقاله:

An abrupt stiffness changes of the track through the transition between slab and ballast superstructure in some areas like bridges decks, tunnels, and culverts, play a significant role in track degradation and the subsequent increase in maintenance costs. This is one of the key challenges which controls the speed and axle-load of current tracks. In the existing literature, various methods such as approaching slab, reduction of the sleeper spacing range, etc., have been proposed to solve the problems related to the transition zone. On the other hand, geosynthetics as a new family of reinforcement tools, are increasingly used in all fields of civil engineering. Therefore, in this paper, the use of geocell layers is investigated as a solution to the difficulties related to the transition zone using LS-DYNA software. For this purpose, three layers of geocell with different lengths and filling soil types are simulated to reduce the effects of dynamic loading caused by sudden stiffness change through the transition zone. Using numerical models, it is revealed that the use of an overlapping geocell layer pattern with three different lengths reduces the settlement value in static and dynamic conditions. However, the vertical induced acceleration does not seem to be changed with reinforcement.

کلمات کلیدی:

Transition zone, Geocell, Stiffness, Settlement

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