Response of Railway GRS Bridge Abutment under Freight Trains

Keywords: Reinforced Soil, Railway Loading, Numerical Analysis, Bridge Abutment, Freight Trains.

Indian railways have been gradually increasing the axle loads of freight trains mainly from 22.5t to 32.5t. Whereas most of the Indian railway infrastructures are mainly designed for lighter loading as compared to 32.5t axle load. The present study looks into the in-service performance of a railway Geosynthetic Reinforced Soil (GRS) bridge abutment under the effect of different freight trains. A numerical analysis was carried out using the ABAQUS software under the effect of railway loading. Also, a parametric study was carried out to study the effect of reinforcement vertical spacing and length on the deformation behavior of the abutment. It was found that the performance of the abutment was satisfactory under the effect of freight trains. Furthermore, the parametric investigation revealed that the response of the abutment is significantly influenced by the vertical spacing of the reinforcement rather than the length of the reinforcement.