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Dynamic Analysis of Double Deck Tunnel

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Abstract : The importance of cost-wise effective application and construction is getting increase due to the surge of traffic volume in the metropolitan cities. Accordingly, the necessity of the tunnel has large section becomes more critical. Double deck tunnel can be one of the most appropriate solutions to the necessity. The dynamic stability of double deck tunnel is essential against seismic load since it has large section and connection between perimeter lining and interim slab. In this study, 3-dimensional dynamic numerical analysis was conducted based on the Finite Difference Method to investigate the seismic behavior of double deck tunnel. Seismic joint for dynamic stability and the mitigation of seismic impact on the lining was considered in the modeling and analysis. Consequently, the mitigation of acceleration, lining displacement and stress were verified successfully.

Keywords : double deck tunnel, interim slab, 3-dimensional dynamic numerical analysis, seismic joint
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