Buckling Behavior of Ballasted Track Laid on Structure Boundary Area and Fragility Curves during Seismicity

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To evaluate safety of ballast track against earthquake and effects of seismic countermeasures for the railway line quantitatively, we should use the risk analysis method. A lot of studies for seismic risk management have been widely performed in various research fields. However, the study for fragility curve of track buckling has not been conducted and its basic characteristics have not been clarified yet. Through this study, we have made clear dynamic behavior of ballasted track installed on a structure during earthquake, using parameters of lateral peak resistance of ballast, degree of earthquake, etc. We have also clarified the fundamental properties of fragility curve of track buckling stability of the railway line (8km length) by the numerical analysis, specifically the effect of PGA and PGV of the earthquake motion.