

Evaluation of the Effect of Loose Bearing of Bridge on Onboard Measured Track Geometry Using Numerical Analysis

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The occurrence of a bearing loosed with a gap in steel bridges is visually detected in situ, which is quite labor intensive. This study investigated the effect of a loose bearing on track geometry using a developed numerical calculation method as a basic investigation of detecting a loose bearing using the track geometry. A non-linear spring representing the loose bearing has been introduced into the existing calculation tool identifying the loaded track geometry considering the structural deformation. The result of the above simulation clarified that the displacement of the loose bearing appears on the track geometry as a local fluctuation with a half wavelength of about 5 m, regardless of the amount of loose.