A Method for Estimating Bridge Deflection of Multi-bridge Section Based on Track Geometries Measured by 2- Bogie Track Inspection Vehicle

Koji HATTORI Kodai MATSUOKA Hirofumi TANAKA

A drive-by methodology for estimating bridge deflection based on the difference between two track geometries (DTG) has been proposed. Through numerical simulations, this paper demonstrates that the DTG in a section of consecutive simply supported bridges is equal to the sum of the DTG of each bridge. Based on this property, we propose a simultaneous estimation method for each bridge deflection using linear regression. On-site verification on five consecutive bridges indicates that the proposed method can estimate bridge deflection with an error of 3% or less, provided that the bearings are defect-free.