Method for Estimating Bending Stiffness of Concrete Girder during Train Passage Considering Effects of Concrete Cracks and Non-Structural Member

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This paper presents the results of a study on the evaluation method of concrete girder stiffness when calculating the impact coefficient and deflection. Based on the fatigue test of concrete members, we proposed an estimation formula that considers bending stiffness reduction due to crack propagation in cyclic loading. In addition, we quantified the stiffness contribution of each type of nonstructural members by means of finite element analysis for various girder structures. Finally, we proposed a simple evaluation method for the reloading bending stiffness of the girder considering the stiffness reduction due to concrete member cracks and the stiffness contribution of non-structural members.