System Dynamics Approach for Bridge Deterioration Monitoring System

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Abstract

Bridge monitoring plays an important role in reducing catastrophic failure. Structural Health Monitoring (SHM) has been performed on one of the bridge components such as decks, girders, abutments/piers independently. However, the failure can be attributed either a component defect or combination among them. Bridge deterioration model requires the analysis of complex and dynamic variables. The system dynamic (SD) is a powerful simulation method to study the dynamic and complex systems. This paper aims to discuss the concept of bridge deterioration monitoring using SD approach. The proposed model utilized variables from the previous studies to represent the bridge component interrelationship, while SD will be used to simulate the probability of bridge failure and to find the dominant bridge component that influences the failure. The model can also be used as guidance for bridge deterioration mitigation and repair program.

Keywords: bridge, deterioration, maintenance, system dynamics

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