

Modeling The Deterioration Of Road Bridges At The Provincial Level In Laos

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Abstract : The effective maintenance of road bridge infrastructure is becoming a widely researched topic in the civil engineering field. Deterioration is one of the main issues in bridge performance, and it is necessary to understand how bridges deteriorate to optimally plan budget allocation for bridge maintenance. In Laos, many bridges are in a deteriorated state, which may affect the performance of the bridge. Due to bridge deterioration, the Ministry of Public Works and Transport is interested in the deterioration model to allocate the budget efficiently and support the bridge maintenance planning. A deterioration model can be used to predict the bridge condition in the future based on the observed behavior in the past. This paper analyzes the available inspection data of road bridges on the road classifications network to build deterioration prediction models for the main bridge type found at the provincial level (concrete slab, concrete girder, and steel truss) using probabilistic deterioration modeling by linear regression method. The analysis targets there has three bridge types in the 18 provinces of Laos and estimates the bridge deterioration rating for evaluating the bridge's remaining life. This research thus considers the relationship between the service period and the bridge condition to represent the probability of bridge condition in the future. The results of the study can be used for a variety of bridge management tasks, including maintenance planning, budgeting, and evaluating bridge assets.

Keywords : deterioration model, bridge condition, bridge management, probabilistic modeling

Conference Title : ICBEM 2024 : International Conference on Bridge Engineering and Management

Conference Location : New York, United States

Conference Dates : September 12-13, 2024