

Challenge and Future Trend of Long-Life Span of Highway Bridges in Thailand

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Department of Highways (DOH) in Thailand is responsible for design, construction, and maintenance of highway and bridges. To response the early development of highway networks around the country for the past 100 years ago, the design and construction of highway bridges is preferable the use of reinforced and prestressed concrete technology with the simple span and deck structural system and configuration due to the ease of construction and the construction cost.

Nearly 17,000 highway bridges around the country (at the end of December 2023) are currently under the DOH preservation programs which are composed of preventive maintenance, repair and rehabilitation, and finally replacement of the bridges. Regarding to the bridge maintenance and management system (BMMS) of DOH, the visual inspection and detailed inspection data result in the deterioration of the bridge components, particularly, at the area near expansion joints drainage facilities and substructures surrounding by severe environment. The deterioration is recognized more rapidly in the highway route with high traffic and truck volume, particularly, when the old fashion thin deck slab structure was adopted. These types of deterioration result in shorten bridge life span e.g. less than 75 years to be replacement and thus affects to the life cycle cost of the existing bridges.

To promote the longer life span of the highway bridges in DOH network, past projects of design and construction of highway bridge projects including its deterioration are presented. The future trends for the longer life span highway bridges are also provided including maintenance technology for the sustainable infrastructure development in Thailand.