



การเปรียบเทียบผลตอบสนองสูงสุดของสะพาน ชนิด I-GIRDER โดยการวิเคราะห์โครงสร้างแบบสถิต และพลวัต เนื่องจากน้ำหนักบรรทุกทุกตามมาตรฐาน AASHTO LRFD และรถบรรทุกไทย

Comparison of the maximum response of type I-GIRDER bridges by static and dynamic structural analysis due to the load according to AASHTO LRFD standard and Thai trucks.

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Abstract

Currently, the bridge design practice in Thailand follows the specifications of American Association of State Highway and Transportation Officials (AASHTO LRFD) by using the vehicular live loading HL93 to analyze the bridge structures. However, nowadays, loads of Thai trucks are higher than HL93 trucks; therefore, it is necessary to increase live load factors to gain an equivalent level of safety conforming to the AASHTO LRFD This research aims to study the live load carrying behavior of structures and to compare maximum structural responses from both kinds of trucks by considering the results from static and dynamic analyses. The research objective is to develop a maximum response factor to increase the live loads for Thai trucks. In this study, the single span bridges ranging from 10 to 60 meters with concrete I-Girder beams are considered. The refined analysis by creating 3D bridge models is applied in this study. By comparing both kinds of trucks, it is discovered that the maximum response ratios of Thai trucks to HL93 trucks are equal to 1.05 (static analysis), 1.49 (dynamic analysis) for beam spans of 10-30 meters, and 1.35 (static analysis), 1.63 (dynamic analysis) for beam spans of 30 to 60 meters. As a result, this research presents the maximum responses to increase the live load of HL93 trucks to be appropriate for a single span bridge design in Thailand.

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