Project #11202 – Effect of Increasing Truck Weight on Bridges

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The US House of Representatives has proposed legislation (HR 1799, 2009) allowing a 17,000-pound increase in the maximum gross vehicle weight on the Interstate Highway System. This project’s main goal is quantify the effect of this increase on the internal forces to which typical slab-on-girder bridges are subjected. Both the longitudinal force effects in the girders and the transverse force effects in the deck slab will be investigated. To accomplish this, several configurations for these heavier trucks that have been proposed in the literature will be evaluated and additional configurations will be developed, as required to minimize the increased force effects. The HS20-44 with alternate military loading and the HL-93 design loadings will be used as baselines for comparison. The project will focus on short and medium span bridges with spans between 20 feet and 150 feet and girder spacings between 4 feet and 10 feet. These ranges may be extended if warranted by the trend of the evaluations at the extents of the range. By comparing the proposed truck configurations with the baseline configurations, the adequacy or deficiency of current design specifications and existing bridges will be evaluated and quantified. If significant deficiencies are determined that cannot be addressed with reasonable refinements to the configuration of the heavier trucks, strengthening techniques will be investigated in the literature and the most effective techniques will be recommended. The results of this research will assist Alabama and other state DOTs in providing a path forward for the eventuality of heavier trucks.

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