Design of VMS Bridge Support Structures for Fatigue Loads
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The 2001 edition of the *Standard Specifications for Structural Supports for Highway Signs, Luminaries, and Traffic Signals* by the American Association of State Highway and Transportation Officials (AASHTO) has been revised in its entirety through a major research project conducted under the auspices of the National Cooperative Highway Research Program (NCHRP 17-10). A major part of the revision includes updated provisions and criteria for extreme wind loads and new provisions and criteria on fatigue design. These provisions differ considerably from those in previous editions of the *Standard Specifications*. The impact of the fatigue criteria on the design of highway overhead variable message sign (VMS) support structures has not been evaluated and is not currently being implemented by the Alabama Department of Transportation (ALDOT). The main goal of this study is to conduct an experimental program to develop realistic loading criteria for the use in fatigue design of bridge-type overhead VMS support structures. The study will address fatigue loading related to natural wind and truck-induced wind gusts. An efficient step-by-step design methodology will be formulated and made available from the established fatigue loading. The data analyses will involve fundamental principles related to structural dynamics. Design examples with associated commentary will be provided that describe the methodology and application of the fatigue loading criteria developed from this study. Recommendations for fatigue design of overhead VMS support structures will be made.

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