

Seismic design force for single-span slab-girder skewed bridges

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ABSTRACT

This paper investigates the validity of seismic design force recommended by AASHTO for single-span bridges. The prescribed force is equal to the products of soil factor, acceleration and tributary weight of the structure. A three dimensional finite element analysis of straight and skewed bridges with skew angles varying from 0 to 60 degrees is used for this study. In the longitudinal direction, the bridges are assumed to be supported either by elastomeric bearings or a pinned support. In the transverse direction, the stiffness of end cross-frames is considered in the analysis. AASHTO's recommended seismic design force for single-span bridges is compared with the El Centro time history and response spectrum analysis. It is concluded that AASHTO's recommended design force for single-span straight and skewed bridges could be unsafe in certain cases. An increase in the design force to a level equal to response spectrum value is recommended for such cases.

KEYWORDS

Skewed bridge; slab-girder; seismic analysis; cross-frame; elastomeric bearing.
