

**AN ABSTRACT OF A THESIS**

**LATERAL DISTRIBUTION OF LIVE LOAD MOMENT IN HIGHWAY  
BRIDGE DESIGN**

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The objective of this research was to reevaluate Henry's method or the equal distribution method for live load moment in highway bridge design. The equal distribution factor (EDF) method is a simplified method for calculating the distribution factors of live load moment and shear. A comparison study has been conducted to investigate the differences between distribution factors calculated from the EDF method and the American Association of State Highway and Transportation Officials (AASHTO) methods. In order to carefully examine the EDF method, twenty-four actual Tennessee bridges of six different types of superstructures were selected for the study. Finite element analysis (FEA) was used to determine live load moment distribution factors for each of these bridges. The distribution factors from the EDF method for these actual bridges were compared with those from the AASHTO Load and Resistance Factor Design (LRFD) method, the AASHTO Standard method, and Finite Element Analysis. In the comparison study, the effects of type of superstructure and other structural parameters that mostly affected the calculation of distribution factors were investigated. The key structural parameters considered included span length, girder spacing, girder stiffness, skew angle, and slab thickness. From statistical analysis of the results obtained from the databases of twenty-four bridges and the NCHRP Project 12-26, modification factors were determined to correlate the EDF method with the more detailed finite element analysis. The modified EDF method is simple, reliable, and compatible with both FEA and the AASHTO LRFD method.