

HR-323 Development of Evaluation, Rehabilitation, and Strengthening Concepts for Low Volume Bridges

Key Words: Low Volume Bridges, Steel Stringers, Timber Stringers

ABSTRACT

This report contains an evaluation and design manual for strengthening and replacing low volume steel stringer and timber stringer bridges. An advisory panel consisting of county and municipal engineers provided direction for the development of the manual NBI bridge data, along with results from questionnaires sent to county and municipal engineers was used to formulate the manual.

Types of structures shown to have the greatest need for cost-effective strengthening methods are steel stringer and timber stringer bridges. Procedures for strengthening these two types of structures have been developed. Various types of replacement bridges have also been included so that the most cost effective solution for a deficient bridge may be obtained.

The key result of this study is an extensive compilation, which can be used by county engineers, of the most effective techniques for strengthening deficient existing bridges. The replacement bridge types included have been used in numerous low volume applications in surrounding states, as well as in Iowa. An economic analysis for determining the cost-effectiveness of the various strengthening methods and replacement bridges is also an important part of the manual. Microcomputer spreadsheet software for several of the strengthening methods, types of replacement bridges and for the economic analysis has been developed, documented and presented in the manual. So the manual, chapter 3. of the final report, can be easily located, blue divider pages have been inserted to delineate the manual from the rest of the report.