HR-169 Ultimate Load Behavior Of Full Scale Highway Truss Bridges

Key Words: Bridges, Field tests, Steel, timber, Trusses, Wrought iron

ABSTRACT

As a result of the construction of the Saylorville Dam and Reservoir on the Des Moines River, six highway bridges crossings the river were scheduled for removal. One of these, an old pin connected high-truss single-lane bridge, was selected for testing program which included ultimate load tests. The purpose of the ultimate load tests, which are summarized in this report, was to relate design and rating procedures presently used in bridge design to the field behavior of this type of truss bridge. The ultimate load tests consisted of ultimate load testing of one span of the bridge, of two I-shaped floor beams, and of two panels of the timber deck. The theoretical capacity of each of these components is compared with the results from the field tests. The bridge was rated using the present AASHTO Maintenance Manual. The ratings of the bridge and its components averaged about 25% of capacity. The ratings were fairly consistent except for the floor beams, where the assumption on lateral support conditions for the compression flange caused considerable variation.