

**EVALUATION OF FIELD TESTS PERFORMED ON AN
ALUMINUM DECK BRIDGE**

by

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(ABSTRACT)

Studies have shown that over 30 percent of the bridges in the United States are structurally deficient, and/or over 50 years old. The majority of the highway bridges have reinforced concrete decks supported on steel or concrete girders. Over the years, weathering and deicing chemicals have caused spalling of the concrete surrounding the reinforcing steel, deteriorating many bridges to levels that often result in closure. Repairing or reconstructing the reinforced concrete deck to meet current design specifications is often not possible or feasible, and at times seems illogical due to the possibility of reoccurrence. Because of reinforced concrete's downfalls, there is a move toward alternative materials and designs for bridge deck replacements. In particular, Reynolds Metals Company has lead the movement toward the use of a shop-extruded aluminum deck system known as ALUMADECK™.

The purpose of this research is to evaluate data collected from full-scale testing under test truck loading of an in-service ALUMADECK bridge system. The bridge is known as the Little Buffalo Creek Bridge and is located in Mecklenburg County, VA. The topics researched from the load tests are the composite action amongst the deck and supporting members, the load distribution amongst supporting members, the dynamic load allowance for supporting members, and the developed deck stresses due to test truck loads. Evaluations of the research topics include comparisons to the methods employed in the design calculations provided by VDOT and to those of the American Association of State Highway and Transportation Officials (AASHTO) design specifications.