

This topic is “practice ready.” Yes No

INNOVATIVE RAHABILITATION OF AGING BRIDGE ABUTMENTS

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Abstract

Bridges throughout the United States are becoming unserviceable faster than they can be replaced. The state of Iowa has 4,968 structurally deficient bridges and currently ranks at the top of the list in the U.S. for the largest number of structurally deficient bridges. Five states –Iowa, Pennsylvania, Oklahoma, Missouri, and Nebraska, account for over 1/3 of all deficient bridges in the U.S. based on 2016 ARBTBA statistics. A large percentage of these bridges are rural single-span bridges with low annual average daily traffic (AADT), but that are vital for mobility of commerce.

A new concept in mitigating this mounting crisis is presented. Current practice typically includes removal and replacement of the abutments and superstructures causing strained budgets and extended road closures. There is now an innovative approach where the existing abutment is left intact and used as a form during construction of the structural rehabilitation. This process can take as little as a few days and environmental concerns and permitting are avoided or minimized. The concept limits traffic disruption while minimizing costs; traffic flow can continue during non-construction hours. Costs are half or less, compared with the typical full removal and replacement.

This new concept combines several aspects of reinforced soil technologies into an integrated package that will allow designers and owners a new option when considering when and how to replace or reinforce an existing bridge or box structure. Utilizing concepts and technologies currently used to permanently stabilize slopes, these innovative designs are proving to be a viable option for bridge owners to address bridge abutment deficiencies. When appropriate, the technology has proven to be faster and less expensive than conventional removal and replacement.

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