

Evaluation of Bridge Components Salvaged from Historic Route 66 in California

A unique set of older timber highway bridges are located along historic U.S. Route 66 in Southern California. The original bridges were all constructed between 1929 and 1935—more than 80 years of continuous service. Along a 111-mile stretch between the Town of Daggett and the Mountain Springs Road exit on Interstate 40 are 127 timber bridge structures (96 that are greater than and 31 that are less than 20 ft in total length). This stretch of historic Route 66 in the Mojave Desert is currently the focus of extensive efforts by the County of San Bernardino to preserve its iconic legacy and protect its key cultural and historical resources, which include the timber bridge structures. This many structures still in service, each having experienced similar exposure conditions and traffic histories, provides a great opportunity to learn more about timber bridge performance and durability characteristics, specifically within a desert region of the southwestern United States.

Background

Very little literature focuses on service life expectancy of timber as a bridge material. In fact, many engineers and decision makers believe the misconception that timber is not a high-durability bridge material.

Objective

The main objectives of this project will be to (1) provide technical assistance with new timber bridge design and construction efforts, (2) salvage timber bridge components for further laboratory evaluation, and (3) draft a final project report detailing our findings. Achieving these objectives will provide new knowledge about the performance of timber as a bridge material in a high-desert climate of the United States.

Approach

Bridge components (stringers and pile caps) were identified for salvage during bridge demolition. A flatbed



Original design features of the timber bridges located along historic California Route 66 (highlighted in purple) include standard 19-ft simple spans, timber pile/cap intermediate supports, timber bridge railing and curb system, and a flexible metal approach railing mounted on timber posts.

trailer truck picked up and transported these components to the Forest Products Laboratory (FPL) in Madison, Wisconsin. Several NDE techniques will be utilized to scan these bridge components in the laboratory, and static strength tests will be conducted when possible to estimate member residual strengths. Tests will also be conducted to identify the species of wood and detect or identify the presence of wood preservation chemicals that may have been used.

Expected Outcomes

This effort will generate data about the durability of the bridge timbers, and it should allow for more reliable prediction of timber bridge service life expectancy. The findings will also help to support bridge deterioration modeling efforts within the ongoing FHWA Long-Term Bridge Performance Program. A final report will provide a description of the timber bridge components along with the results of laboratory testing.

Timeline

The Dola and Lanzit Ditch bridges, located approximately 6 miles east of the City of Amboy, were the first two timber bridges to be deconstructed in March 2017. Salvaged materials were shipped to the FPL for further analysis in April 2017. Laboratory testing to determine their residual strength is planned for completion in fall 2017.

Cooperators

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