



CENTER FOR INFRASTRUCTURE ENGINEERING STUDIES

Sappington Bridge Demolition, Crawford County, Mo

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16. Abstract After obtaining the requisite permits and permissions, demolish the longer of the two steel spans of the Sappington Bridge as a service to Crawford County through the use of explosive demolition by a unit of the U.S. Army or by a demolition contractor. Return the demolition site to its original state within the direction of permits and permissions. Transport the shorter of the two steel spans to the UMR campus for testing.			
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Sappington Bridge Demolition, Crawford County, MO

A project to benefit Crawford County, Missouri, the U.S. Army, the Missouri Department of Transportation, and the University of Missouri – Rolla (UMR) was conducted jointly by the UMR Center for Infrastructure Engineering Studies (CIES) and the UMR Rock Mechanics and Explosives Research Center (RMERC). The Sappington Bridge, a steel arch span bridge constructed in 1904, was demolished due to its advanced state of deterioration. By arrangement with Crawford County, a 55-ft span of the old bridge was brought to the University Structures Laboratory in Rolla, while the longer, remaining span of the bridge was demolished using explosives. Originally, the longer span was to be blown up by C Company of the 5th Engineering Battalion (from Ft. Leonard Wood, Missouri) under the supervision of personnel from UMR. Unfortunately, required authority for the operation from the Department of the Army could not be obtained in time to meet permitting requirements for the demolition. Therefore, a commercial demolition contractor was employed to perform the demolition, and to remove the scrap.

Missouri has many steel bridges of similar age and construction as the Sappington Bridge, but most are not as deteriorated and are still in use. If relatively inexpensive, reliable means can be found to reinforce and repair these bridges, the state stands to save money by repairing rather than replacing them. UMR researchers have been studying infrastructure reinforcement and repair for a number of years, and have been looking for structures to use as examples of their techniques. The Sappington Bridge proved to be a good candidate, as it had a small span that could be moved to Rolla for repair and test after the main span was demolished.

Crawford County is to build a new bridge to replace the current Sappington Bridge (located off Crawford County Highway D, south of Sullivan). UMR helped the county by providing services as the coordinators of the project. RMERC assisted the Army in the initial phases of the project by training C Company to use commercial means for explosive demolition.

The longer span of the bridge was demolished on March 21st 2002, and the short span was delivered intact to UMR by truck on April 4th. This short span is approximately 55 feet (length) by 18 feet (width). During removal, and transportation to UMR some of the bridge members were slightly deformed. A local machine shop was hired to

make the necessary repairs and installation of mounting plates to place the bridge at the UMR mine site located 5 miles from the main campus. When in place this bridge will be instrumented with displacement transducers, strain gages, wireless sensors, and hydraulic jacks for testing and class demonstrations. Students from local high schools and from UMR structural analysis classes will have a great opportunity to witness testing and data collection on a full sized actual structure. It is expected that this bridge demonstration project will be fully functional by December 2002.

Unfortunately, the bridge was not well placed for onlookers to observe the blast. There was no location where the bridge could be seen that was also far enough from the bridge to be safe from flying debris. So, spectators were not allowed to be within the blasting area (on land or on the river) during the actual demolition. UMR personnel and local TV and newspaper journalists, however, provided extensive photographic and video documentation of the blast.

All scrap has been removed from the bridge site, and divers checked the river channel for damage and for hazards to river travel; none was found. The County is making initial preparations for building the new bridge at the site.

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