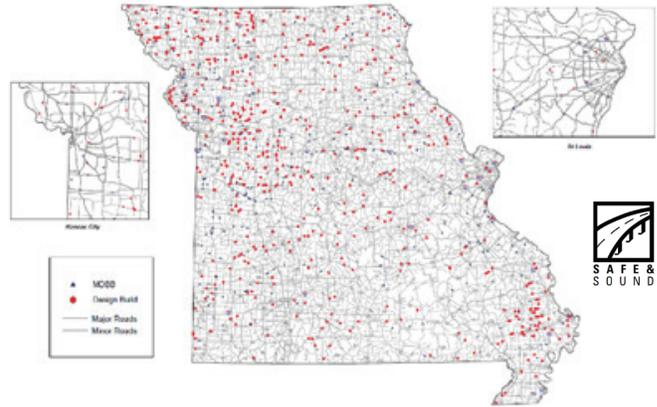




# MoDOT SAFE & SOUND BRIDGE IMPROVEMENT PROGRAM

In the mid-2000s, over 10% of Missouri's bridges were rated serious (Condition 3) or poor (Condition 4) under the Federal Highway Administration (FHWA) National Bridge Inspection Standards. The timeframe to repair the approximately 1,100 bridges using MoDOT's standard capital programming approach was too long. Missouri accelerated the rehabilitation or replacement of 802 of these bridges under the Missouri Safe & Sound Bridge Improvement Program. MoDOT pursued a Public-Private Partnership to construct and maintain the bridges for 20 years. That procurement was found unaffordable during a major recession in 2008. Subsequently, the program was delivered by more traditional financing and project delivery. The program was completed with GARVEE-bond financing and a combination of D-B and D-B-B procurement. Five hundred fifty-four of the bridges, known to be replacements, were bundled into a single D-B project. The remaining 248 bridges, primarily major rehabilitations, were delivered by conventional D-B-B. Those bridges were bundled into bid packages of 2 to 10 bridges each.

The contract for the D-B project was not prescriptive and allowed for construction schedule flexibility. The RFP was written to minimize closure duration and overall project timeline. The bridges that were constructed met the requirements in the request for proposal but did not follow typical MoDOT details, leading to concerns about durability and more maintenance than what is typical of MoDOT standard bridge types. They were constructed faster than



Safe & Sound Bridge Improvement Plan.

traditional MoDOT bridges due to the design details that were used.

The D-B-B contract consisted of 248 bridges bundled by structure type, location, and schedule. The first 100 bridges were considered "fast start" bridges. These were mostly superstructure replacements or rehabilitation projects with minimal right-of-way needs and coordination. The bundles were sized and scheduled to allow a spectrum of local contractors to perform the work. (Most of the 802 bridges were constructed by "local" contractors. The D-B contractor self-performed a small percentage themselves.) Overall, the program was very successful. MoDOT was able to replace 802 bridges in just 4 years.

**Name of Agency:** Missouri Department of Transportation (MoDOT)

**Location:** Statewide (at least one in every county)

**Project Delivery Method:** Design-Build (D-B; 554 bridges)  
Design-Bid-Build (D-B-B; 248 bridges)  
802 Total Bridges

**Procurement Method:** Best Value, D-B; Low Bid, D-B-B

**Total Project Cost:** \$685 million (\$487 million for D-B, \$198 million for D-B-B) Current funding is around \$8.0 million per year.

**Funding Source:** Federally Funded with GARVEE Bonds

**Construction Schedule:** There are 802 bridges, with a program goal to complete construction in 5 years. The D-B portion required 3 years of construction to complete. The D-B-B started 1 year earlier and finished at the same time. Average road closure was 42 days. Road closures were necessary to make program affordable. Without closures, the program would have been reduced by 40%.

**Project Website:** <http://www.modot.gov/safeandsound/districts.htm>

## SUMMARY

Program Goals	To quickly reduce the percentage of bridges in poor condition on the local system.
Bridge Selection Criteria	<ul style="list-style-type: none"> <li>• State owned.</li> <li>• Poor condition.</li> <li>• Limited or no right-of-way needs.</li> <li>• Relatively small bridges (average 147-ft long and 24-ft wide).</li> <li>• Roads that can be detoured preferred.</li> <li>• Low-volume roads. Annual average daily traffic (AADT) volume under 400 preferred.</li> <li>• No bridges involving a railroad.</li> <li>• No historic bridges.</li> <li>• Minimal environmental impacts.</li> <li>• Bridges selected to maximize the number of bridges improved, not total deck area.</li> </ul>
Delivery and Procurement Method	D-B, Best Value D-B-B, Low Bid
Funding Sources, Financing Strategy	Federally Funded with GARVEE Bonds
Environmental, Right-of-Way, and Utility Considerations	<p>D-B Contract:</p> <ul style="list-style-type: none"> <li>• All bridges were categorical exclusions. MoDOT performed the environmental coordination.</li> <li>• Bridges with little anticipated right-of-way needs were chosen. A reserve fund was set up to purchase right-of-way. As an incentive to the D-B team to work within the existing right-of-way where possible, any money left in the reserve fund was split between the state and the contractor.</li> <li>• A SUE contract was performed by MoDOT in advance, and utility information was provided in the request for proposal (RFP). Utility coordination was the responsibility of the D-B team.</li> <li>• Hydrology and hydraulics was performed by the D-B team. For bidding purposes, it was assumed that the bridge opening would be the same as what exists.</li> <li>• MoDOT funded a temporary position at the review agency to process the flood plain permits in a timely manner.</li> </ul> <p>D-B-B Contract:</p> <ul style="list-style-type: none"> <li>• Final plan, specification and estimate (PS&amp;E) packages were completed by MoDOT and advertised.</li> <li>• All coordination performed by MoDOT.</li> <li>• Hydrology and hydraulics performed by MoDOT.</li> <li>• Bridges with little anticipated right-of-way needs were chosen.</li> </ul>
Risks	<p>D-B Contract:</p> <ul style="list-style-type: none"> <li>• MoDOT was responsible for proper scope in the RFP.</li> <li>• MoDOT assumed the risk for a bridge opening increase needed for hydraulic capacity.</li> <li>• The D-B team was responsible for design and construction.</li> <li>• The D-B team assumed the risk for geotechnical design.</li> <li>• Weather was a shared risk.</li> </ul> <p>D-B-B Contract:</p> <ul style="list-style-type: none"> <li>• Risks are similar to traditional D-B-B projects.</li> <li>• MoDOT was responsible for providing a complete design package.</li> <li>• MoDOT was responsible for all coordination with third parties.</li> </ul>
Owner Management/Quality Assurance	<ul style="list-style-type: none"> <li>• MoDOT created a Safe &amp; Sound Team comprised of eight staff members and did not report to the Bridge Section.</li> <li>• The Safe &amp; Sound Team had the power of the chief engineer to make decisions. This allowed them to be responsive and to avoid delays for this fast-paced project.</li> <li>• MoDOT performed all community relations.</li> </ul> <p>D-B Contract:</p> <ul style="list-style-type: none"> <li>• The Safe &amp; Sound Team had daily conference calls and met weekly with the D-B team to discuss issues and head off problems.</li> <li>• QA/QC was the responsibility of the D-B team. The QA/QC process worked well.</li> <li>• MoDOT performed the material testing.</li> </ul> <p>D-B-B Contracts:</p> <ul style="list-style-type: none"> <li>• Run like traditional D-B-B contracts.</li> </ul>
Stakeholder Communication	<ul style="list-style-type: none"> <li>• MoDOT had an industry meeting prior to proposing the massive bridge bundle contract to gauge interest from the contracting community. Over 200 people from four different countries showed up.</li> <li>• The project had the necessary political buy-in to get it done. The poor condition of rural bridges was evident statewide.</li> <li>• MoDOT launched a successful public relations campaign to encourage the public to buy in to short-term road closures to have these bridges replaced.</li> <li>• MoDOT met with the financial markets to determine the best way to fund the project.</li> </ul>

