

Missouri Department of Transportation
Kevin Keith, Director

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February 22, 2012

Re: Request For Information (RFI) – Poplar Street Bridge Resurfacing

Dear Potential Vendor:

The Missouri Department of Transportation (MoDOT) is seeking information through a Request for Information (RFI) to develop a set of alternative pavement treatment options for placement on the Poplar Street Bridge over the Mississippi River in St. Louis. MoDOT will review the set of alternative pavement treatment options, and is considering a Request for Proposal for a research project. The research project would be conducted to test and make recommendations to MoDOT on the best alternative for the placement of a pavement treatment that is cost-effective.

Background:

The Poplar Street Bridge was built in 1967 and incorporates the use of an Orthotropic steel bridge deck which is placed on two steel box girders in each direction. The structure is five spans and is 2,165 feet long. It carries three interstate routes (I-70, I-64 and I-55). The superstructure is placed on a common set of substructure piers. The steel plate deck is 9/16 inch thick, with select areas over the interior piers being 5/8 inch and 3/4 inch thick. The Orthotropic steel plate deck is reinforced by a system of longitudinal stiffeners and transverse floor beams.

The original pavement treatment was the placement of two layers of an epoxy tack coat then on top of that was 1-1/2 inches of a rubberized asphalt concrete wearing surface. Unique was that the second layer of the epoxy tack coat had stone chips embedded as an anchor for the rubberized asphalt wearing surface. The original wearing surface performed well until 1983.

At that time the original wearing surface was removed to bare steel and replaced with an identical wearing surface. The second wearing surface did not perform well and lasted only about 3 years.

After this failure in 1986 a third proprietary wearing surface was applied that had a fiberglass mat added to the asphalt wearing surface and exhibited a short lifespan due to excessive rutting and shoving.

In the early 90's MoDOT awarded a contract to the University of Missouri-Columbia to evaluate several type of products to make a recommendation for replacement. That research



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included the testing of six different treatments requested by MoDOT. These included an epoxy asphalt concrete, polymer-modified asphalt concrete, three epoxy concretes and a methyl methacrylate concrete overlay. The study also evaluated three different plate surface conditions. The plate surface conditions studied were bare steel (sandblasted), sandblasted steel protected by a coating of water-based zinc paint and sandblasted steel with a coating of carbozinc paint.

The result of the study was recommending the placement of a thin-lift (two-coat) epoxy concrete which was placed on the bridge deck in August 1992. The University of Missouri-Columbia also conducted field inspections during a five year period from 1992-1997 to evaluate the performance.

The surface placed on the deck in August 1992 lasted until the summer of 2006 at which time a similar wearing surface of epoxy concrete was placed. This latest surface is exhibiting a lot of delaminations and has cost a lot of time and expense to keep patched in the last few years.

A project was completed last year to patch the existing epoxy polymer in-kind and total surface seal with methyl methacrylate. The patching has become more intensive and MoDOT is looking to develop potential alternatives for a full replacement.

MoDOT has seen that the orthotropic steel deck has exhibited higher and lower temperatures than the surrounding air temperatures. Field observations during overlay patching have shown the steel deck to have temperature ranges anywhere from 0° F to as high as 150° F. Thus MoDOT asks offeror to consider temperatures within these ranges when submitting their response.

On the MoDOT Innovation Library, which is a website that provides links to MoDOT research reports includes a link to the 1999 research project entitled "Temperature Dependent Performance of the Polymer Concrete Wearing Surface on the Poplar Street Bridge". In this research there were 3 different temperature ranges (0°, 20° and 73° F) that tests were conducted. MoDOT asks for any offer submitting information of potential research processes, procedures and criteria needed to evaluate the different pavement treatment options, also consider temperature ranges in their response. Below is a link to that report:

<http://library.modot.mo.gov/RDT/reports/Ri90016/RDT99001.pdf>

Also included with this RFI are some pictures from the Poplar Street Bridge. These pictures have been taken within the last year to 18 months to give some indication of the type and severity of the existing overlay. It should also give some indication of the challenge to remove the existing deck. Within the pictures there have been some labels added to give some indication of the timeline of when the picture was taken and from where on the bridge.

<http://www.modot.mo.gov/rfipoplarstpics.htm>

Desired Information:

Below is information that MoDOT has discussed and would like to have further information, thus the interest to issue this RFI. The offeror is being asked to provide information that they have knowledge. MoDOT is not expecting offeror to provide information on each of the options below.

The following are some pavement treatment types that MoDOT has considered as possible alternatives and is seeking information on these and any additional pavement treatments:

- Spray-on membrane with asphalt overlay
- Epoxy concrete overlay
- Polyester concrete overlay
- Ultrathin Bonded asphalt wearing surface (UBAWS) over existing pavement surface
- Ultrathin Bonded asphalt wearing surface (UBAWS) placed on bare steel
- Standard dense graded overlay
- Rubberized asphalt overlay
- Methyl methacrylate overlay
- Polymer-modified asphalt concrete overlay

MoDOT will request that any pavement treatment alternative offered will also include recommendations as to a Maintenance Plan for each alternative. Information of each pavement treatment alternative offered shall also include placement procedures and an expected timeline for placement. This information is of interest to develop work zone plans and develop a schedule for the placement in staged construction. MoDOT is looking for pavement treatment alternatives that can withstand the extreme temperature ranges that the steel deck can exhibit on a daily basis and during the life of the material. These large temperature ranges along with the structural details of the structure contribute to unique expansion and contraction of the material that needs to be accounted for. Cost information and expected life is also requested on any pavement alternatives that are offered.

After review of pavement treatment options, MoDOT is considering development of an RFP for a research project to evaluate the preferred alternatives. This research project will evaluate the preferred alternatives in both a laboratory setting and in the field.

Information provided in response to this RFI is for preliminary review only. No awards will be made based on any response(s) received to this RFI. The Offeror is hereby advised that all information contained in or related thereto shall be open to public inspection and that MoDOT does not guarantee nor assume any responsibility whatsoever in the event that such information is used or copied by individual person(s) or organization. Therefore, the Offeror must submit its proposal based on such conditions without reservations.

Please submit your response to the information above directly to me. E-mail submittals are acceptable. If you chose to send your response with back-up information you may send your information to my attention at the following address:

Bill Stone, PE
Research Administrator
Construction and Materials
Missouri Department of Transportation
1617 Missouri Blvd, PO Box 270
Jefferson City, MO 65102-0270

All response shall be received **no later than April 30, 2012**. If you should have any questions, please contact me at 573-526-4328. MoDOT appreciates the interest you may have in participating in this RFI.

Sincerely,

A handwritten signature in black ink that reads "Bill Stone". The signature is written in a cursive, slightly slanted style.

Research Administrator