



## Additional repairs required for Purcell/Lexington bridge before reopening

FOR IMMEDIATE RELEASE

April 22, 2014

PR# 14-018

Inspectors have located additional cracks on the US-77/SH-39 bridge between Purcell and Lexington in areas where cracks were not anticipated. The Oklahoma Department of Transportation continues to remain confident that the bridge will open on or before the June 14 deadline.

The contractor on the project was making great progress with repair bracket installation when during continuous inspections two additional cracks were found near the gusset plates in the manganese alloy lower cord. Ninety-six areas on the bridge are now slated for repair, adding to the work that must be completed before the bridge can open. All areas of the bridge will continue to be checked and in consultation with experts the department feels certain once the recently cracked areas are repaired the bridge will be secure.

“I know this news is not welcomed by anyone, but the department remains steadfast and determined to get this bridge open safely and as quickly as possible for the people of Purcell and Lexington,” ODOT Executive Director Mike Patterson said.

Although the recently formed cracks are associated with welded manganese steel, they were unexpected because the welds used were relatively small compared to those used on the initial cracked locations and engineers believed that not enough heat was generated to cause the material to become weakened. No additional cracked areas are expected, because there are no other areas of the bridge that include welded manganese steel.

When the contract for repairs was awarded, ultrasonic impact treatments were slated to be used on all welds made to manganese members regardless of the prevalence of cracks. This device uses vibrating needles to relax tension on the base of the welds. This treatment appeared to be working on the gusset plate welds areas until cracks began to appear. The ultrasonic impact treatments are an ongoing repair and had no bearing on the bridge reopening as these repairs could be completed under traffic.

“Initially it was thought that these locations could be sufficiently different from the welded manganese areas that they might not be susceptible to cracking, especially since no cracking had been observed during the time when about 180 cracks were developing at the original cracked locations,” Modjeski and Masters Chairman Emeritus and Senior Technical Advisor John Kulicki, Ph.D., P.E., said.

The repairs for the gusset plate cracks will be similar to the ongoing repairs in the sense of adding redundancy, but instead of brackets, the contractor will add reinforcement plates connected to the existing plates using bolts. These repair plates will support the bridge in case the cracks go through the entire beam.

“Although I regret that there is additional work to be completed on the bridge, I’m glad that we found the problem and are going to be able to fix it without endangering the safety of drivers and still within the same timeline,” ODOT Chief Engineer Casey Shell said.

The cost for repairs is still being negotiated with the contractor, but is expected to be an additional \$1-1.5 million and the contractor and ODOT are determined to get the bridge opened by the original deadline of June 14. Ongoing inspections on the bridge remain to ensure that if additional problems are found, they are addressed immediately. The department will always err on the side of caution and take steps to protect drivers’ safety.

INFORMATION RELEASE

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The bridge was initially closed January 31 following inspections that revealed several cracks in the lower members of the bridge. Those lower members were made of a rare alloy called carbon manganese steel which is not conducive to welding. The department was not aware that the bridge contained this alloy and designed the previous rehabilitation project to use welding, which is common practice on normal carbon steel.

There was nothing in any of the inspection records dating back to 1950 to indicate that any portions of the bridge are made of anything unusual. Engineers had to go back to the original plans from 1938 to make the discovery.

Constructing a replacement bridge has become a top priority the department and steps have been taken to expedite the preliminary processes by hiring a consultant to complete the environmental clearance document.

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