

Frequently Asked Questions

Why is the bridge closed?

On May 11, 2021, a mechanical fracture was discovered during a routine inspection of the bridge. The bridge was immediately shut down to all traffic* above and below the structure to ensure the safety of the motoring public along the interstate, as well as vessels traveling along the Mississippi River. The closure will allow for an extensive investigation into the cause of the fracture, extent of the damage, and repair of the bridge.

*On May 14, 2021, the U.S. Coast Guard reopened the area under the bridge to river traffic.

When will the bridge reopen?

At this time, it is unclear how long the bridge will remain closed to interstate traffic. An emergency contract has been awarded to allow work to begin quickly, lessening the long-term impact to motorists; however, the bridge will remain closed during the repair work.

What is a mechanical fracture?

Typically, a fracture is the separation of an object or material into two or more pieces. In this case, the mechanical fracture along the bridge is essentially a crack, and not a complete break.

The fracture was found in a steel box beam, which is comprised of an inboard and outboard side plate and a top and bottom tow cover plate. The fractured components include 100% of the outboard plate, 100% of the top plate, and approximately 20% of the bottom plate.

How serious is the fracture?

The fracture, or crack, is in a steel support beam that is critical to the structure of the bridge. For that reason, the bridge is closed to all interstate traffic until repairs can be made.

What caused the fracture?

It is not clear what caused the fracture. Generally, the root cause of mechanical fracture can be overload, shock, fatigue, or stress; but the exact cause can be difficult, if not impossible, to determine. Following the completion of repairs on the bridge, the damaged steel will be preserved for detailed forensic investigation.

How will the bridge be fixed?

Repairs to the bridge will occur under an emergency repair contract awarded to Kiewit Infrastructure Group. The work has been divided into two phases as outlined below.

Phase 1: Installation of Steel Plates

Steel plates will be installed on each side of the fractured bridge piece. This will strengthen the damaged steel plates, providing the stability needed for contract crews to install equipment for the permanent replacement of the damaged components and to continue bridge inspections.

Phase 2: Replacement of Damaged Steel

Once design plans are finalized, contract crews will begin the process of removing and replacing the damaged components before reopening the bridge to traffic.

How long will it take to fix it?

Repair work is expected to begin as early as Wednesday, May 19, 2021. The timeline to complete the repairs and reopen the bridge has not yet been determined.

Why can't traffic be on the bridge during repairs?

Due to the location of the fracture and the nature of the work, as well as for the safety of the motoring public, both phases of construction will need to be completed before the bridge can be reopened to interstate traffic.

Where will traffic be detoured?

Detours are in place in Tennessee and Arkansas. The primary interstate detour route is I-55. Interstate and local detour maps can be viewed and downloaded [here](#).

[I-40 Hernando DeSoto Bridge Detour Map – Interstate Routes \(PDF\)](#)

[I-40 Hernando DeSoto Bridge Detour Map – Local Routes \(PDF\)](#)

Can I-55 withstand the additional traffic?

Built in the 1940s, the I-55 Mississippi River bridge is an older structure; however, it was designed to carry interstate traffic loads. The additional traffic from the I-40 bridge does not overload the I-55 bridge. The bridge will see the same traffic loads, but for a longer duration during peak hours.

The I-55 Mississippi River bridge was last inspected in August 2020. Out of an abundance of caution, TDOT will re-inspect the bridge between May 18-21, 2021, to ensure the safety of anticipated traffic volumes due to the I-40 detour.

Can ferries be used to carry motorists across the river?

Access points would have to be built on both sides of the river to accommodate a ferry system. Construction of that magnitude would not be completed in time to be beneficial for the duration of the bridge repairs.

Who is responsible for the bridge?

The Tennessee Department of Transportation (TDOT) and the Arkansas Department of Transportation (ARDOT) share responsibility for the bridge. ARDOT is responsible for routine and special inspections. TDOT is responsible for maintenance and repairs.

How often is the bridge inspected?

Prior to the discovery of the fracture, the bridge was inspected annually by ARDOT or its contractors.

Under Federal law, Departments of Transportation, including TDOT and ARDOT, are required to inspect all bridges that are over 20 feet long on public roads every 24 months, unless the condition of the bridge necessitates a re-inspection. Following each inspection, each bridge is rated to determine if more frequent inspections and/or repairs are needed.

Due to its design, this bridge is considered “fracture critical” and must be inspected every year. See <https://www.fhwa.dot.gov/bridge/120620.cfm> for more information.

When was the last inspection?

Prior to the May 2021 inspection, the last bridge inspection was completed in September 2020.

What is included in an inspection?

Visual inspection is the primary method used to perform routine bridge inspections. Tools for cleaning, probing, sounding, and measuring, as well as visual aids, are typically used. Bridge ratings are assigned based on the condition of the deck (surface), superstructure (deck support), and substructure (foundation, pier/column, abutment).

National Bridge Inspection Standards are identified in the Federal Aid Policy Guide under 23 CFR 650C. See <https://www.fhwa.dot.gov/bridge/nbis.cfm> for more information.

Why wasn't the fracture found sooner?

On May 17, 2021, ARDOT confirmed there was a failure in the inspection process. Drone video from a May 2019 inspection shows evidence of the fracture.

In response to the findings, ARDOT officials said the Department will change the inspection process by adding redundancies, with further changes possible in the future.

See News Release – ARDOT Confirms Failure in Inspection Process and Vows to Increase Redundancies to Avoid Repeat Event <https://www.ardot.gov/news/21-134/>

When was the bridge last repaired?

TDOT has performed general maintenance as needed. The most significant project in recent years was the seismic retrofit of the bridge that occurred between 2000 and 2015. During that process, the deteriorated west approach was completely replaced with a new steel plate girder structure.

What is seismic retrofit?

Seismic retrofitting is the modification and reinforcement of existing structures to make them more resistant to seismic activity, ground motion, or soil failure due to earthquakes.

Did the seismic retrofit damage the bridge?

The seismic retrofit project addressed areas vulnerable to seismic events by strengthening foundations and other elements. The work will allow the bridge to be able to withstand a 7.7 magnitude earthquake.

No modifications were made to the area where the fracture was found on May 11, 2021.