



DATE: December 1, 2022
TO: Darrel Pyle, City Manager
THROUGH: Shawn O'Leary, Director of Public Works
FROM: Scott Sturtz, City Engineer *SS*
SUBJECT: Staff recommended closure of the 60th Avenue NE Bridge located between Rock Creek Road and Tecumseh Road NBI# 09189

BACKGROUND:

On Monday November 28, 2022, Public Works staff received an updated inspection report for the 60th Avenue NE Bridge over Rock Creek located between Rock Creek Road and Tecumseh Road, see attached location map. This report indicates that there has been additional degradation of the structure requiring additional consideration of the safety of the bridge. Upon receipt of the attached inspection report, staff engaged in review of report with representatives from H.W. Lochner, an engineering firm selected by the City of Norman to conduct routine inspection of nationally registered off-system bridges located within the City limits. During review of this report, concerns regarding further deterioration of structural components were raised.

The referenced bridge structure was originally constructed in 1940 and has been deteriorating for several years. Staff has bridge inspections from 2013 to present on a 2 year cycle. The bridge inspections are required and funded by the Oklahoma Department of Transportation (ODOT). In 2019, H.W. Lochner conducted their first inspection cycle as the selected engineering firm tasked with inspection of bridges in Norman. It was during this inspection cycle that the load posting was re-evaluated and it was determined the load rating of 10-ton was inadequate and it was reduced to a posted load rating of 4-tons. For frame of reference a ½ ton pick-up unloaded in approximately 3 tons and a school bus is 13 tons.

In January 2020, as a result of this reduced posted load rating, the City of Norman entered into a separate agreement with H.W. Lochner in the amount of \$9,576.00 to investigate options improve the load capacity on this bridge. A summary of these findings has been attached. This summary includes 6 alternatives geared towards temporary improvement of load posting and 1 alternative for replacement of bridge. The rehabilitation options would only increase the load rating to 11 tons in the best case which limited the use of the bridge to passenger vehicles. None of the recommendations were determined to be feasible or significant enough at that time and the posted load remained at 4-tons. In addition, there were still a lot of concerns with the proposed efforts including if the structure was physically capable safely handling the stresses of the rehabilitation efforts. A couple of examples are:

- Does the existing steel have weldable surfaces?
- This structure being 80 years old has a lot of corrosion that may prevent ability to create good supportive contact on additional bracing.

office memorandum

- The option of removing pavement thickness from the deck in order to lessen the load on the bridge would be complicated as the equipment utilized for removal activities far exceeds load posted limits.

Following the 2021 Inspection cycle for City of Norman bridges, H.W. Lochner placed the 60th Avenue NE Bridge on an accelerated inspection cycle reducing the interval from 24 months to 12 months resulting in the report provided on November 28, 2022. This report indicates that there has been a rapid deterioration of the structural beams on the bridge as shown in the photos in the report resulting in additional concerns for the safety of the travelling public over this bridge. The photos show holes in the beams and large areas where sections of the steel are delaminating.

DISCUSSION:

Staff has worked to proactively to begin preparations for the referenced bridge, including a recently approved contract for design of replacement with Garver LLC. Upon reviewing the findings provided by H.W. Lochner, staff engaged Garver requesting a peer review of the described bridge and inspection report. On Wednesday November 30, 2022, staff received the attached review supporting the findings of the Lochner inspection report and further solidifying concerns of this bridge's structural integrity. In addition, Garver provided recommendations related to the bridge's condition and operational capacity. These recommendations include reinforcing the structure, limiting traffic to one-lane for better weight distribution or closure of the bridge. The Garver report also recommended adding an additional critical damage item due to the deterioration and damage of the pier caps. This item would put the bridge on a 90 day requirement to repair or close the bridge.

Although Garver is under contract to design the for replacement of this bridge and that work is underway, Final Plans and Bid Documents are not expected until December of 2023 and construction of this bridge is not funded at this time. The estimated cost for the replacement of this bridge is \$3-4 million.

Since 2016, the City of Norman has had 3 bridge failures resulting in emergency closure. The Havenbrook Bridge in 2016 (Ward 3), Main street Bridge in 2018 (Ward 3) and the Imhoff Road Bridge in 2021 (Wards 2 and 4). We are fortunate that these past events have not resulted in severe injury or death.

After consultation with H.W Lochner, Garver and City staff it had been determined that out of an abundance of caution, staff is recommending closure of the 60th Avenue NE Bridge over Rock Creek. A planned closure, although inconvenient is the safest and most guaranteed option available to the City of Norman at this time. The bridge closure will be properly signed and barricaded to protect the travelling public. Staff will continue to search for remedies for the repair or replacement of the bridge.

Public safety was large concern in the decision to close this bridge. This closure was discussed with emergency services. Based on the existing load rating it was not utilized as

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a route for emergency services and this closure will not affect the current response times of those agencies.

RECOMMENDATION:

Staff recommends closure of the 60th Avenue NE Bridge over Rock Creek located between Rock Creek Road and Tecumseh Road effective December 2, 2022, out of an abundance of caution relating to structural concerns on bridge.

Approved by:

Darrel Pyle, City Manager