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DEPARTMENT OF TRANSPORTATION
STRUCTURES DIVISION
BRIDGE INSPECTION AND REPAIR OFFICE
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BUTCH ELEY
COMMISIONER

BILL LEE
GOVERNOR

July 14, 2022

To: Kevin Howard
City Of Pittman Center
Mayor

Subject: **Bridge Federal ID 780A3590001 Requires Closure**
Bridge Location No. 78 - 0A359 - 0.01
Grassy Branch Rd. over Little Pigeon River
Sevier County

The enclosed Bridge Evaluation Report (BER) requires the subject bridge to be closed to all traffic immediately as per attached TDOT memo dated July 13, 2022. The bridge closure shall be completed to remain in compliance with TDOT and FHWA regulations.

Pictures of proper closure are required as verification as soon as possible but no later than July 21, 2022. Specifically, pictures of the closure barricades should be taken at each bridge end and should demonstrate the proximity of the barricades and the bridge. Pictures should also be taken of advance warning barricades and advanced warning signs. All pictures should be labeled with the Bridge Federal ID, the date, and the number of the approach.

If structural repairs are completed, the TDOT Regional Bridge Engineer should be notified so a follow-up inspection can be completed. Any repair plans or as-built drawings shall be provided so that we can better evaluate the work performed.

All correspondence including receipt acknowledgement, closure verification pictures, and details of repairs shall be sent to TDOT.BridgeEval@tn.gov. Should you have any questions, please advise.

Sincerely,

for Ted Knaizewycz, PE
Director of Structures

TN TDOT Department of Transportation

BRIDGE EVALUATION REPORT

Location: Town of Pittman Center **Date:** July 14, 2022

Bridge ID No.: 780A3590001

Location No.: 78-A359-00.01

Route: NFA 0A359 (Grassy Branch Road)
over Middle Prong of Little Pigeon River

Bridge Geometry:

Roadway Width:	11.6'
Structure Length:	140.6'
Span Lengths:	1 @ 17.5' , 3 @ 24.6' , 1 @ 24.4' and 1 @ 21.1'

Type of Construction: This structure consists of six simply supported steel I-beam spans with a corrugated metal deck and asphalt wearing surface. The substructure is concrete with steel cap beams.

Commentary

We have completed the inspection and evaluation of the subject bridge. The bridge was required to be closed to traffic by TDOT bridge inspectors in a memo dated July 13, 2022. The following are noted deficiencies:

1. Floodwater overtopped the bridge on 7/13/2022. The condition posed an immediate risk to the motoring public. It has also exasperated the existing decay and the already structurally deficient conditions of the corrugated metal deck, steel beams and pier footings.

2. The corrugated metal deck has heavy corrosion and section loss at all lap joints in Spans 1 thru 6 with some areas of exposed asphalt. In its current condition, the calculated capacity of the deck indicates closure is needed.

3. The steel beams have heavy corrosion and section loss throughout the structure. Beams "B" and "C" in Span 1 and Beams "D" and "E" in Span 6 have section loss up to 30% in the bottom flange and up to 100% section loss in the top flange. In their current condition, the calculated capacity of the beams is minimal.

4. Loss of foundation support at Abutment 2 has caused rotation towards the stream measuring 2.5" horizontally per 3' of height.

5. Scour has caused void areas underneath the footings of Piers 2 and 3.
6. There is a scour hole beginning to form under Span 5.
7. Steel cap beams at both Abutments have heavy corrosion and section loss along the top flange.
8. Both abutments lack adequate backwalls and wingwalls.
9. The asphalt wearing surface has areas of displacement, raveling, and settlement up to 4' long by 4" deep.
10. Flooding has caused both asphalt approaches to settle and crack.
11. Flooding has deposited debris on the deck that is obstructing the travel way. There is also debris lodged between beams.
12. The bridge railing does not meet current state or federal safety standards and approach guardrails are non-existent.

This bridge was closed to traffic following the flood event on 7/13/2022. However, barricades and advance warning signs are non-existent.

Recommendations

1. Close the bridge to all traffic with proper signs and barricades. (See the attached Bridge closing Alternatives for proper signs and barricades).
2. Replace the deck.
3. Repair or replace deteriorated steel beams and clean and paint all other structural steel.
4. Fill void areas underneath the footings of Piers 2 and 3 and install scour countermeasures.
5. Repair the scour hole underneath Span 5 and install scour countermeasures.
6. Repair or replace backwalls and construct proper wingwalls at both abutments.
7. Repair the approach roadways.
8. Clear drift and debris from between the beams and from the top of the deck.
9. Install adequate bridge railing and approach guardrails.

At the minimum, Recommendation Item 2 shall be satisfactorily completed to re-open the bridge to traffic. Please note, even with this repair, the structure will likely only be able to carry light traffic for a short timeframe until closure will be required again due to the other deficiencies outlined in the Commentary. Therefore, replacement of the entire structure could be a better long-term, cost-effective option.

If the repairs are completed, the bridge shall be re-inspected and re-evaluated to determine the adequacy of the repairs and the load capacity of the bridge.

(for) Ted Kniazewycz, P.E.
Director of Structures