STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
STRUCTURES DIVISION
BRIDGE INSPECTION & REPAIR OFFICE
SUITE 1200, JAMES K. POLK BUILDING
505 DEADERICK STREET
NASHVILLE, TENNESSEE 37243-1402
(615) 741-0776

CLAY BRIGHT
COMMISSIONER

BILL LEE
GOVERNOR

May 11, 2021

Mr. Steve Hutchings, P.E.
Regional Bridge Engineer
P. O. Box 22368
Chattanooga, Tennessee 37422

Bridge Inspection Program
State Route 56
over Interstate 40
Bridge Loc. No. 71-SR056-0.54
Bridge ID No. : 71I00400007
Putnam County

Dear Mr. Hutchings:

For the subject bridge, we are enclosing the Bridge Evaluation Report. The partial closure should be implemented immediately. Please provide pictures and details of the partial closure to our office (TDOT.BridgeEval@tn.gov or 615-741-7315) as soon as practical.

Should you need additional information, please advise.

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

RPH:rph

cc: Ted Kniazewycz, P.E.
Joe Deering, P.E.
Fawaz Saraf, P.E.
Na'il Alammori
Steven Paulson, P.E.
Rebecca Hayworth, P.E.

TN TDOT Department of Transportation

BRIDGE EVALUATION REPORT

Location: Putnam County **Date:** May 11, 2021

Bridge ID No.: 71I00400007

Location No.: 71–SR056–00.54

Route: SR-56 (Smithville Hwy.)
over I-40

Bridge Geometry:

Roadway Width: 33'–1"
Structure Length: 203'–0"
Span Lengths: 2 @ 47'–6" and 2 @ 54'–0"

Type of Construction: This structure consists of four simply supported prestressed concrete I-beam spans with an integral concrete slab deck. The substructure is concrete stub abutments and concrete two-column bents.

Commentary

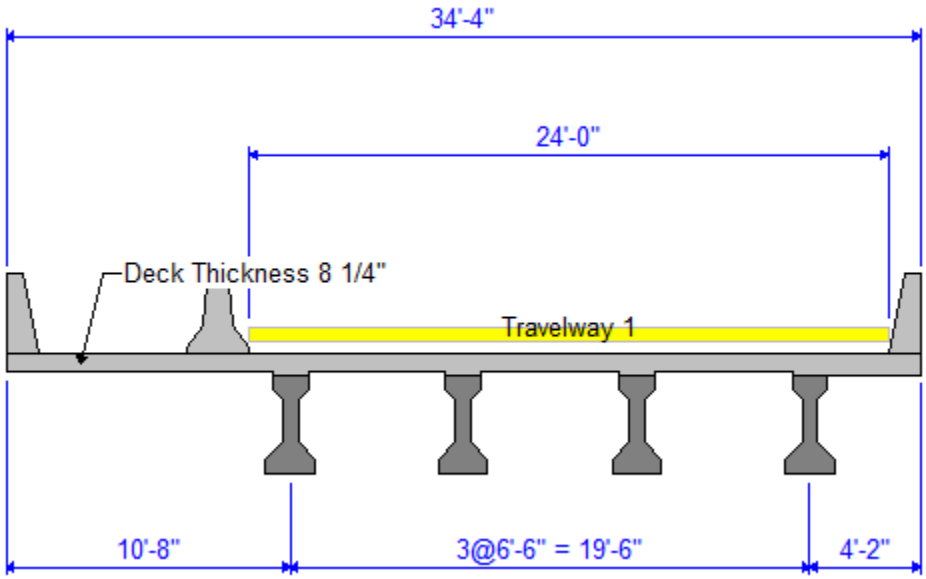
We have completed the inspection and evaluation of the subject bridge, which suffered collision damage on May 10, 2021. The following are noted deficiencies:

1. Beam "A" in Span 1 is severely damaged and has been partially removed. In its current condition, it has no dead load or live load carrying capacity.
2. Beam "B" in Span 1 has minor spalls and heavy smoke stains but has no exposed prestressing strands or reinforcing steel. This beam was sounded throughout with an inspection hammer and no delamination was found.
3. The stay-in-place metal formwork on the bottom of the deck in Bay "A" of Span 1 has distortion and heat damage caused by the fire underneath the bridge.
4. In the most recent routine inspection report, the remaining beams are noted as having areas of minor concrete scaling and spalling, as well as hairline cracks.
5. In the most recent routine inspection report, the bearing devices at both abutments are noted as having section loss up to 1/16 inch deep.

6. In the most recent routine inspection report, the riding surface at both approaches to the bridge has an uneven grade with the asphalt surface being settled up to 1-1/4 inches below the concrete surface.

Recommendations

1. Close a portion of the deck in Span 1 in order to shift live load traffic away from Beam "A". This can be accomplished by placing a portable concrete barrier as shown in the sketch below. (Please note that Beam "A" is removed in the sketch.)



2. Install temporary shoring underneath the remaining portion of Beam "A" in Span 1.
3. Replace Beam "A" in Span 1. This will include replacing the left cantilever and Bay "A" of the concrete deck in Span 1.
4. Repair areas of concrete deterioration throughout the remaining beams.
5. Clean and paint the bearing devices at both abutments, including replacing anchor bolts and nuts if necessary.
6. Level the riding surface at both approaches.

At the minimum, Recommendation Item 3 shall be satisfactorily completed to re-open the full travel way of bridge to traffic. After the repairs have been 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