

Boyd Rd, Graves County (042C00099N) Bid Report

Graves County has requested for Bridge ID 042C00099N to be submitted for the County & City Bridge Improvement Program. This bridge is located on Boyd Rd at the 2.80 mile point. Based on the latest Inspection Report, created on 9/06/2023, the Deck rating is a 5, the Superstructure rating is a 5, and the Substructure rating is a 2.

The Inspection Photos, created on 9/06/2023, were utilized in tandem with the Inspection Report as a preliminary diagnosis on the issues pertaining to Bridge ID 042C00099N. The biggest issues found were the condition of the timber piles and end bents. There is approximately 54 feet of CS3 scouring for the end bents/piles and 21 feet of CS3 distortion of the wingwalls deformed towards the channel. Meanwhile, there is 4 each of CS4 decay/section loss and 2 each of CS3 decay for the timber piles.

Once preliminary notes were made based on the Inspection Report, a team of Engineers from KYTC D1 went to the site to compare the report to current issues. The team took notes and measurements on-site. The measurements taken at Bridge ID 042C00099N were found to be:

- 23 ft structure length,
- 17 in. depth of super,
- 18 ft roadway width,
- 21 ft streambed width,
- 28 ft end bent width (both end bents),
- 9.5 ft tall (measure from streambed to bottom of beams)

The notes consisted of a Standard Template of a side elevation view of a bridge consisting of the deck/beam, abutments, piles, slopes, streambed, and piers (if applicable to the bridge). Notes were made on the Template when on-site to report issues found during the inspection, as well as possible fixes for said issues. The Standard Template with notes made will be attached to this report for reference.

Inspection was made at Bridge ID 042C00099N with KYTC D1 engineers. While on-site, it was determined that a total replacement would be needed since the channel has grown wider than what the total length of the bridge can handle as well as being the most economical option compared to cost of rehab. It would need to be extended from a 23 ft span to a 58 ft span to ensure protection of the piles/end bents from scour due to the channel.

Based on these findings, work to be done for Bridge ID 042C00099N would include:

- Replace old timber piles with new steel piles as well as new end bents, also correct the channel flow through the middle of the bridge. This would provide protection against scouring for the piles/abutments and improve the rating for the Substructure.
- Replace current beams with Precast Prestressed Box Beams due to requiring a longer span. This would improve the rating for the Deck and Superstructure.

- Create a slope at new End Bents to provide bearing and protection for the piles against scour. This would improve the Substructure rating.

The work done based on the above suggestions should follow the KYTC Standard Specifications and, if applicable, Standard Drawings. All work done for Precast Prestressed Box Beams will include, but not be limited to:

- *Elastomeric Bearing Pads per Drawing BBP-003-02*
- *Railing System Type II Guardrail Treatment per Drawing BHS-007-07*
- *Precast Prestress Box Beams General Notes per Drawing BDP-001-05*
- *Box Beam Bearing Details per Drawing BDP-002-03*
- *Box Beam Tension Rod Details per Drawing BDP-004-03*
- *Railing System Type II per Drawing BDP-005-05*
- *Box Beam B27 Details per Drawing BDP-009-04*
- *HP12x53 Steel Pile per Drawing BPS-003-09*
- *Modified Pile End Bent 0 Degree Skew*
 - It should be noted that using a 1.5:1 slope will require more maintenance compared to using a 2:1 slope
 - Piles will be utilizing restrictor plates to assist in reaching pile loads thus allowing for shallower pile depths
- *Grout per Section 601.03.03*