Jackson County Department of Transportation
Great Lakes Engineering Group, LLC

Overview

- Purpose of Project
  - The current bridge was built in approximately 1934.
  - Due to deterioration, the bridge is currently posted for reduced loading with only one lane open to traffic.
  - The existing bridge does not meet current geometric, navigational, or loading requirements.

Existing Bridge

Overview

- Current Status
  - The Jackson County Department of Transportation applied for funding through MDOT Local Agency Bridge Programs and was awarded funding for the replacement bridge.
  - Great Lakes Engineering Group was selected to provide the design, construction drawings, and contract documents for the replacement of this bridge.
  - Currently at Final Plan Stage with MDEQ Permit obtained. Anticipated construction to begin this winter and open to traffic in summer of 2019.

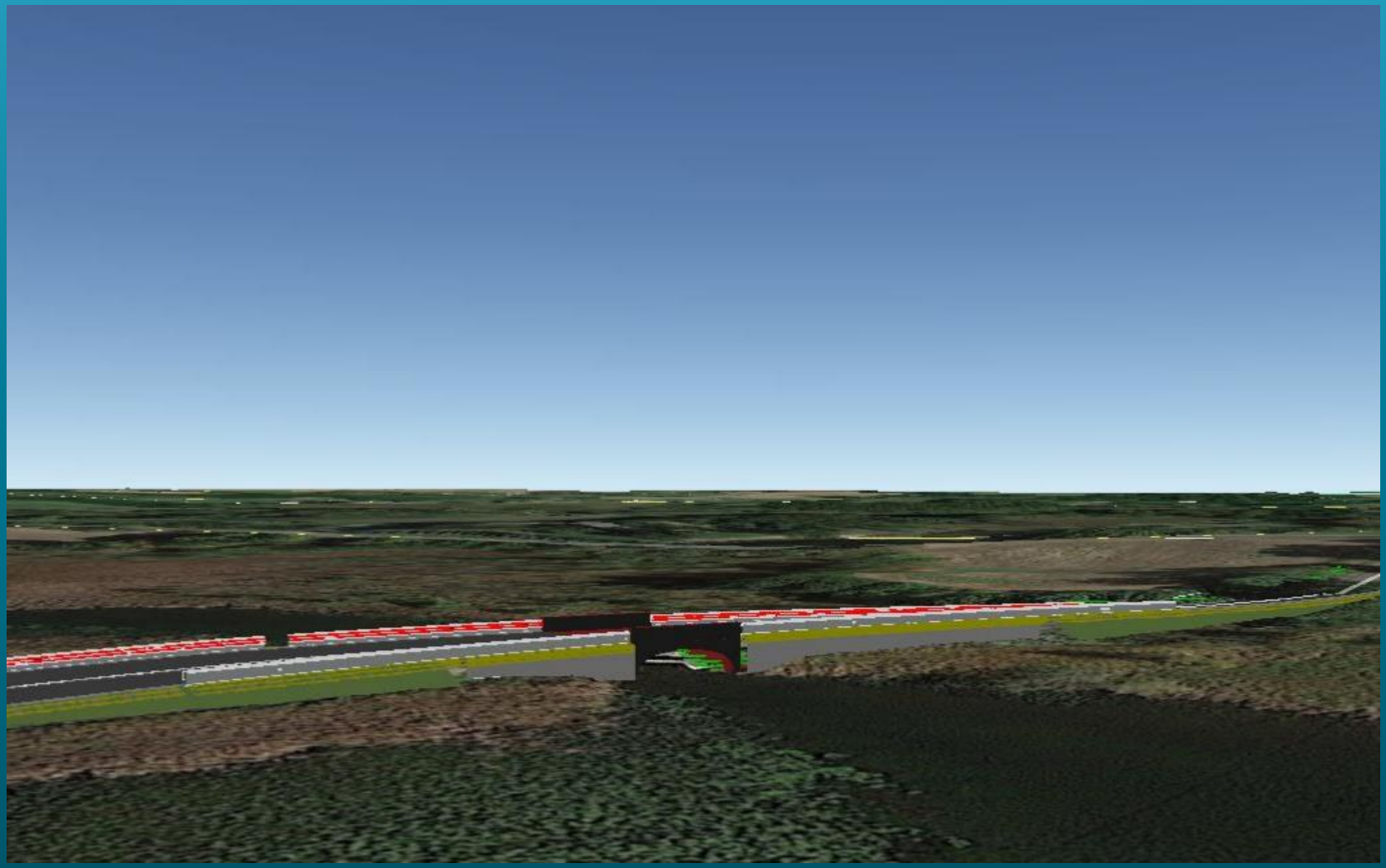
Design Constraints

- Overall Project Design
  - In order to meet geometric design requirements of the funding without major impacts to the lake and wetlands, retaining walls and steep slopes with guardrail are being utilized in order to provide additional underclearance at the crossing.
  - Navigational underclearance will be increased from approximately 3’ to approximately 6’ at the proposed culvert crown.

Overview

- Design Roadway
  - The current roadway only meets a design speed of 30 MPH.
  - The proposed approaches designed to meet a 40 MPH design speed based on the causeway location without filling in the lake or wetlands.
  - The proposed roadway will be a No Passing Zone over the new structure.
  - Retaining walls and guardrail will be utilized in order to provide additional underclearance without fill being placed in the lake.

Elevation view



Streetview looking West

Streetview looking east

Design - Structure

- Structure Type and Size
  - The current bridge has a span of 21’ with approximately 3’ of underclearance and a clear roadway width of 22’.
  - The new structure will have a 29’ span with 11’ lanes and 5’ shoulders with approximately 6’ of underclearance at the crown and approximately 5’ of underclearance at the inflection points (change in radius from top to sides) at a width of 17’

Design – Structure (Cont.)

- Structure Cost
  - The current estimated project cost is $1,300,000
  - The project was awarded State and Federal funds with a cap of $1,032,840
  - The local match is 5% up to the total capped cost of $1,087,200 (or $54,360), then is 100% of cost over $1,087,200. The current local match is estimated to be $267,160

Design – Structure (Cont.)

- Structure Schedule
  - Currently the project is scheduled for a November or December bid (depends on funding obligation authority by MDOT)
  - Construction on the project typically begins 4 to 8 weeks after bid.
  - The removals, substructure concrete, and culvert will be built over the winter and the approach roadway and restoration to be built in the spring.
  - The project is anticipated to be completed in early summer of 2019

Design – Structure (Cont.)

- MDEQ Underclearance Guidelines:

  - 4.3 feet for canoes
  - 5.3 feet for run-abouts
  - 6.3 feet for pontoons with top down

MDEQ determined the required underclearance to be 5’ at the inflection points of the arch.

Design – Selected Structure

- Concrete arch culvert:
  - Advantages:

    Natural stream bottom

    Quick Construction

    Can pave HMA over the structure to eliminate bumps at the ends of the structure

    Differential settlement between approach roadway and structure are minimized due to the shape of the culvert

    Thin profile (12” thick arch) with minimal roadway cover needed over the arch for the roadway

Arch type selected

Aesthetics

- Precast concrete headwalls and wingwalls and cast in place bridge railing:
  - Many form liner options can be utilized for aesthetics

Aesthetics

Conclusion

- Final design submittal almost complete.
- Arch style structure was the selected option based on navigation and soils conditions.
- Aesthetic treatment will be applied to the concrete headwalls, wingwalls, and outside of bridge railing.

Questions and Discussion