

Grand River Over Kent Lake / Huron River

South Lyon, Michigan



The Road Commission for Oakland County (RCOC) was looking to replace the superstructure on this bridge. The Federal Sufficiency Rating had dropped below 10, and the bridge was in need of repair. SDA was selected in 2006 to complete the design. When the structure study was completed, it was determined that the bridge substructure would not be able to handle the increased dead loads due to the increased deck width and changes in design criteria. The most economical

alternative was to replace the entire structure.

When the soil borings were completed for the new bridge, SDA found a 30-foot layer of soft compressible material. This layer of soft material under the retaining walls and abutments caused the size and number of piles to be extensive. In order to reduce the lateral load on the retaining walls and the abutments, SDA recommended the use of Expanded Polystyrene (EPS) Blocks for part of the backfill which reduced the number of piles and the size of the footings.

This soft layer of material also caused concern with the stability of the existing I-96 over Kent Lake structure, located less than eight feet from the edge of the proposed Grand River Bridge. To ensure that the Contractor's construction procedures did not affect the stability of the existing structure, the construction documents were developed to include tilt meter monitoring. The tilt meters were installed and monitored during construction procedures and ensured that there was no excessive movement of the existing I-96 structure.



The bridge is located between two parks, Kensington Metropark to the north and Island Lake State Recreation Area to the south. The substructure of the bridge is clearly visible to the public by boat traffic and the bike path under the bridge. SDA recommended RCOC to use a form liner to enhance the aesthetic look of the bridge's substructure.

OWNER / CLIENT

Road Commission for Oakland County

PROJECT START - END

July 2006 – August 2008

SDA PROJECT NO.

RB06-006

SOFTWARE

HEC-RAS

AutoCAD

Conspan

Virtis

MERL

Microsoft Excel

Microsoft Word