

Underwater Inspection Report for:
State Route 422 (Westbound) over La Due Reservoir Geauga County, Ohio
(Four Span, Steel Beam Bridge)

KCI Personnel on site during inspection:

1. Mr. Travis M. Clower, P.E. (Primary Diver / Lead Inspector)
2. Mr. Mark A. Suchan, (Backup Diver / Inspector)
3. Mr. John L. Clower (Supervisor / Inspector)

ODOT Personnel on site during inspection:

1. Mrs. Andrea Persani



South Elevation View looking East



Location Map

Prepared for:

ODOT District 12
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Prepared by:

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Travis M. Clower
12-10-09



DESCRIPTION

Bridge GEA-422-0986 L (SFN 2801655) carries two lanes of State Route 422 westbound over La Due Reservoir towards Bainbridge, Ohio in Geauga County. The structure, built in 1960, consists of a four-span, steel beam bridge carried by three reinforced concrete column piers and two reinforced concrete abutments. Each pier has three round concrete columns and one steel jacketed concrete drilled shaft. This is shown in Photos 1, 2, 5 and 6. Both abutments were more than six feet above the water level and not considered part of this inspection.

To be consistent with ODOT's Topside Inspection Report dated 11/13/08, Pier 1 is the east pier. Likewise this report numbers beams and columns starting at the south going north. When comparing reports, it is important to note that the 10/28/04 Underwater Inspection Report did not follow this numbering convention.

INSPECTION OPERATIONS

KCI's three-person dive team performed an underwater inspection on October 28, 2009. A visual inspection was performed from 1-foot above the waterline (splash zone) to the mud line. Where the diver's visibility was limited, tactile methods were used. Soundings were taken along all substructure units and up to 30 feet upstream and downstream of the bridge using a survey story pole.

The 10/28/04 Underwater Inspection Report established a Hydrographic Reference Location at the north end of Pier 2's cap. The water level for the 2009 inspection was 8.7 feet below the top of the cap. The water level during the 10/28/04 inspection was 5.8 feet below the top of the pier cap, a 2.9-foot difference.

Hazards Encountered: *N/A*

Inspection Mode: *Diving from a boat.*

Flow Direction / Velocity: *N/A*

Direction of Diver / Inspector: *Soundings were gathered first. Then the Piers were inspected in order.*

Bottom Composition: *Flat mud and small stone bottom with riprap stone near the abutments.*

Scour Checked By: *Soundings, probing and tactile methods.*

Equipment Used: *Surface Supplied Diving with hardwire communications.*

Elements Cleaned: *No significant cleaning required.*

Hydrographic Reference: *North end, Pier 2, top of pier cap to the water = 8.7 feet .*



OBSERVATIONS

GENERAL

- The concrete surfaces had up to ¼-inch scaling. The concrete was sounded in numerous locations and found to be hard with no signs of delamination.
- The steel jacketed concrete drilled shafts had a 1/8-inch layer of surface corrosion (see Photo 8).
- Underwater visibility was less than 2 feet with no current.

CHANNEL

- The bottom composition is flat mud and small stone.
- Each abutment is surrounded with large diameter riprap stone (shown in Photos 5 and 6). This stone slopes downward toward the piers.

DEFECTS & DEFICIENCIES

PIER 1 (EAST PIER)

- The concrete surfaces had up to ¼-inch scaling.
- The steel jacketed concrete drilled shaft has a 1/8-inch layer of surface corrosion. Photo 8 is an underwater picture of this corrosion on Pier 1.

PIER 2

- The concrete surfaces had up to ¼-inch scaling.
- The steel jacketed concrete drilled shaft has a 1/8-inch layer of surface corrosion.

PIER 3 (WEST PIER)

- The concrete surfaces had up to ¼-inch scaling.
- The steel jacketed concrete drilled shaft has a 1/8-inch layer of surface corrosion.
- At 3 feet below the waterline on the east side of Column 1 are three small honeycombing areas 3 inches in diameter and 1-inch deep.



COMPARISION TO PREVIOUS REPORTING AND SUMMARY

Both the previous Underwater Inspection Report and the previous Topside Inspection Reports were available for comparison. The light concrete scaling on the columns and the surface corrosion of the steel jackets on the drilled shafts remains unchanged from the previous inspection. The only new defects that were mentioned in this report are three small areas of honeycombing on the east side of Pier 3, Column 1, three feet below the water surface. They are insignificant in size and have no reinforcing steel exposed. The spalled areas above the water on the south side of Pier 3's cap were present in the previous ODOT inspection and remain unchanged.

There was no undermining, no scour and no other significant defects found at the time of inspection.

RECOMMENDATIONS

Because of the satisfactory conditions found during the underwater inspection, there are no recommendations at this time.





Photo by T. Clower, 10/28/09

Photo 1 – Facing South. North Elevation of the Bridge.



Photo by T. Clower, 10/28/09

Photo 2 – Facing Northeast. South Elevation of the Bridge.



Photo by T. Clower, 10/28/09

Photo 3 – Facing North. View of La Due Reservoir from the Bridge.



Photo by T. Clower, 10/28/09

Photo 4 – Facing South. View of La Due Reservoir and Bridge GEA-422-0986 R.



Photo by T. Clower, 10/28/09

Photo 5 – Facing West. West Abutment with large Riprap Stone Shore Protection.



Photo by T. Clower, 10/28/09

Photo 6 – Facing Southeast. East Abutment with large Riprap Stone Shore Protection.



Photo by T. Clower, 10/28/09

Photo 7 – Facing North. South end of Pier 3 Cap with Spalls and exposed Rebar.
(9-inch high x 6-inch wide x 1-inch deep)

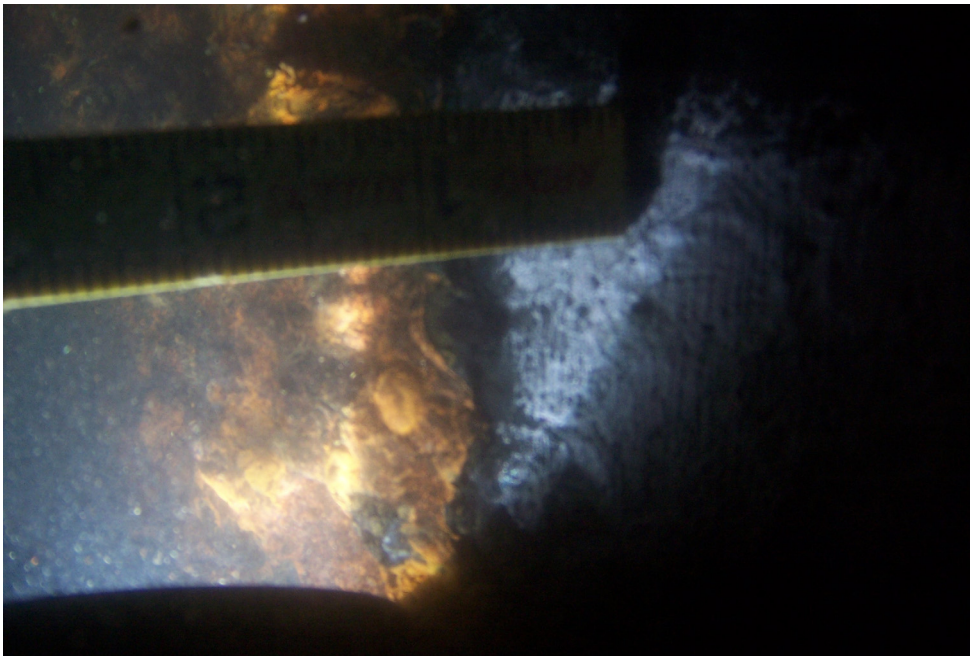


Photo by T. Clower, 10/28/09

Photo 8 – Facing North. South side of Pier 1 steel jacket on the drilled shaft at the mudline. Typical 1/8-inch thick corrosion of the steel.

SOUNDING SHEET

(All measurements are in feet)

Bridge No.: GEA-422-0986 L
Inspectors: JC, MS, TC

Inspection Date: 10/28/2009
Clearance Location: Pier 2, north, top of cap

