

**Underwater Inspection Report for:**

State Route 422 (Eastbound) 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 North



Location Map

**Prepared for:**

ODOT District 12  
5500 Transportation Blvd  
Garfield Heights, Ohio 44125



**Prepared by:**

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**DESCRIPTION**

Bridge GEA-422-0986 R (SFN 2801744) carries two lanes of State Route 422 eastbound over La Due Reservoir in Geauga County, Ohio. 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 west pier. Likewise this report numbers beams and columns starting at the north going south.

**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.

A Hydrographic Reference Location was established at the north end of Pier 2's cap. The water level during this inspection was 8.7 feet below the top of the cap.

Hazards Encountered:	<i>N/A</i>
Inspection Mode:	<i>Diving from a boat.</i>
Flow Direction / Velocity:	<i>N/A</i>
Direction of Diver / Inspector:	<i>Soundings were gathered first. Then the Piers were inspected in order.</i>
Bottom Composition:	<i>Flat mud and small stone bottom with riprap stone near the abutments.</i>
Scour Checked By:	<i>Soundings, probing and tactile methods.</i>
Equipment Used:	<i>Surface Supplied Diving with hardwire communications.</i>
Elements Cleaned:	<i>No significant cleaning required.</i>
Hydrographic Reference:	<i>North end, Pier 2, top of pier cap to the water = 8.7 feet .</i>



## **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 7).
- 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 (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.

### **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.
- Timber formwork protrudes from the bottom at the northwest corner of the pier.

### **PIER 3 (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 7 is an underwater picture of this corrosion on Pier 3.
- Steel and rebar debris are located between the drilled shaft and the adjacent concrete column at Pier 3's south end.



### **COMPARISION TO PREVIOUS REPORTING AND SUMMARY**

The previous Topside Inspection Report dated 11/13/08 was 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. A small amount of wood formwork and steel debris was discovered around the bottom of Piers 2 and 3 respectively. 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 Southeast. North Elevation of the Bridge.



Photo by T. Clower, 10/28/09

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



Photo by T. Clower, 10/28/09

Photo 3 – Facing North. View of La Due Reservoir and Bridge GEA-422-0986 L.



Photo by T. Clower, 10/28/09

Photo 4 – Facing South. View of La Due Reservoir from the Bridge.



Photo by T. Clower, 10/28/09

Photo 5 – Facing Northwest. Pier 1 and West Abutment with Riprap Stone.



Photo by T. Clower, 10/28/09

Photo 6 – Facing East. Pier 3 and East Abutment with Riprap Stone.



*Photo by T. Clower, 10/28/09*

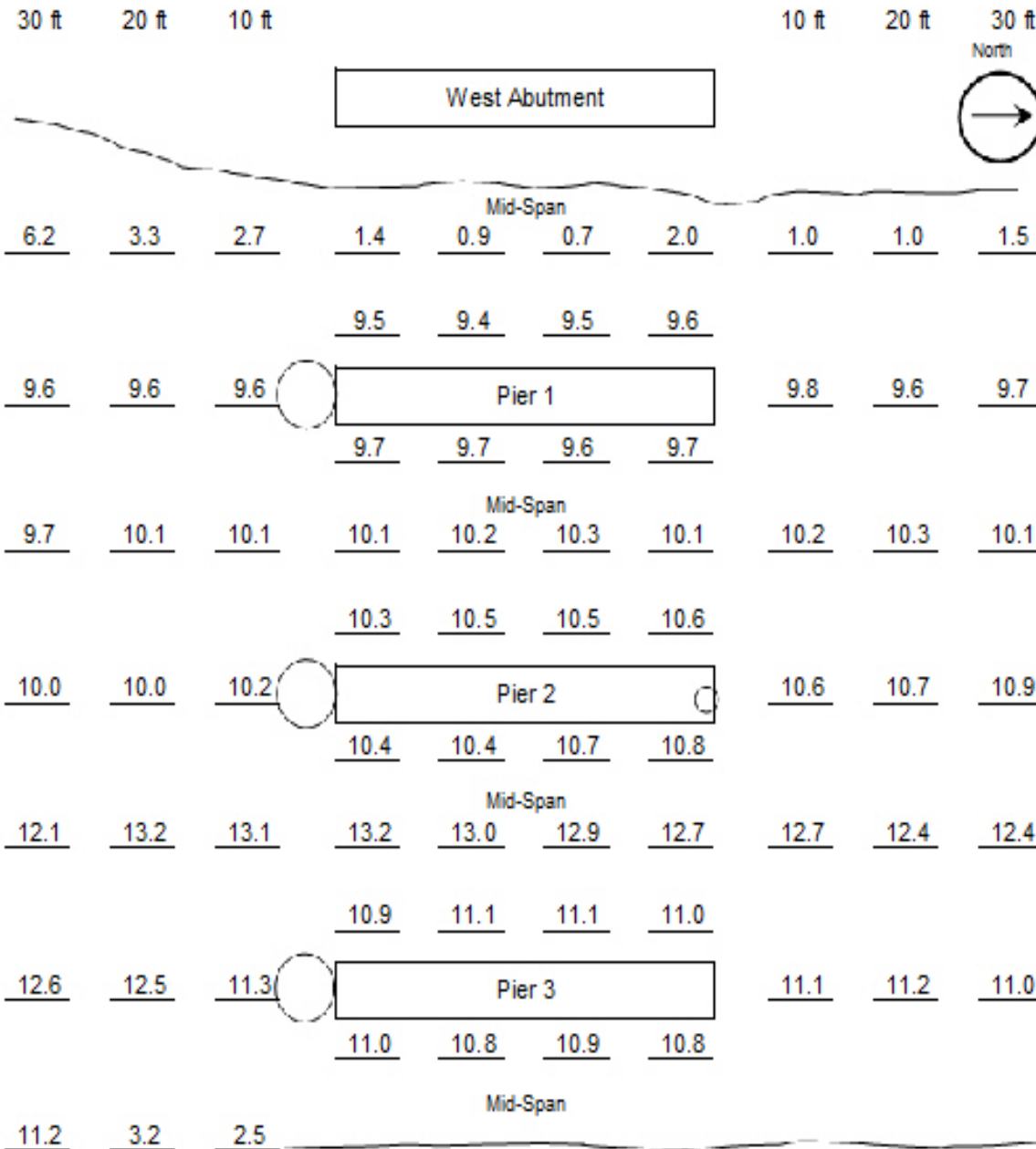
*Photo 7 – Facing North. South side of Pier 3 steel jacket on the drilled shaft at the mudline. Typical 1/8-inch thick corrosion of the steel.*



# SOUNDING SHEET

(All measurements are in feet)

Bridge No.: GEA-422-0986 R Inspection Date: 10/28/2009  
 Inspectors: JC, MS, TC Clearance Location: Pier 2, north, top of cap



All soundings are given in tenths of feet.  
 Drawing not to scale.  
 Clearance measurement taken at Pier 2 North end cap = 8.7 feet

