

BRIDGE INSPECTION REPORT

2801744
Structure File NumberBRIDGE NUMBER **GEA 00422 0986 R**YEAR BUILT **1960**DIST **12** Bridge Type **322** TYPE SERVICE **1 5** **LA DUE RES. 0.71 MI E 44**

DECK	out/out 41.3 Deck Area 9,085 sqft		2 INTEGRAL CONCRETE (MONOLITHIC)	
1. FLOOR	1 REINF CONCRT (PRESTRSD, PRECAST)	1	2. WEARING SURFACE	Thk 2 Wear Date 1/1/1994 1
3. CURBS, SIDEWALKS AND WALKWAYS	Left N NONE / Right N NONE		4. MEDIAN	Lanes on 2
5. RAILING	C 32" DEFLECTOR-TYPE PARAPET (NJ)	1	6. DRAINAGE	0 OTHER-NATURAL(OFF THE BRIDGE ENDS) 1
7. EXPANSION JOINTS	3 COMPRESSION SEAL	3	8. SUMMARY	7
SUPERSTRUCTURE			4 ROLLED STEEL	
9. ALIGNMENT	Max Spans 60	1	10. BEAMS/GIRDERS/SLAB	2
11. DIAPHRAGMS or CROSSFRAMES		2	12. JOISTS/STRINGERS	
13. FLOOR BEAMS			14. FLOOR BEAM CONNECTIONS	
15. VERTICALS			16. DIAGONALS	
17. END POSTS			18. TOP CHORD	
19. LOWER CHORD			20. LOWER LATERAL BRACING	
21. TOP LATERAL BRACING			22. SWAY BRACING	
23. PORTALS			24. BEARING DEVICES	2 ROCKERS 3
25. ARCH			26. ARCH COLUMNS or HANGERS	
27. SPANDREL WALLS			28. PROTECTIVE COATING SYSTEM	Paint Date 1/1/1987 5 PAINT SYSTEM OZE 7
29. PINS/HANGERS/HINGES			30. FATIGUE PRONE CONNECTIONS	
31. LIVE LOAD RESPONSE		E	32. SUMMARY	6
SUBSTRUCTURE			6 STUB-CAPPED PILE (SINGLE ROW PILES)	
33. ABUTMENTS	6 STUB-CAPPED PILE (SINGLE ROW PILES)	2	34. ABUTMENT SEATS	Abutment: ON PILING 1
35. PIERS		1	36. PIER SEATS	5 CAPPED COLUMN Piers: ON PILING 1
37. BACKWALLS		1	38. WINGWALLS	1
39. FENDERS and DOLPHINS	Piers = 03 NN NN Spans = 4		40. SCOUR	2 1
41. SLOPE PROTECTION	3 RIP RAP (DUMPED ROCK)	1	42. SUMMARY	Dive Date 10/28/2009 6
CULVERTS				
43. GENERAL	N NONE/NOT APPLICABLE		44. ALIGNMENT	
45. SHAPE			46. SEAMS	
47. HEADWALLS or ENDWALLS	Culvert Length 0		48. SCOUR	Culvert Fill Depth 0
49.			50. SUMMARY	
CHANNEL				
51. ALIGNMENT		1	52. PROTECTION	2 STONE 1
53. WATERWAY ADEQUACY	6 (SEE CODING GUIDE)	1	54. SUMMARY	8
APPROACHES				
55. PAVEMENT	2 BITUMINOUS	1	56. APPROACH SLABS	2
57. GUARDRAIL	1 STEEL BEAM	1	58. RELIEF JOINTS	
59. EMBANKMENT		1	60. SUMMARY	Percent Legal = 150 6
GENERAL				
61. NAVIGATION LIGHTS			62. WARNING SIGNS	Maint Resp 1 OHIO TRAN DEPT
63. SIGN SUPPORTS	Signs on = N MVC on = 9999.9 Under C = 0		64. UTILITIES	
65. VERTICAL CLEARANCE	Under NC = 0	N	66. GENERAL APPRAISAL & OPERATIONAL STATUS	6 A
67. INSPECTED BY			68. REVIEWED BY	

SIGNED

PE Number

MJS
INITIALS

SIGNED

60048 YSS
PE Number INITIALS

DATE 6/17/2010

1 1 1 1 1 N N N
SURVEY

DATE 2/8/2011

DECK

FLOOR: A FEW TRANSVERSE CRACKS. FLOOR <1% DETERIORATED.
WS: CRACKS. WS <1% DETERIORATED.
RAILING: MINOR SPALL AND DELAMINATIONS ON LEFT RAIL.
EXJTS: DECK SIDE OF REAR (WEST) JOINT IS 1/2" LOWER THEN
THE APPROACH SLAB SIDE. FORWARD BACKWALL ARMOR WHICH
IS SLIGHTLY HIGHER THAN THE DECK ARMOR IS GOUGED AND
CRACKED WITH 6" OF MISSING ARMOR. SEE ATTACHED
PHOTOS 1 - 5 DATED 11/03/09.

SUPERSTRUCTURE

BEAMS: RUST SECTION LOSS NEAR ABUTMENTS. BEAM #1 WEB AT
START ENDFRAME FLEXES WITH HEAVY LIVE LOAD.
XFRAMES: ENDFRAME RUST SECTION LOSS. CRACKS AND RUSTING
THRU HOLES TO ENDFRAMES AT BOTH ABUTMENTS. SEE
ATTACHED PHOTOS 6 - 9 DATED 11/3/09.
BEARINGS: RUSTED SECTION LOSS. REAR ABUTMENT ROCKERS #2,#3,
#4 AND #5 ARE LOOSE. FORWARD ABUTMENT ROCKERS #3,
#4 & #5 ARE LOOSE.
PCS: FADED PAINT. 2% RUST. PCS IS 1-5% DETERIORATED.
LLR: VERTICAL MOVEMENT OF BEAM ENDS ABOVE ALL LOOSE ROCKERS.
WEB OF BEAM #1 AT REAR FLEXES.

SUBSTRUCTURE

ABUTMENTS: A FEW DELAMINATIONS. A FEW SPALLS.
PIERS: RUSTING SECTION LOSS OF STEEL AND SCALING OF CONCRETE
AT WATERLINE.
SCOUR: SEE ATTACHED DIVE REPORT DATED 10/28/09.

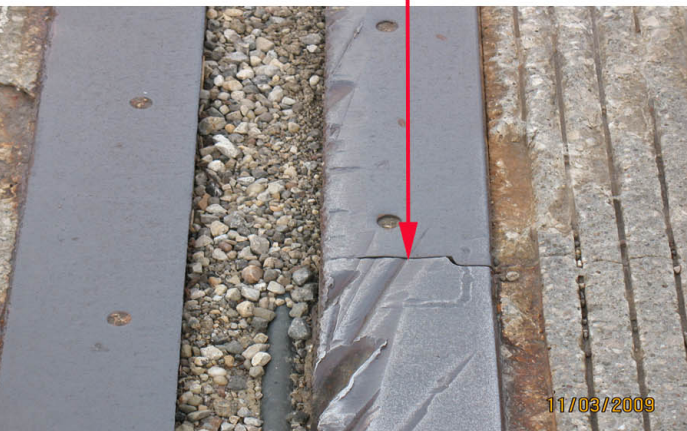
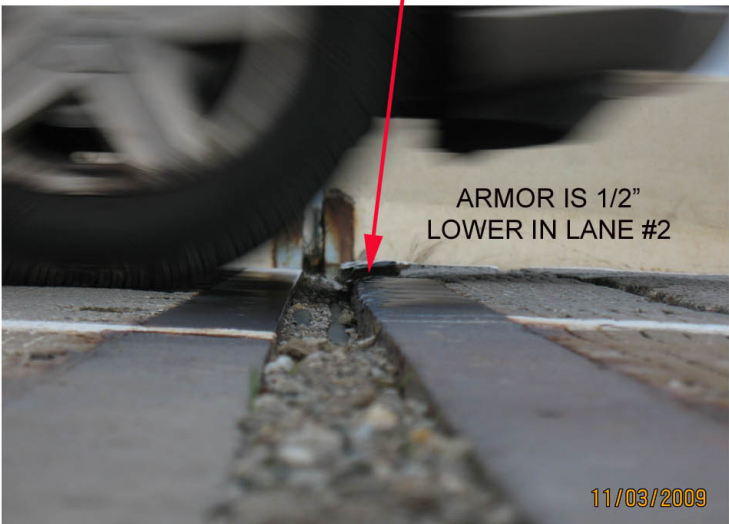
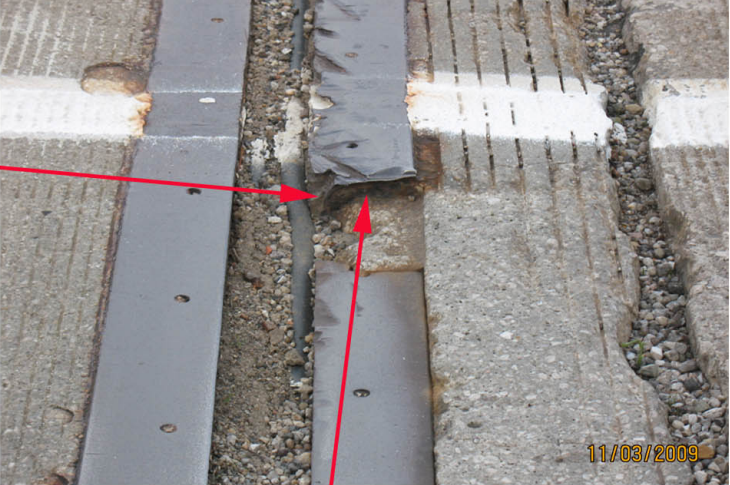
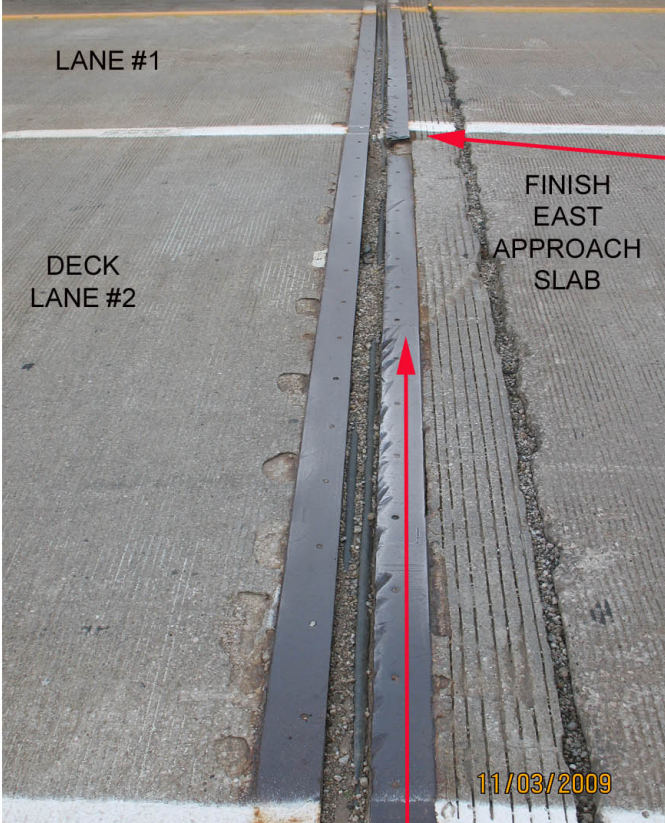
APPROACHES

PAVEMENT: CRACKS.
APPROACH SLABS: BOUNCE ONTO BRIDGE FROM WEST.
GUARDRAIL: MINOR COLLISION DAMAGE TO REAR-LEFT.

GENERAL

BOATED BY MS AND AH ON 06/17/10. LAST DIVED ON 10/28/09.

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SFN 2801744



P1 - P4: SHOWS EAST EXJT. NOTE MANY GOUGES, MISSING AND CRACKED ARMOR. MOST DAMAGE IS TO LANE #2 EASTBOUND.

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P6: START (W) ABUTMENT AT BEAM #1. CRACKED ENDFRAME. WEB OF BEAM HERE FLEX'S WITH HEAVY LOAD.



P7: CRACKED AND RUSTING THRU HOLE TO START (W) ENDFRAME AT BEAM #5.



P8: SEVERED ENDFRAME AT FINISH ABUTMENT TO BEAM #5.



P9: CLOSE-UP OF P8.

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

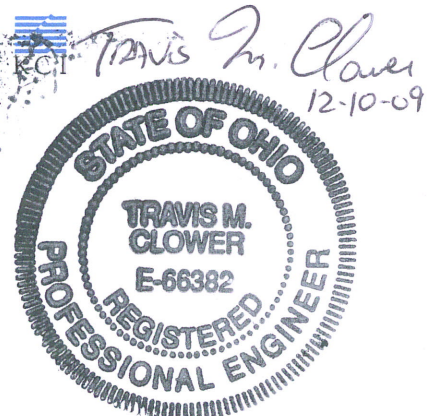
Prepared for:

ODOT District 12
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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.

