STATE OF OHIO DEPARTMENT OF TRANSPORTATION

BRIDGE INSPECTION REPORT

2801744 Structure File Number | BRIDGE 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 1. FLOOR — 1 REINF CONCRT (PRESTRSD, PRECAST	1	2 INTEGRAL CONCRETE (MONOLITHIC) 2. WEARING SURFACE — Thk 2 Wear Date 1/1/1994	1
Left N NONE / Right N NONE 3. CURBS, SIDEWALKS AND WALKWAYS		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 9. ALIGNMENT — Max Spans 60	1	4 ROLLED STEEL 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		Paint Date 1/1/1987 28. PROTECTIVE COATING SYSTEM — 5 PAINT SYSTEM OZE	7
29. PINS/HANGERS/HINGES		30. FATIGUE PRONE CONNECTIONS	
31. LIVE LOAD RESPONSE	E	32. SUMMARY	6

SUBSTRUCTURE 33. ABUTMENTS — 6 STUB-CAPPED PILE (SINGLE ROW PILES)	2	6 STUB-CAPPED PILE (SINGLE ROW PILES) 34. ABUTMENT SEATS — Abutment: ON PILING	1
35. PIERS	1	5 CAPPED COLUMN 36. PIER SEATS — Piers: ON PILING	1
37. BACKWALLS	1	38. WINGWALLS	1
Piers = 03 NN NN 39. FENDERS and DOLPHINS — Spans = 4		40. SCOUR — 3	1
41. SLOPE PROTECTION — 3 RIP RAP (DUMPED ROCK)	1	42. SUMMARY — Dive Date 12/30/1899	6
CULVERTS 43. GENERAL — N NONE/NOT APPLICABLE		44. ALIGNMENT	
45. SHAPE		46. SEAMS	
Culvert Length 0 47. HEADWALLS or ENDWALLS		Culvert Fill Depth 0 48. SCOUR	
49.		50. SUMMARY	
CHANNEL 51. ALIGNMENT	1	52. PROTECTION — 2 STONE	1
6 (SEE CODING GUIDE) 53. WATERWAY ADEQUACY	1	54. SUMMARY	8
APPROACHES 55. PAVEMENT — 2 BITUMINOUS	1	56. APPROACH SLABS	1
57. GUARDRAIL — 1 STEEL BEAM	1	58. RELIEF JOINTS	
59. EMBANKMENT	1	60. SUMMARY — Percent Legal = 150	7
GENERAL 61. NAVIGATION LIGHTS		62. WARNING SIGNS — Maint Resp 1 OHIO TRAN DEPT	
Signs on = N 63. SIGN SUPPORTS — MVC on = 9999.9		64. UTILITIES	
Under C = 0 65. VERTICAL CLEARANCE — Under NC = 0	N	66. GENERAL APPRAISAL & OPERATIONAL STATUS	6 A

67. INSPECTED BY

SIGNED | PE Number | KJB INITIALS

DATE 11/3/2009

68. REVIEWED BY

SIGNED | 72336 PE Number | MWB INITIALS

DATE 3/3/2010

1 1 1 1 1 N N N
SURVEY

DECK

FL: A FEW TRANSVERSE CRACKS. FLOOR <1% DETERIORATED.
WS: CRACKS. WS <1% DETERIORATED.
RAILING: MINOR SPALL AND DELAMINATIONS ON LEFT RAIL.
EXJTS: DECK SIDE OF START (W) JOINT IS 1/2" LOWER THEN THE APPROACH SLAB SIDE. FINISH BACKWALL ARMOR IS GOUGED AND CRACKED, A 6" LENGTH OF THIS ARMOR IS MISSING; SEE ATTACHED PHOTOS 1 - 5 DATED 11/3/09.

SUPERSTRUCTURE

BEAMS: RUSTED SECTION LOSS NEAR ABUTMENTS. #1 BEAM WEB AT START ENDFRAME FLEX'S WITH HEAVY LOAD.
FRAMES: ENDFRAME RUSTED 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. START ABUT ROCKERS #2,#3,#4, AND #5 ARE LOOSE. FINISH ABUT 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 START FLEX'S.

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: SLIGHT BOUNCE ONTO BRIDGE FROM WEST.
GUARDRAIL: MINOR COLLISION DAMAGE TO START-LEFT.

GENERAL

AP LOOK AT SUPER FROM BOAT WITH DIVER ON 10/28/09.

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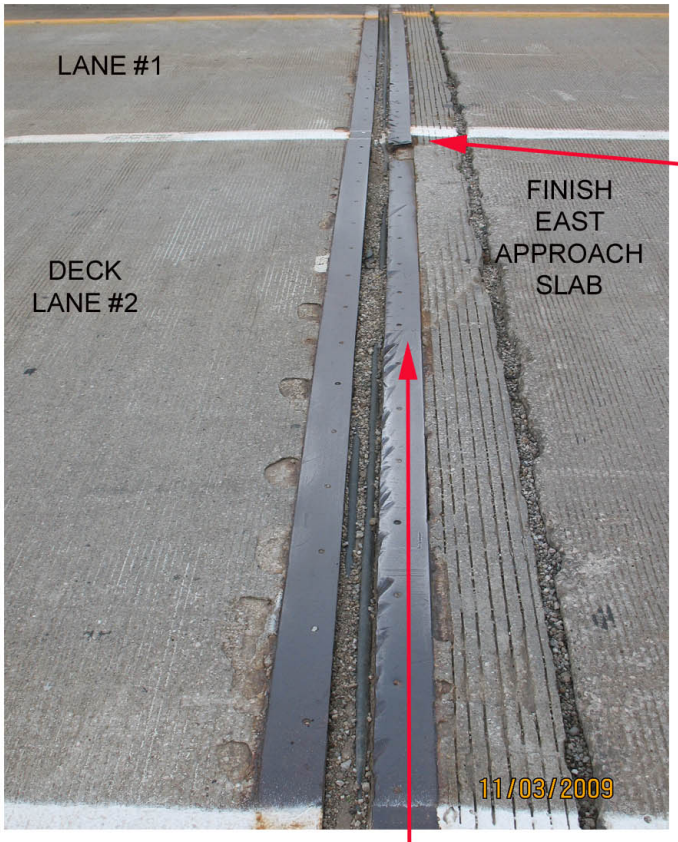
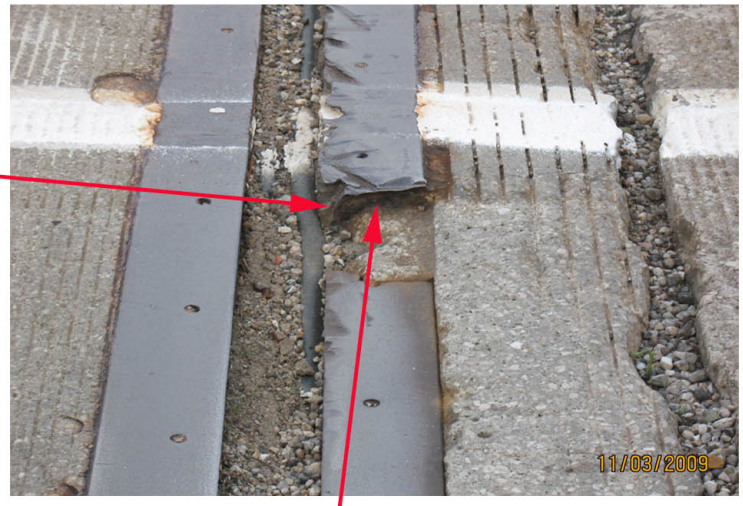
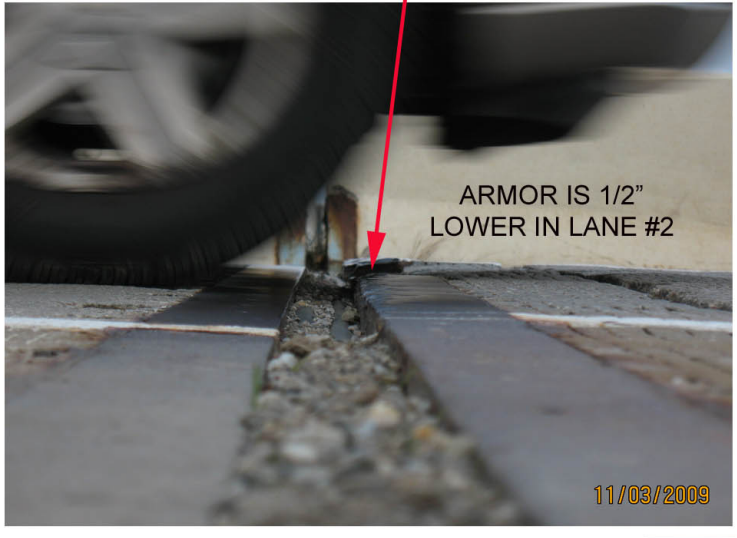
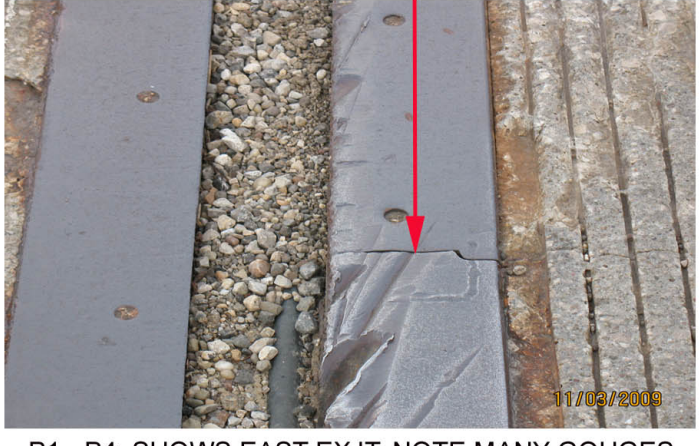
SFN 2801744









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.

2801744	State Route 422 over La Due Reservoir (GEA-422-0986 R)	Oct. 28th, 2009
SFN	*Bridge Name*	*Underwater Inspection Date*

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:

KCI Associates of Ohio, P. A.
388 S. Main Street, Suite 401
Akron, Ohio 44311
Phone: (330) 564-9100

Travis M. Clower 12-10-09

STATE OF OHIO
TRAVIS M. CLOWER
E-66382
REGISTERED
PROFESSIONAL ENGINEER

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:	*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 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.

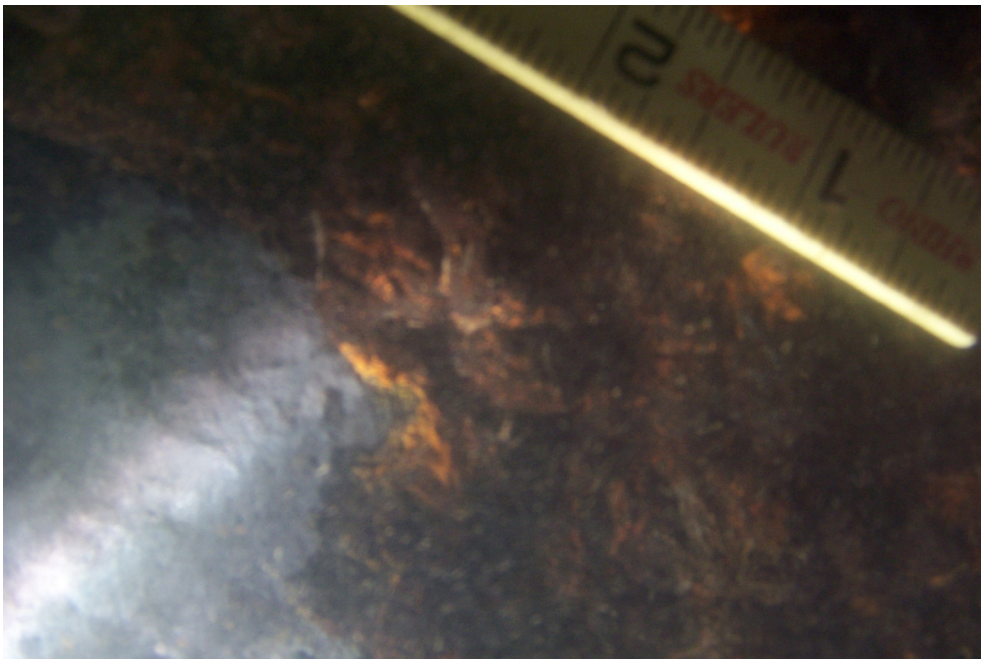


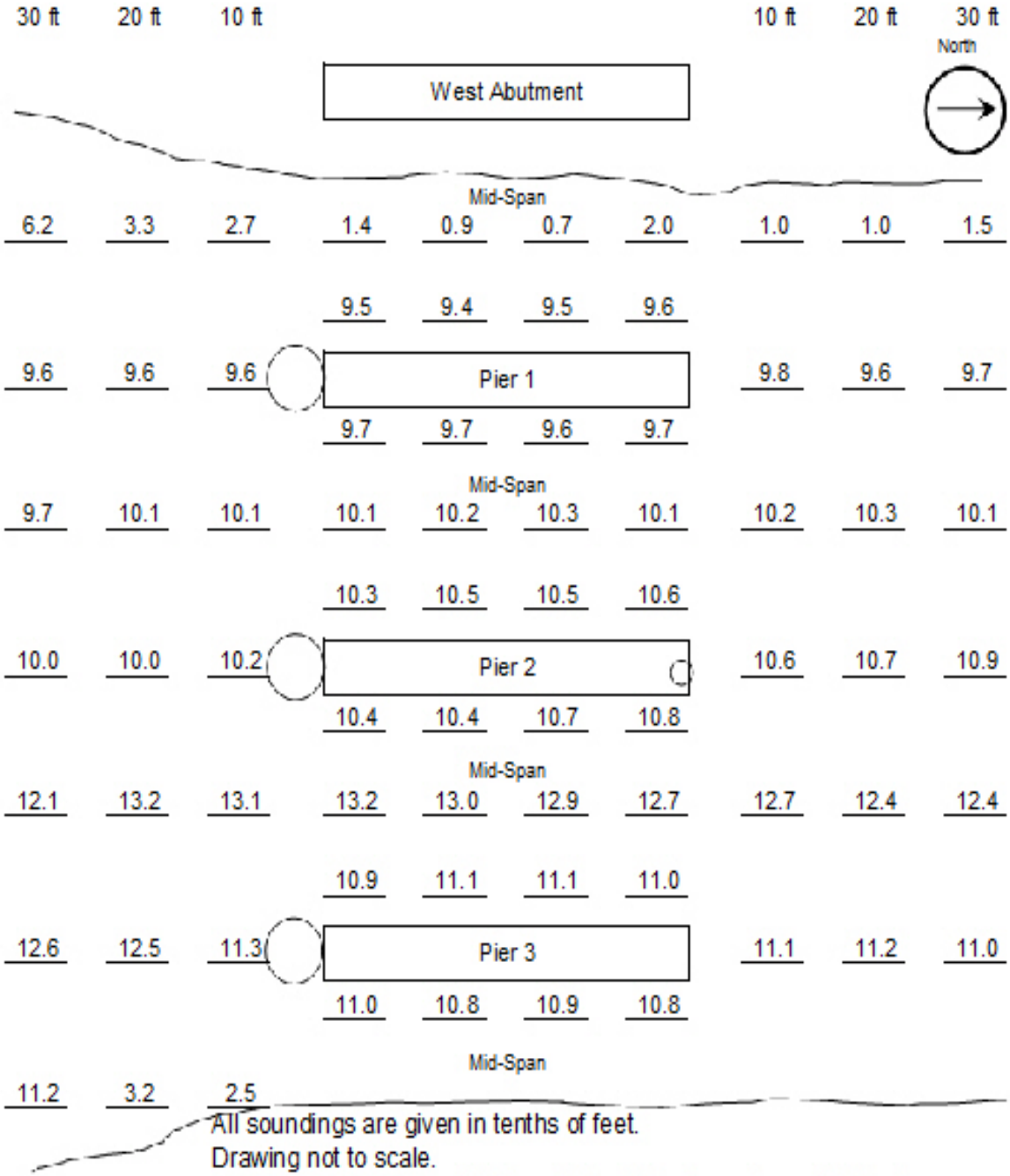
Photo by T. Clower, 10/28/09

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
Inspectors: JC, MS, TC
Inspection Date: 10/28/2009
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