

STATE OF OHIO DEPARTMENT OF TRANSPORTATION  
BRIDGE INSPECTION REPORT

BR-86 REV 2-95

1 8 0 1 5 0 3  
STRUCTURE FILE NUMBER 7

BRIDGE NUMBER **CUY 00010 1613**  
TWP ROUTE UNIT

YEAR BUILT **1932**

DIST **12** BRIDGE TYPE **343** TYPE SERVICE **5 7** **CUY RIVER VALLEY & FI RR**

<b>DECK</b>	out/out 83 Deck Area 272,652 sqft 1 REINF CONCRT (PRESTRSD, PRECAST)	8	<b>2</b>	3 LATEX MODIFIED CONCRETE OVERLAY Thk 1.2	41	<b>1</b>
1. FLOOR				2. WEARING SURFACE		
	Left 2 SIDEWALK(>2')/Right 2 SIDEWALK(>2')					
3. CURBS, SIDEWALKS & WALKWAYS		9	<b>1</b>	4. MEDIAN Lanes on 8	42	
5. RAILING	5 REINFORCED CONCRETE PARAPET	10	<b>1</b>	6. DRAINAGE 3 SCUPPERS & DWNSPTS	43	<b>1</b>
7. EXPANSION JOINTS	0 OTHER	11	<b>1</b>	8. SUMMARY	44	<b>7</b>
<b>SUPERSTRUCTURE</b>	Max Spans 299					
9. ALIGNMENT		12	<b>1</b>	10. BEAMS/GIRDERS/SLABS 15 ROLLED STEEL	45	<b>1</b>
11. DIAPHRAGMS OR CROSSFRAMES		13	<b>1</b>	12. JOISTS/STRINGERS	46	<b>1</b>
13. FLOOR BEAMS		14	<b>1</b>	14. FLOOR BEAM CONNECTIONS	47	<b>1</b>
15. VERTICALS		15	<b>2</b>	16. DIAGONALS	48	<b>1</b>
17. END POSTS		16		18. TOP CHORD	49	<b>1</b>
19. LOWER CHORD		17	<b>2</b>	20 LOWER LATERAL BRACING	50	<b>1</b>
21. TOP LATERAL BRACING		18		22. SWAY BRACING	51	<b>1</b>
23. PORTALS		19		24. BEARING DEVICES 1 ROLLERS	52	<b>2</b>
25. ARCH		20		26 ARCH COLUMNS or HANGERS	53	
27. SPANDREL WALLS		21		28. PROTECTIVE COATING SYSTEM Paint Date 3/4/2004 5 PAINT SYSTEM OZE	54	<b>7</b>
29. PINS/HANGERS/HINGES		22	<b>1</b>	30. FATIGUE PRONE CONNECTIONS	55	
31. LIVE LOAD RESPONSE		23	<b>S</b>	32. SUMMARY	56	<b>7</b>
<b>SUBSTRUCTURE</b>	3 SOLID WALL					
33. ABUTMENTS		24	<b>1</b>	34. ABUTMENT SEATS 2 CANTILEVER Abutment: NOT ON PILING	57	<b>1</b>
35. PIER		25	<b>1</b>	36. PIER SEATS 4 OPEN COLUMN Piers: NOT ON PILING	58	<b>1</b>
37. BACKWALLS		26	<b>1</b>	38. WINGWALLS	59	<b>1</b>
39. FENDERS and DOLPHINS	Piers = 15 03 01 Spans = 20	27	<b>4</b>	40. SCOUR 60	1	<b>1</b>
41. SLOPE PROTECTION	N NONE-NATURAL PROTECTION(GRA)	28		42. SUMMARY Dive Date 12/30/1899	62	<b>7</b>
<b>CULVERTS</b>	N NONE/NOT APPLICABLE					
43. GENERAL		29		44. ALIGNMENT	63	
45. SHAPE		30		46. SEAMS	64	
47. HEADWALLS or ENDWALLS	Culvert Length 0	31		48. SCOUR Culvert Fill Depth 0	65	
49.		32		50. SUMMARY	66	
<b>CHANNEL</b>						
51. ALIGNMENT		33	<b>2</b>	52. PROTECTION 4 PILING	67	<b>2</b>
	8 SLIGHT CHANCE OVERTOPPING					
53. WATERWAY ADEQUACY		34	<b>1</b>	54. SUMMARY	68	<b>6</b>
<b>APPROACHES</b>	8 BITUMINOUS					
55. PAVEMENT		35	<b>1</b>	56. APPROACH SLABS	69	<b>1</b>
57. GUARDRAIL	0 OTHER	36	<b>1</b>	58. RELIEF JOINTS	70	
59. EMBANKMENT		37	<b>1</b>	60. SUMMARY Percent Legal = 150	71	<b>8</b>
<b>GENERAL</b>						
61. NAVIGATION LIGHTS		38	<b>1</b>	62. WARNING SIGNS Maint Resp 1 OHIO TRAN DEPT	72	
63. SIGN SUPPORTS	Signs on = N MVC on = 9999 9	39		64. UTILITIES	73	<b>3</b>
65. VERTICAL CLEARANCE	Under C = 0 Under NC = 0	40	<b>N</b>	66. GENERAL APPRAISAL & OPERATIONAL STATUS 74	<b>7</b>	<b>A</b>

67. INSPECTED BY

**61171 JMC**

68. REVIEWED BY

SIGNED 76 PE NUMBER Burgess & Niple, Inc., 5085 Reed Rd, Columbus, OH 43220

78 INITIALS

SIGNED

81 PE NUMBER 83 INITIALS

DOT 2852

DATE

1 2 1 1 0 9  
86 91

1 1 1 1 1 N N N  
92 99

DATE

100 105

USE REVERSE SIDE FOR ADDITIONAL DETAILS

## BRIDGE INSPECTION REPORT

BR-86 REV 02-95

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STRUCTURAL FILE NUMBER

Bridge Number CUY 00010 1613

CO ROUTE UNIT

Date Built 1932District 12 Bridge Type STEEL/TRUSS/DECKType Service 57CUY. RIVER VALLY & FRR

Deck

FLOOR: SPALLS THAT HAVE BEEN SEALED. A FEW WET SPOTS. EAST APPROACH SPAN HAS LARGE SPALLED AREAS WITH EXPOSED REBAR. TRUSS SPANS 1-5% DETERIORATION. EAST APPROACH 5-10% DETERIORATION.

WS: <1% DETERIORATION.

RAILING: CRACKING WITH RUST STAINS IN MULTIPLE LOCATIONS.

EXPANSION JOINTS: LEAKAGE IS OCCURRING AT SEVERAL OF THE EXPANSION JOINTS.

Superstructure

LOWER CHORD: SECTION LOSS DUE TO PREVIOUS CORROSION ON PLATES AND RIVET HEADS; PITTING AND SECTION LOSS IN GUSSET PLATES. PACK RUST IS BEGINNING TO RE-ACTIVATE BETWEEN COMPONENTS IN SOME LOCATIONS.

VERTICALS: SECTION LOSS DUE TO PREVIOUS CORROSION (BEFORE REHAB). RUST STAINING IS OCCURRING OVER THE PAINT ON THE VERTICALS AT THE JOINTS. ALSO, PACK RUST IS BEGINNING TO RE-ACTIVATE IN SOME LOCATIONS ON THESE SAME VERTICALS.

DIAGONALS: SECTION LOSS, HOLES DUE TO PREVIOUS CORROSION FROM BEFORE THE REHAB.

BEARINGS: WATER COLLECTS IN THE BASE OF SOME PIER BEARINGS.

PINS: SECTION LOSS ON SLEEVES DUE TO PREVIOUS CORROSION. PLATES ARE BENT DUE TO PACK RUST. ABRASIVE SECTION LOSS ON LOWER CHORD SLIDING PIN CONNECTIONS.

PAINT: <1% DETERIORATION. MINOR PEELING OF TOP COAT. PACK RUST IS RE-ACTIVATING IN A FEW LOCATIONS, ESPECIALLY ON MEMBERS NEAR JOINTS AND RANDOM LOCATIONS THROUGHOUT THE EXTERIOR LOWER CHORDS. RUST STAINING IS OCCURRING OVER THE PAINT TOP COAT ON MEMBERS NEAR THE JOINTS.

Substructure

PIERS: LARGE SEALED SPALLS WITH 360 DEGREE REBAR EXPOSURE ON PIER TOWERS ABOVE BEARINGS. EXTERIOR DECORATIVE WALLS OF PIERS ARE CRACKING AND SPALLING NEAR THE TOPS.

FENDERS: SEVERE ROT AND COLLISION DAMAGE. FENDERS ARE ESSENTIALLY FAILED.

SCOUR: DIVED BY SPECIALTY DIVING ON 10/12-05; SEE DIVE REPORT.

Channel

ALIGNMENT: SHARP BEND JUST UPSTREAM OF BRIDGE.

PROTECTION: WEST BANK SHEET PILING IS WASHED OUT 200 YARDS NORTH (DOWNSTREAM) OF BRIDGE.

General

LIGHTING: WIDESPREAD CRACKING IN PRECAST CONCRETE LIGHT POLES MOUNTED OUTSIDE OF THE BRIDGE RAILING. SEVERAL MISSING OR DAMAGED DECORATIVE LIGHTS ON PIERS. MISSING PLATES THAT COVER ELECTRICAL BOXES IN SIDEWALKS AND HAND ACCESS HATCHES ON LIGHT POLES.

UTILITIES: MISSING SUPPORTS UNDER 40" GAS MAIN ON UTILITY DECK. SEVERAL OF THE UTILITY CONDUITS HAVE BEEN BROKEN INTO AND THE COPPER WIRE STRIPPED AT THE WEST END (CUYAHOGA COUNTY ENGINEER IS AWARE OF THIS).

# 2009 Annual Inspection of the Detroit-Superior Bridge CUY-10-1613 SFN 1801503

## Supplemental Report of 2009 Inspection Results

Overall the bridge is in good condition and the repairs that were performed during the recent rehabilitation are performing well. A few items on the bridge are starting to show some new deterioration. This is a brief summary of the specific findings during the 2009 inspection that better explain the ratings on the BR-86 form.

### **Deck**

The deck wearing surface and the underside of the deck are in good condition.

### **Railings**

The decorative concrete railing is experiencing progressive cracking and rust staining. From the widespread and random extent of the rust stains, it is apparent that the reinforcement bars in the railing have begun corroding.

### **Expansion Joints**

The expansion joint seals have been leaking. At the time of the inspection, icicles could be seen hanging from the undersides of the expansion joints in multiple locations, especially near the outer ends (over the north and south exterior truss lines and under the sidewalks and curbs). This leakage of the roadway drainage, with its chloride content, is causing rust staining on the truss members directly below, and it is beginning to re-activate the pack rust that had been dormant since the recent rehabilitation.

### **Truss Verticals**

In general the truss verticals are in the same condition as at the completion of the rehabilitation. However, the pinned verticals directly below the expansion joints are experiencing corrosion again already.

### **Truss Diagonals, Upper Chords and Lower Chords**

The upper and lower chords of the trusses and the diagonals, in general, are in the same condition that they were in at the time of the completion of the rehabilitation. There are a few random locations – especially on the lower chords of the south exterior truss line – where the paint has begun to crack over area between components of built-up truss members that previously had pack rust. This would indicate that the pack rust is beginning to re-activate between the components. These paint cracks are, as of yet, few, small and isolated.

### **Paint**

The paint system overall is still in very good condition since the recent rehabilitation. However, at the pinned truss verticals directly below the expansion joints (and to some extent also on the portions of the diagonals and chord members near the expansion joints), there is rust staining occurring, and some reactivation of pack rust. The rust staining is on the outside of the paint. It is coming from the corrosion of the steel around the joint, which drips down onto verticals below and parts of the adjacent members. Thus, the new paint itself is not failing (yet) even though it appears corroded from a distance at these locations. However, the paint is beginning to crack in some locations near the joints where previously cleaned out pack rust existed. This is an indication that the pack rust has already begun to re-activate.

### **Substructure**

The piers have some cracking and spalling occurring on the upper ends of the outer decorative walls. These are decorative and are not load-bearing portions of the piers. The abutments and piers in general have many patched areas. Per information provided to the consultants by ODOT, sounding has been performed on these patched areas and has indicated that, although they have an appearance of delamination, they are in fact in good condition. No sounding of the substructure was included in the scope of the 2009 routine inspection.

### **Channel Protection/Fenders**

The timber pile fenders in the river in front of the piers are rotted and collapsed. This happened several years ago and is not a new condition. No diving was performed as part of the 2009 routine inspection.

### **Miscellaneous/Utilities**

Vandals have been breaking open the PVC conduits for the utilities (cable, phone) on the lower level deck and stripping the copper wire. Per conversations with the Cuyahoga County Engineer's Office, they are aware of the damage to the utility conduits, and the vandals were caught using surveillance cameras installed on the Detroit-Superior ("Vets Memorial") Bridge just downstream of the Hope Memorial bridge.



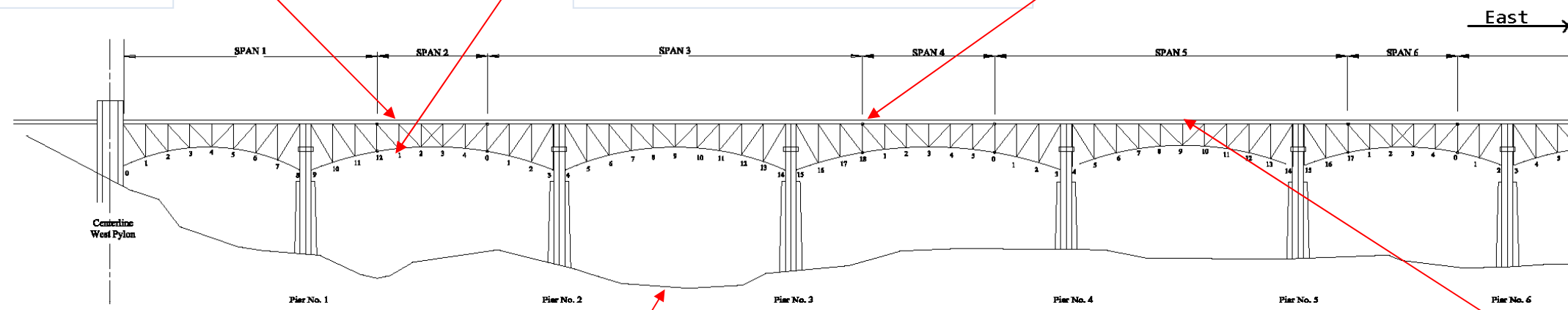
Leakage through deck under south sidewalk (visible in wet spots).



Efflorescence on lower chord and new corrosion (rust staining) directly below leaking areas in the south sidewalk.



Efflorescence, rust staining on the outside of the new paint in areas below the joints that are leaking (typical at all joints).



**CUY-10-1613 Elevation**  
Looking North,  
West Abutment to Pier 6

Collapsed (failed) timber fenders in river.



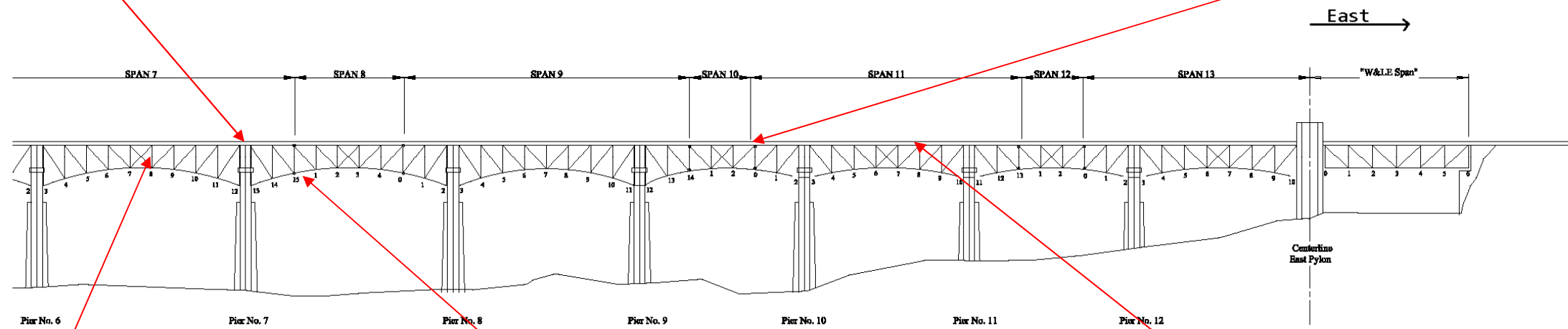
Precast concrete light pole is cracked, cover for hand access hole is missing, (typical of multiple locations).





Spalling at top of decorative details over piers, exterior faces.

Leakage through joints at the ends, visible here in the form of icicles – typical all expansion joints.



**CUY-10-1613 Elevation**  
Looking North,  
Pier 6 to East Abutment



Typical good condition of paint after rehabilitation. Most members, like U8-L8 shown here, have some previous pack rust that has been cleaned and painted over and is not currently active.



Corrosion beginning to re-activate on angles below bottom chord pin. These members are directly below a leaking joint, as are all the members that have re-activation of corrosion.



Spall, 6'x3', in underside of deck, span 11 between U7 and U8.