

STATE OF OHIO DEPARTMENT OF TRANSPORTATION
BRIDGE INSPECTION REPORT

BR-86 REV 02-95

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 1 Structure File Number 7

Bridge Number _____ CLEVELAND
 CO ROUTE UNIT

Date Built _____

District _____ Bridge Type _____

Type Service _____

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DOT 2852 DECK AREA Date _____ 86 _____ 91 _____ 92 _____ 69 Survey _____ 99 Date _____ 100 _____ 105

BRIDGE INSPECTION REPORT

BR-86 REV 02-95

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Structure File Number 7

Bridge Number CUY 00006 1456
CO ROUTE UNITDate Built 07/01/1917 -1997District 12 Bridge Type STEEL/ARCH/THRUType Service 1 5 7(1499)CUY. RIVER & RTA

Deck

FLOOR: 1-5% DETERIORATION. THE SIP FORMS ARE IN GOOD CONDITION. THE CONCRETE DECK BOTTOM HAS A SPALL IN SPAN 6 BETWEEN COLUMNS S6-11NI AND S6-12NI.

WS: THERE ARE SHALLOW EDGE SPALLS ALONG ALMOST ALL OF THE JOINTS. ELSEWHERE, THE WEARING SURFACE IS IN VERY GOOD CONDITION.

SIDEWALKS: SOME LONGITUDINAL CRACKS EXIST IN THE SIDEWALKS..

RAILING: TIGHT THE PEDESTRAIN FENCE ON THE S RAILING IS DAMAGED BETWEEN THE 5TH AND 6TH EXP JTS FROM THE E ABUTMENT. THE N. RAILING HAS A 1 SF SPALL AT THE 9TH JOINT FROM THE W ABUTMENT.

EXPANSION JOINTS: THERE IS DEBRIS IN ALMOST ALL OF THE JOINTS, WHICH RETAINS MOISTURE ON THE SEALS INSTEAD OF DRAINING TO THE CURBLINES.

Superstructure

BEAMS: CRACKS, DELAMINATIONS, SPALLS WITH EXPOSED RE-STEEL.

STEEL ARCH TRUSS COMPONENTS AND STEEL FLOOR SYSTEM MEMBERS: SEE ATTACHED SUPPLEMENTAL REPORT.

BEARING DEVICES: THERE ARE CRACKED WASHER AT THE SKEWBACKS AT L0' OF THE N TRUSS AND L0 OF THE S TRUSS (THE LATTER WAS PREVIOUSLY NOTED).

PRINCIPAL ARCHES: SPALLS WITH EXPOSED REBAR EXIST ON THE S INTERIOR ARCH IN SPAN 7 (OVER MERWIN ST.). THE NI ARCH IS CRACKED IN SPAN 12, JUST BELOW FB 7, AND THERE IS MAP CRACKING IN THE UNDERSIDE OF THE SPAN 12 NE ARCH AT THE W END. THERE IS A ¼" WIDE CRACK IN THE ARCH IN SPAN 7 BETWEEN COLUMNS S7-8SE & S7-9SE.

JACK ARCHES: THERE IS A ¼" WIDE CRACK IN THE ARCH IN SPAN 7 BETWEEN COLUMNS S7-8SE & S7-9SE; SPALLS WITH EXPOSED REBAR ON THE UNDERSIDES OF THE ARCHES OF THE SI LINE IN SPAN 2 BETWEEN COLUMNS S2-6SI AND S2-12SI; IN THE JACK ARCH BETWEEN COLUMNS S6-10SE AND S6-11SE; BETWEEN S6-4SE AND S6-5SE; AMONG OTHER CRACKS AND SPALLS. NUMEROUS SMALL DELAMINATIONS EXIST ON JACK ARCH UNDERSIDES.

ARCH COLUMNS: COLUMN 12-NE-12 IS CRUSHED AT THE TOP, WITH A LARGE CHUNK OF CONCRETE SPALLED OFF AND 3 EXPOSED UN-CORRODED REBAR; THE SPALLING CONCRETE FROM THE COLUMN SHATTERED THE SCREEN OF A DECORATIVE LIGHTING FIXTURE. SPALLS ALSO EXIST IN COLUMNS S7-7NI, .

COLUMN S6-14SE HAS A 30" LONG, ½" WIDE CRACK. SIMILAR CRACKS EXIST IN COLUMNS S6-7SE, S6-14SE, S9-9NI, S10-10NE, S12-6NE, S12-9NE, S13-4SE, ES-5SE, ES-16NI, ES-18SE AND MULTIPLE COLUMNS IN THE EAST STATION SECTION PAST COLUMN ES-17. MANY OF THE CORBELS AT THE TOPS OF THE COLUMNS ARE SPALLED.

PINS/HANGERS: RUST SECTION LOSS ON EYEBAR HANGERS AT PP'S 4 AND 4'.

CRACKS IN RETAINING WASHERS. SLIGHT TRANSVERSE MISALIGNMENT AT UPPER ARCH PIN.

PAINT: <1% DET ABOVE UPPER DECK. BELOW THE UPPER DECK PAINT IS FAILED INSIDE THE N TRUSS PANEL POINTS L6, L7, L9, L8', AND L7' (WATER PONDS IN SOME OF THESE LOCATIONS, IF NOT ALL). THERE IS 5% RUST, PAINTED OVER SCALE AND PEELING PAINT. PAINT CONDITIONS ARE WORSE UNDER OPENINGS IN THE UPPER DECK. CANDIDATE FOR ZONE PAINTING.

Substructure

ABUTMENTS: WATER LEAKS THROUGH THE E ABUTMENT NEAR THE PAVEMENT - THIS AREA HAS RUST STAINING.

PIERS: A 2 SF SPALL EXISTS ON THE E FACE OF PIER 11. SPALLING ALSO EXISTS ON THE S FACES OF THE TOWERS AT PIERS 10 AND 12. SEVERAL EAST STATION AND TUNNEL PIER COLUMNS HAVE HEAVY SPALLING WITH 360 DEGREE REBAR EXPOSURE. WIDE CRACKS IN WALLS OF WEST APPROACH, UNDER LOWER DECK. CRACK MONITORS HAVE BEEN INSTALLED SEE ATTACHMENTS AND PHOTOS DATED 05/17/07.

Channel

ALIGNMENT: FLOWS DIAGONALLY UNDER SPAN 4. PROTECTION: RUST SCALE ALONG WATER LINE. WEST BANK EROSION SOUTH OF PIER 3 HAS CAUSED SLOPE TO FAIL.

Approaches

EMBANKMENT: PAST SLOPE FAILURES OF SOUTHWEST EMBANKMENT. TOWER B IS TIPPING AWAY FROM STRUCTURE. CRACK MONITOR INSTALLED AT TOWER B HAS MOVED 9 MM SOUTH AND 1 MM EAST.

General

UTILITIES: PLASTIC CONDUIT HANGING DOWN AND LYING ON LOWER DECK IN SPANS 2,5 AND 6. RUBBER ELECTRIC LINE SUSPENDED FROM SPAN 4 RUBBING L1'-L2'. FOR MORE INFORMATION SEE ATTACHED SUPPLEMENTAL REPORT.

2008 Annual Inspection of the Detroit-Superior Bridge

CUY-6-1456 SFN 1800930

Supplemental Report of 2008 Inspection Results

Floorbeams (Concrete Arch Spans)

Floorbeam 17 in span 3 between the NI and SI column lines has multiple long cracks in the bottom face and E & W faces near bottom, indicating ongoing corrosion of the main reinforcement. The same is occurring at Floorbeam 9, span 3.

Floorbeam 11 in span 5 between the NI and SI lines has a transverse crack across the bottom face and extending up the vertical faces, indicating it has been overloaded at some point. Many floorbeams have had vertical cracks epoxy-injected, incl. most of the floorbeams in span 11, and Floorbeams 12 through 15 in span 5.

Some of the retrofitted concrete floorbeams with widened flanges are developing delaminations or spalls in the repaired areas. This occurs at:

- Floorbeams 8, 9 & 15 in span 2 between SI & SE
- Floorbeam 7 in span 10, between SE & SI
- Floorbeams 8 & 13 thru 17 in span 3, between SE & SI
- Floorbeams 3 & 7 in span 11 between NE & NI
- Floorbeams 3 & 12 in span 12 between SE & SI
- Floorbeams 4 & 5 between NE & NI, and Floorbeams 6 & 7 between SE & SI in span 13.

The north cantilever of Floorbeam 4 in span 13 is spalled with exposed rebar on the bottom face.

Floorbeams (Steel Truss Arch Span)

The floorbeams of the lower-level deck have heavy previous section loss in many locations.

In the upper deck, previous corrosion is re-activating on the sections of the top flanges of the floorbeams that are inside truss members (e.g., the end of floorbeam 4 inside U4-L4); these areas collect debris and retain moisture. Nearly all the floorbeams have some area of heavy previous section loss where corrosion is starting again, but the most corroded are Floorbeams 1, 3, 6, 9, 10, 12, 11', 10', 8', 6' and 4'. Large corrosion holes through the floorbeam webs near the stringer E & F and P & R connections are especially common.

In some cases, re-activating pack rust between components is causing cracks in welds, such as at the S end of Floorbeam 10'.

Also, several floorbeams have field-welded patches to holes that were flame-cut into the webs for access during construction. These thick field welds are now cracking - all the cracks observed are following the path of the weld and not propagating into other parts of the floorbeam web.

Truss Verticals

Pitting and corrosion is re-activating between the batten plates and the other components on several members, especially near the splash zone of the deck. 2 rivets are missing on exterior angle at top of U2'-L2', N truss. U6'-L6' has 3 missing rivets at the top, E face (condition predates last painting).

Truss Diagonals

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Pack rust and pitting is re-activating on the lacing bars on U1-L2, U2-L3, U3-L4, U2'-L3' and U1'-L2', N truss, near the splash zone. Pitting and corrosion is re-activating between the batten plates and the other components on several members, especially near the splash zone of the deck. The bottom batten plate of U1-L2 has 100% section loss in the bottom of the plate.

Truss Upper Chord

The paint is cracked and surface rust is occurring at U8, S. truss. Pack rust (up to 1/2") is re-activating at U10, S. truss; and on U11-U12, N. truss.

Truss Lower Chord

Pack rust and pitting is re-activating on the lacing bars on L8-L9, L9-L10 & L5'-L6' of the N truss. Pack rust is re-activating between all the components inside the L2 and L2' panel points, N truss. There is active corrosion on the diaphragm plates inside L5-L6 of the N. truss and in L8'-L9' of the N. truss.

Truss Sway Bracing

The top gusset plate at the sway bracing connection to U9', S. truss has a tear (construction damage). Corrosion is re-activating on the sway bracing connection to U2'-L2'.

Truss Upper Lateral Bracing

Light pack rust is typical at upper lateral bracing connection gusset plates.

Paint

Paint is failed inside the N truss panel points L6, L7, L9, L8', and L7' (water ponds in at least some of these locations, if not all). Corrosion is re-activating on both of the floor systems in the areas of previous heavy section loss, especially near the connections of Stringers E, F, P and R to the floorbeams.







