

Ohio Bridge Inspection Summary Report

CUY-00002-1441 (1800035)

2: District 12 16000 - CLEVELAND (CUY county)
 21: Major Maint A/B 01 - State Highway Agency /
 225 Routine Main A/B 04 - City or Municipal Highway /
 Agency
 221 Inspection A/B 01 - State Highway Agency /
 220: Inv. Location CUY

5A: Inventory Route 1 00002
 7: Facility On SR 2
 6: Feature Ints CUY RIVER,RTA,FLATS
 9: Location MAIN AVE. BRIDGE

Condition

58: Deck 7 - Good Condition
 58.01 Wearing Surface 7 - Good (1% distress)
 58.02 Joint 6- Satisfactory (isolated leaking)
59: Superstructure 5 - Fair Condition
 59.01 Paint & PCS 7 - Good (1-5% corr.)
60: Substructure 6 - Satisfactory Condition
61: Channel 8
61.01 Scour 7 - Good
62: Culverts N - Not Applicable
67.01 GA 5

Appraisal

Sufficiency Rating 40.2 SD/FO 2 - FO
 36: Rail, Tr, Gd, Term Std 1 1 1 1
 72: Approach Alignment 6 - Equal to present minimum criteria
 113: Scour Critical 8 - Stable for scour conditions
 71: Waterway Adequacy 9 - Bridge Above Flood Water Elevations

Geometric

48: Max Span Length (ft) 400.0
 49: Structure Length (ft) 6580.0
 52: Deck Width, Out-To-Out (ft) 85.5
 424: Deck Area (sf) 562590
 32: Appr Roadway Width (ft) 70.0
 51: Road Width, Curb-Curb (ft) 82.0
 50A: Curb/SW Width: Left (ft) 0
 50A: Curb/SW Width: Right (ft) 0
 34: Skew (deg) 99
 33: Bridge Median 3 - Closed median with non-mountable barriers
 54B: Min Vert Underclearance (ft) 14.08
 336A: Min Vert Clrnce IR Cardinal (ft) 99
 336B: Min V Clr IR Non-Cardinal (ft) 0
 578: Culvert Length (ft) 0

Load Posting

41: Op/Post/Closed A - Open
 70: Posting 5 - Equal to or above legal loads
 70.01: Date
 70.02: Sign Type
 734: Percent Legal (%) 110
 704: Analysis Date 07/01/2012
 63: Analysis Method 6 - Load Factor (LF) rating reported by rating factor (RF) method using MS18 loading.

Structure Type

43: Bridge Type 3 - Steel
 09 - Truss - Deck
 N- Not Applicable
 45: Spans Main / Approach 10 / 30
 107: Deck Type 1 - Concrete Cast-in-Place
 408: Composite Deck N - Non-composite Construction
 414A Joint Type 1 8 - Elastomeric Strip Seal
 414B: Joint Type 2 N - None
 108A: Wearing Surface 3 - Latex Concrete or similar additive
 N- Not Applicable
 422: WS Date 01/01/1992
 423: WS Thick (in) 1.2
 482: Protective Coating 8 - Paint System A with intermediate tie coat
 483: PCS Date 01/01/1984
 453: Bearing Type 1 0 - Other
 455: Bearing Type 2 N - None
 528: Foundn: Abut Fwd 4 - Spread Footing
 533: Foundn: Abut Rear 4 - Spread Footing
 536: Foundn: Pier 1 2 - Cast-in-Place Reinforced Concrete Piles (Other diameter)
 539: Foundn: Pier 2 N - None (Such as most Culverts)

Age and Service

27: Year Built/ 106 Rehab 1939 / 1992
 42A: Service On 5 - Highway-pedestrian
 42B: Service Under 8 - Highway - waterway - railroad
 28A: Lanes on 06
 28B: Lanes Under 04
 19: Bypass Length 2
 29: ADT 37139
 109: % Trucks (%) 3

Inspections

		Months	
90: Routine Insp.		12	08/14/2020
92A: FCM Insp.	Y	24	07/25/2019
92B: Dive Insp.	N	0	
92C: Special Insp.	N	0	
92D: UBIT Insp.	Y	12	08/14/2020
92E: Drone Insp.			

Inspector Anamasi,Peter

Inspector: Peter Anamasi
 Inspection Date: 08/14/2020

Structure Number: 1800035
 Facility Carried: SR 2

Bridge Inspection Report

Element Inspection

	Environment	Total Quantity	Units	Condition State 1	Condition State 2	Condition State 3	Condition State 4
12 - Reinforced Concrete Deck	3 - Mod.	502787	sq. ft.	487693	15094	0	0
510 - Wearing Surfaces		464586	sq. ft.	430615	33873	98	0
107 - Steel Open Girder/Beam	3 - Mod.	8898	ft.	7346	1510	42	0
113 - Steel Stringer	3 - Mod.	62103	ft.	61648	455	0	0
116 - Reinforced Concrete Stringer	3 - Mod.	3611	ft.	3584	27	0	0
120 - Steel Truss	3 - Mod.	5360	ft.	1978	2150	1178	54
515 - Steel Protective Coating		121604	sq. ft.	116582	4973	49	0
152 - Steel Floor Beam	3 - Mod.	23487	ft.	18359	5111	17	0
161 - Steel Pin and Pin & Hanger Assembly or both	3 - Mod.	14	each	11	3	0	0
162 - Steel Gusset Plate	3 - Mod.	1096	each	803	206	87	0
202 - Steel Column	3 - Mod.	151	each	120	31	0	0
205 - Reinforced Concrete Column	3 - Mod.	268	each	213	53	2	0
210 - Reinforced Concrete Pier Wall	3 - Mod.	55	ft.	55	0	0	0
215 - Reinforced Concrete Abutment	3 - Mod.	110	ft.	59	51	0	0
231 - Steel Pier Cap	3 - Mod.	5426	ft.	5197	209	20	0
234 - Reinforced Concrete Pier Cap	3 - Mod.	212	ft.	203	9	0	0
300 - Strip Seal Expansion Joint	3 - Mod.	1750	ft.	651	869	230	0
302 - Compression Joint Seal	3 - Mod.	1055	ft.	388	524	139	4
303 - Assembly Joint with Seal	3 - Mod.	595	ft.	222	295	78	0
311 - Movable Bearing	3 - Mod.	103	each	83	14	6	0
313 - Fixed Bearing	3 - Mod.	100	each	80	14	6	0
321 - Reinforced Concrete Approach Slab	3 - Mod.	6788	sq. ft.	6788	0	0	0
331 - Reinforced Concrete Bridge Railing	3 - Mod.	20150	ft.	17645	2368	137	0
815 - Drainage	3 - Mod.	268	each	250	14	4	0
830 - Abutment Backwall	3 - Mod.	110	ft.	50	60	0	0

ODOT District: 12

CUY-00002-1441 _(1800035)

Major Maint: 01 - State Highway Agency

Facility Carried: SR 2

Traffic On: 5 - Highway-pedestrian

Date Built: 07/01/1939

Rehab Date: 07/15/1992

Routine Maint: 04 - City or Municipal Highway Agency

Feature Inters: CUY RIVER,RTA,FLATS

Traffic Under: 8 - Highway - waterway - railroad

Insp. Resp A: 01 - State Highway Agency

FIPS Code: 16000 - CLEVELAND (CUY county)

Location: CUY

MAIN AVE. BRIDGE

Insp Resp B:

Inspector

Anamasi,Peter

Inspection Date 08/14/2020

Reviewer Anamasi,Peter

Inspector Comments - Deck and Approach

Deck

Reinforced Concrete Deck (SF)

The replacement deck, opened to traffic in 1992, consists of epoxy coated reinforcement with stay-in-place metal galvanized steel forms. The haunches in the deck above the stringers have areas of minor spalling. In Unit 1, Section P, the underside of the deck has cracking with efflorescence throughout. Isolated edge spalls were noted adjacent to the expansion joint armor. Areas of isolated spalling were noted along the gutter line on the eastbound roadway in Unit II, Main Truss spans. At Joint L between Spans 5 and 6, the underside of the joint header on the east side of the joint is delaminated and spalling with loose concrete falling onto the catwalk below. The underside of deck exhibits spalling at several joint locations in Unit II.

Strip Seal Expansion Joint (LF)

At Joint O on the westbound side of the bridge, the west joint armor in the left lane near the W. 28th Street exit ramp is loose and banging under vehicular impact. The west joint header exhibits spalls on the top of deck at the area of loose joint armor. Throughout the structure, joints have significant debris impaction and corrosion with section loss typically 3/16" deep on the joint plates. Some joints are depressed, up to 1" deep. Joint Q1 is leaking for approximately 8 LF and Joint Q is leaking for the full length of the joint. Joint G exhibits evidence of minor leakage over the south cantilever.

Compression Joint Seal (LF)

Throughout the structure, joints have significant debris impaction and corrosion with section loss typically 3/16" deep on the joint plates. Some joints are depressed, up to 1" deep. Isolated joints exhibit evidence of leakage.

Assembly Joint with Seal (LF)

At Joint L between Spans 5 and 6, the joint header on the east side of the joint is delaminated and spalling with loose concrete falling onto the catwalk below. This joint is located over Elm Street in Unit II.

Reinforced Concrete Bridge Railing (LF)

The median and railing constructed during the 1991-1992 rehabilitation were poured using slip form construction. Both the median and the parapets were repaired in the last rehabilitation project between 2017 and 2018. Many of the large spalls facing traffic were patched, however, isolated

patches are spalled again. Several spalls exhibit exposed reinforcing steel. The spalls previously noted on the exterior faces of the parapets have sealed; however, surface corrosion is reactivating on the exposed reinforcing bars that were sealed. Vertical, horizontal, and map cracking are common throughout the bridge railings. Spalls exist in the bridge railing at or near the deck joints with isolated spalls up to 2-3/4" deep at the joint armor in the parapets. There are isolated spalls up to 3" deep in the median.

Drainage (EA)

The scuppers and catch basins along the edge of roadway are partially or fully clogged with debris that is visible from the top of deck. In Unit II, the downspout at the South Truss panel point L6U6 is broken which is allowing water to drain directly onto the superstructure. At the Pier 5 South Column, the bottom angle scupper piece is broken. In Unit III, Pier 11, the scupper basin at the South Column scupper is clogged and filled with water.

Wearing Surface (SF)

The wearing surface consists of a 1.2" layer of latex modified concrete over top of the reinforced concrete deck. Typical deterioration includes minor wear in the wheel path and isolated minor hairline cracking. There are isolated areas of surface scaling / spalling up to 1" deep. Some of the scaling / spalling areas are patched with bituminous material. There is spalling up to 1/2" deep along the joints. Areas of vegetation are growing along the curblines, especially at the west end of the bridge. There is an area of spalling in the WB left lane at Joint O where the joint armor is loose.

Lighting

The deck lighting consists of metal poles with cobra head fixtures. Several pull boxes at the base of the light poles across the structure have either missing or loose covers with exposed wiring

Approach

Approach Wearing Surface (EA)

There is minor cracking and spalls noted throughout the approach wearing surface. Multiple spalls, potholes and patches are present in the West Approach.

Signs (EA)

Historic Remarks: Quantity has been updated from 0 to 6 for each truss sign/support assembly. underpass- measured 14'-1" at north curb and should be posted for 13'-10".

Sign Supports (EA)

Historic Remarks: Quantity has been updated from 0 to 6 for each truss sign/support assembly.

Inspector Comments - General Appraisal

Superstructure

Superstructure Alignment (EA)

In Unit II, there are several pin locations along the upper chord and lower chord where the trusses are not aligned along a linear plane. This is due to an intentional change in alignment of the structure. These locations should continue to be monitored. In Unit III, between Bent 11 and Bent 12, the southern fascia beam over West 9th Street is misaligned due to numerous hits from vehicles travelling northbound. Beam FSS was previously heat straightened and nearly returned to its original alignment. Measured minimum clearance at this beam is 13'-6" (posting) feet along the right curb. In Unit III, between Bent 8 and 9, the south diagonal is bent upward and to the South due to vehicular impact. The member has not been braced or straightened. In Unit IV, Section E at Bent 26, the north girder bottom flange on the north side is bent at Joint B4 and the pin nuts shown evidence of movement. Continue to monitor this location. Historic remarks: Isolated stringer sliding bearings exhibit minor vertical misalignment at the bearing interface in the East Approach Trestle Section.

Beams/Girders (LF)

There are isolated areas of reactivated pack rust with minor section loss and distortion due to pack rust noted across the structure. The West Approach, Unit I, Section K / C and N superstructure consists of rolled beams, welded plate girders, and riveted built-up plate girders. These members have areas of minor corrosion and broken rivets. The South Girder in Unit I, Section M at the South column of Frame 3 has a replacement bolt for the previously noted sheared rivet at the south connection angle. The West Approach, Unit 1, Section P reinforced concrete frame superstructure is in poor condition. There are spalls up to 7' long x 4' high x

3" deep with exposed and corroded reinforcing steel that has 100% section loss. There are hairline cracks with and without efflorescence in the concrete stringers. There are isolated patches throughout the stringers with some areas of unconsolidated concrete. The East Approach, Unit IV Lakefront Trestle consists of riveted built-up girders. These girders have isolated areas of painted over pack rust along the bottom flange up to 1" T and isolated areas of painted over pitting up to 1/8" D. The recent painting project has cleaned and sealed the corrosion on these girders. There are cutouts in the girder webs up to 11.5" L x 10" H in various locations throughout Unit IV. These cutouts are present for drainage troughs that were removed in 1991. The East Approach, Unit V Lakefront Ramp superstructure consists of three riveted built-up plate girders. Painted over pitting up to 1/16" D is typical on the girder webs with isolated locations of up to 1/4" D. The previously noted corrosion hole in the south girder in Span 38 has been repaired. The steel grating for the transverse catwalk extension between the middle and south girder has been removed due to section loss in the transverse catwalk supports.

Diaphragm/X-Frames (EA)

Minor section loss to steel crossframes. There are isolated spalls and cracks in concrete diaphragms in Section P.

Stringers (LF)

The steel stringers typically exhibit minimal to no section loss with areas of isolated freckled rust and corrosion. Historic remarks: The fascia stringers in Sections C and K (over W. 28th St.) exhibit localized web distortion adjacent to the top flange. Retrofit angles have been installed. The previously noted cracks in the fascia stringers show no propagation since the previous inspection.

Floorbeams (LF)

The floorbeams and floorbeam connections are in Good condition with areas of reactivating pack rust, painted over pitting, and section loss. Localized areas of painted over section loss and pitting ranging from 1/16" to 1/4" D are present throughout the floorbeams. Reactivated areas of pack rust and surface corrosion or freckled rusting were noted on the floorbeams. There are weld remnants and attachments on the floorbeams from previous drainage assemblies. In the main truss spans, areas of painted over pitting are noted along the bottom of top flange tension tie plates connecting the center floor beam section and the floor beam cantilever brackets. A previously repaired cracked cantilever floorbeam bracket was found during the 2020 inspection in Unit II, Span 8, Floorbeam 25 on the north side of the bridge. The West Approach, Unit I, Section J, B, M, D and P have reinforced concrete floorbeams. One floorbeam has one exposed rebar due to poor consolidation. There are isolated hairline cracks throughout the floorbeams in Section P.

Truss (LF)

Verticals

The truss verticals are in Fair condition with isolated areas of pack rust and pitting. The truss verticals exhibit areas of minor section loss with pitting and reactivated pack rust, particularly between the gusset plates, fill plates, cover plates, and vertical flanges. See report for detailed locations and descriptions of deficiencies.

Diagonals

The truss diagonals are in Fair condition with areas of pack rust and pitting. The truss diagonals exhibit areas of section loss with pitting on the top face of the web plates and pack rust along the flanges and connection fill plates. Some areas of painted over section loss were repaired with bolted repair plates. See report for detailed locations and descriptions of deficiencies.

Upper Chord

The truss upper chords are in Fair condition with isolated areas of pack rust and pitting. The truss upper chord has areas of painted over section loss, pitting, and pack rust. There are isolated areas of reactivating rust near the joints. See report for detailed locations and descriptions of deficiencies.

Lower Chord

The truss lower chords are in Fair condition with typical areas of pack rust and pitting. Various deficiencies are noted throughout the lower chord in Unit II. Areas of section loss due to previously noted and reactivating areas of pack rust are affecting up to 25% of the total calculated length of the lower chord members. Some previously caulked areas between the lower chord and gusset plate interfaces are cracked and no longer effective. Various degrees of pack rust, both sealed and reactivated, located between the flange angles and the web plates are prevalent throughout the exterior lower chords. Isolated perforations are also noted along the top and bottom flange plates. The Unit II lower chord (Span 8, L2425) at the South Truss, has a full length retrofit around the original steel. See report for detailed locations and descriptions of deficiencies.

Truss Gusset Plate (EA)

Gusset plates have areas of painted over pitting up to ¼" D with isolated areas of pitting reactivating. There is typically pack rust found between truss members and gusset plates. Fill plates throughout the structure have areas of removed pack rust and painted over section loss up to 100%. Corrosion is typical on gusset plates in the form of pack rust and pitting. At the North Truss, Unit II, Span 4, lower chord panel point L8 there is a 2" diameter corrosion hole that has been

painted over and a 1-1/4" T retrofit plate on the inboard gusset plate. There are twelve (12) gusset plates have been retrofitted as part of the 2012 project that was completed in 2015. See report for detailed locations and descriptions of deficiencies.

Lateral Bracing

There are isolated areas of pack rust and pitting. There are isolated missing or broken rivet heads and painted over section loss on rivet heads noted throughout. The connections plates have areas of significant section loss with isolated corrosion holes. See report for detailed locations and descriptions of deficiencies.

Sway Bracing

The sway bracing is in good condition with isolated areas of pack rust and pitting. See report for detailed locations and descriptions of deficiencies.

Bearing Devices (EA)

Standing water was noted in a number of bearings at the truss member connections due to blocked drain holes within the bearing assembly. Unit II bearings have moderate surface corrosion and laminated edge corrosion along the vertical steel box sides and edges located at the bottoms of some bearings. In Unit III, painted over section loss up to 3/16" D was noted throughout the lower portions of the columns and along the lower bracing members. Areas of pack rust have been cleaned and caulked throughout. The anchor bolts at the base of the pier bents from Bent 1 through Bent 10 have moderate section loss due to pack rust and debris accumulation between the bearing stiffeners and bent columns prior to recent cleaning and painting operations. Masonry plates have painted over pitting throughout, typically

3/16" D or less. See report for detailed locations and descriptions of deficiencies.

Protective Coating System (SF)

The protective coating system (PCS) is in Good condition. The PCS of the Main Truss Spans was applied in 2007. The PCS within the West Approach, Forward Section, Lakefront Trestle, and the Lakefront Ramp were painted in 2017 and 2018. See report for detailed locations and descriptions of deficiencies.

Pins/Hangers/Hinges (EA)

The pins, hangers and hinges are in Good condition. Rivet heads interfere with several hangers in the Lakefront Trestle. Due to recent painting, evidence of movement of the pin and hanger was noted due to cracked paint between the hangers and the beam webs. Isolated pins have painted over pitting less than 1/8" D. Unit II, Span 9, South Truss at L0L1 the inboard and outboard oval pin plates have rotated. The pin plates are rotated to the point where they are in contact with gusset stiffening channels on both the inboard and outboard gusset. The channel flange/rivets are beginning to push the edge of the pin plate outward. See report for detailed locations and descriptions of deficiencies.

Fatigue

No fatigue distress was noted at locations of tack welds and welded cover plates in the West Approach and Trestle Sections. Previous cracks (not necessarily fatigue related) have been drilled and do not exhibit additional growth. Unit IV, Lakefront Trestle, Bents 14 and 15, Section A, an

obsolete utility bracket is welded to the south twin girder. The top flange weld on the field splice of Girder GF2 has a deep crevice between adjacent weld passes. Both of these welded connections represent stress risers and potential fatigue prone details. See report for detailed locations and descriptions of deficiencies.

Substructure

Reinforced Concrete Abutment (LF)

The abutments are in Good condition. Isolated areas of hairline vertical cracking were noted with isolated areas of efflorescence and moisture staining. The East Abutment in Unit V has 31 LF of concrete patches.

Reinforced Concrete Pier Wall (LF)

The reinforced concrete pier walls are in Good condition.

Reinforced Concrete Pier Caps (LF)

The Pier caps are in Good condition. In Unit I, spalls are noted in Pier O in Section P and Pier 12 in Section M of Unit 1. In Unit II, the Pier 10 Cap exhibits patched areas.

Steel Pier Caps (LF)

In Unit V, the steel pier caps at Pier 38, 39 & 40 exhibit painted over pitting with painted over pack rust up to 1" thick.

Reinforced Concrete Columns (EA)

The pier columns are in Fair condition. In Unit I, Section M and D, the reinforced concrete columns are generally in good condition. There is one isolated column with significant spalling. In Unit I, Section P, the reinforced concrete base at the third column from the south in the second row of columns is delaminated.

Steel Column (EA)

The Steel Bents in Unit I, Unit III, and Unit IV exhibit areas of painted over pitting up to 3/16" D and isolated painted over corrosion holes. There are areas of painted over pack rust up to 1/4" thick between plates. The anchor bolts nuts have up to 40% painted over section loss. Anchor bolts exhibit painted over section loss up to 25%. The reinforced concrete bases have isolated spalls up to 4" deep.

Abutment Backwalls (LF)

The backwalls are in Good condition. Minor vertical cracking and staining are present on the East Abutment backwall.

Wingwalls (EA)

The wingwalls are in Good condition. **Mask Walls:** In Unit I, there are mask walls in each section except for B and J, where the roadway is built on fill. The mask walls have significant areas of spalling, delaminations and cracking, on the inside and outside faces of the walls. Several spalls exhibit exposed reinforcing steel with significant section loss. In Section C & K, some of the delaminations are above pedestrian walkways. In Unit III, there are mask walls at the north and south chambers east of West 9th Street. The inside faces of the walls have significant areas of spalling, delaminations and cracking. Several spalls have exposed rebar with up to 100% section loss.

Substructure Scour

Sea walls are present along both riverbanks, providing protection for Pier 8 and 9. No underwater inspection was required in 2020 for this structure.

Slope Protection

In Unit IV, near Bent 30, there is a sink hole in the parking area that measures approximately 4' long x 3' wide x 3' deep. The sink hole is marked with traffic barrels and there is also debris/trash in the sink hole. The sink hole has continued to grow in size as compared to the 2019 inspection. The pavement around the sink hole exhibits cracking. Historic remarks: Slope protection on east side of Pier 37 has been repaired.

Culvert

Inspector Comments - Waterway

Waterway Adequacy

Channel Hydraulic Opening (EA)

Navigation lights are in good condition. Historic Remark: Can not get navigation lights item c54 to show up in SMS

Channel

Channel Protection (LF)

Historic Remark: Isolated erosion holes exist in the area between Pier 9 and the river wall.

Channel Navigation Lights (EA)

Navigation lights non-operational on both the east fender system and the west bank dolphins.

Scour Critical