

Ohio Bridge Inspection Summary Report

CUY-00017-0283 (1802046)

2: District 12 26446 - FAIRVIEW PARK (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 00017
 7: Facility On SR 17
 6: Feature Ints ROCKY RIVER
 9: Location APPROX 900FT E W220 ST

Condition

58: Deck 4 - Poor Condition
 58.01 Wearing Surface 7 - Good (1% distress)
 58.02 Joint 6- Satisfactory (isolated leaking)
59: Superstructure 4 - Poor Condition
 59.01 Paint & PCS 4 - Poor PCS (15-20% corr.)
60: Substructure 4 - Poor Condition
61: Channel 4
61.01 Scour 7 - Good
62: Culverts N - Not Applicable
67.01 GA 4

Appraisal

36: Rail, Tr, Gd, Term Std 1 0 0 0
 72: Approach Alignment 6 - Equal to present minimum criteria
 113: Scour Critical 9 - Foundations above flood waters
 71: Waterway Adequacy 8 - Bridge Above Approaches

Geometric

48: Max Span Length (ft) 192.0
 49: Structure Length (ft) 1919.0
 52: Deck Width, Out-To-Out (ft) 64.5
 424: Deck Area (sf) 123775.5
 32: Appr Roadway Width (ft) 52.0
 51: Road Width, Curb-Curb (ft) 52.0
 50A: Curb/SW Width: Left (ft) 5
 50A: Curb/SW Width: Right (ft) 5
 34: Skew (deg) 0
 33: Bridge Median 0 - No median
 54B: Min Vert Underclearance (ft) 0
 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 (%) 140
 704: Analysis Date 07/01/2013
 63: Analysis Method 6 - Load Factor (LF) rating reported by
 rating factor (RF) method using MS18
 loading.

Structure Type

43: Bridge Type 1 - Concrete
 11 - Arch - Deck
 N- Not Applicable
 45: Spans Main / Approach 8 / 9
 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 10/31/1989
 423: WS Thick (in) 1.2
 482: Protective Coating B - Epoxy - Urethane sealers
 483: PCS Date 01/01/1987
 453: Bearing Type 1 3 - Sliding (Bronze)
 455: Bearing Type 2 N - None
 528: Foundn: Abut Fwd 4 - Spread Footing
 533: Foundn: Abut Rear 4 - Spread Footing
 536: Foundn: Pier 1 4 - Spread Footing
 539: Foundn: Pier 2 0 - Other

Age and Service

27: Year Built/ 106 Rehab 1933 / 1989
 42A: Service On 5 - Highway-pedestrian
 42B: Service Under 5 - Waterway
 28A: Lanes on 04
 28B: Lanes Under 00
 19: Bypass Length 3
 29: ADT 14415
 109: % Trucks (%) 6

Inspections

		Months	
90: Routine Insp.		12	09/14/2020
92A: FCM Insp.	N	0	
92B: Dive Insp.	N	0	
92C: Special Insp.	N	0	
92D: UBIT Insp.	Y	12	09/14/2020
92E: Drone Insp.			

Inspector Miller,Jeff

Inspector: Jeff Miller

Structure Number: 1802046

Inspection Date: 09/14/2020

Facility Carried: SR 17

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.	118207	sq. ft.	96824	11992	9391	0
510 - Wearing Surfaces		95238	sq. ft.	91897	3341	0	0
110 - Reinforced Concrete Open Girder/Beam	3 - Mod.	9098	ft.	6881	1230	987	0
144 - Reinforced Concrete Arch	3 - Mod.	2852	ft.	1298	161	1393	0
155 - Reinforced Concrete Floor Beam	3 - Mod.	6154	ft.	5331	308	515	0
205 - Reinforced Concrete Column	3 - Mod.	34	each	3	18	12	1
215 - Reinforced Concrete Abutment	3 - Mod.	130	ft.	82	30	15	3
234 - Reinforced Concrete Pier Cap	3 - Mod.	556	ft.	474	50	27	5
300 - Strip Seal Expansion Joint	3 - Mod.	715	ft.	508	207	0	0
316 - Other Bearing	3 - Mod.	40	each	40	0	0	0
321 - Reinforced Concrete Approach Slab	3 - Mod.	4592	sq. ft.	4492	100	0	0
330 - Metal Bridge Railing	3 - Mod.	3672	ft.	3672	0	0	0
815 - Drainage	3 - Mod.	18	each	8	6	0	4
830 - Abutment Backwall	3 - Mod.	108	ft.	108	0	0	0

ODOT District: 12

CUY-00017-0283_(1802046)

Major Maint: 01 - State Highway Agency

Facility Carried: SR 17

Traffic On: 5 - Highway-pedestrian

Date Built: 07/01/1933

Rehab Date: 10/31/1989

Routine Maint: 04 - City or Municipal Highway Agency

Feature Inters: ROCKY RIVER

Traffic Under: 5 - Waterway

Insp. Resp A: 01 - State Highway Agency

FIPS Code: 26446 - FAIRVIEW PARK (CUY county)

Location: CUY

APPROX 900FT E W220 ST

Insp

Resp B:

Inspector

Miller,Jeff

Inspection Date

09/14/2020 12:00:00 AM

Reviewer

Lawler,Matthew

Inspector Comments - Deck and Approach

Deck

Floor/Slab (SF)

The deck is in overall poor condition throughout. Large areas of the deck underside are delaminating or have spalled off. Both longitudinal and transverse reinforcing are typically exposed in these areas with section loss typically of 10%. The worst condition is in Span H between floorbeams 03 and 04 where the floor has lost its concrete cover as well as an additional 1.5" above the main reinforcing for 20 consecutive bars. Several bars in this row of 20 are completely exposed longitudinally over the entire span between the floorbeams. This area was specified in the 2017 project to receive a full depth repair to the slab, but the repair was non-performed.

Previous repairs are failing in multiple locations with delaminating patches and reactivating corrosion on the coated reinforcing is bleeding through. Longitudinal and transverse cracking with efflorescence and rust staining was noted throughout the spans. In the approach spans, the soffit is in a similar condition to the main spans, with areas of cracking, staining, and delamination or spalls extending full width across the bays between beams, affecting approximately 10% of the soffit area.

Netting was installed under arch spans A, B, and C to protect vehicles on Valley Parkway and pedestrians on the Valley Parkway and Bridle Trails from falling concrete. At the time of the inspection, it was noted that there was no broken off concrete in the netting in spans A and B. In span C, there were four locations of broken off concrete in the netting.

Drainage inlets are offset from the scupper downspout along the piers. This offset area in the floor is unreinforced and failing at all locations.

Edge of Floor/Slab (LF)

The edge of deck is in poor condition throughout. The edge of floor has typical minor cracks and spalls on the underside and the side of the deck. Additionally, the top and side of the deck/sidewalk has an approximately 1' long deep spall at every railing post location.

Bridge Wearing Surface (SF)

The wearing surface is 3 years old. A 4' x 3' area of unsound concrete is located on the eastbound traffic lanes on the west end of the bridge near the west approach slab. The unsound area is outlined with cracks. The wearing surface also exhibits minor deterioration at the gutters near the curbs.

Curbs/Sidewalk (LF)

The sidewalk is in good condition.

Bridge Railing (LF)

The horizontal rail elements across the entire bridge is 3 years old and in good condition. The vertical posts were painted in 2017, and while there are some locations of painted over section loss, the posts are also in good condition.

Deck Drainage (EA)

The deck drainage is in poor condition. Some of drainage grates are partially full of debris, especially at locations on the south side. The downspouts at the East Pylon are positioned in a way to cause erosion of the shale, exposing more of the foundation. Ponding was noted in several locations at expansion joints. Significant corrosion holes were noted for downspouts at Piers 9-12 on the south side of the bridge. The south scupper at the West Pylon is completely filled with debris.

Expansion Joint (LF)

The expansion joints are in fair condition. The expansion joints hold water at the sidewalk curbs. At all of the expansion joints, the steel is rusting and the joints are partially filled with debris at the gutters. The expansion joint seal at Pier 8 is partially torn.

Approach

Approach Wearing Surface (EA)

The west approach pavement is in fair condition with random cracks that have been sealed but are reopening 1/8" to 1/4" wide. The east approach pavement is in good condition.

Approach Slab (SF)

Both the west approach slab and east approach slab are in good condition, having only minor longitudinal cracks. The south sidewalk on the west approach slab has a wide crack.

Approach Embankment (EA)

The embankments are in good condition. There is not any sign of active erosion or sloughing.

Approach Guardrail (EA)

The guardrail is in good condition having only minor surface corrosion and scrapes.

Signs (EA)

Northeast and southwest chevron end markers and eastbound left curve arrow in place with no deficiencies.

Inspector Comments - General Appraisal

Superstructure

Superstructure Alignment (EA)

The structure alignment is in good condition.

Beams/Girders (LF)

The concrete beams in both the east and west approach spans are in fair condition with typical delamination, spalling with exposed rusted reinforcing, and leakage throughout.

The following are deficiencies found in the West Approach Spans:

- Span 1: delaminations/spalls on Beams 3, 4, 5, 7, and 9 and also random transverse cracks with efflorescence
- Span 2: delaminations/spalls exist on Beam 4 and there are several transverse cracks with efflorescence on the beams along the North half
- Span 3: delaminations/spalls on Beams 7 and 8

- Span 4: there are delaminations/spalls on Beams 5, 6, 7, and 8
- Span 5: delaminations/spalls on Beams 5, 6, and 10
- Span 6: delaminations/spalls exist on Beam 8

In the East Approach Spans, the following deficiencies were found:

- Span 9: abundant rust staining coming through the concrete
- All Spans: cracks with delaminations on the bottom of the beams

Floorbeams (LF)

The floorbeams are in fair condition with transverse cracks and areas of efflorescence throughout. There are localized areas of large spalls with exposed, corroded reinforcing steel. Corrosion of the exposed reinforcement has typically resulted in section loss of about 10% to 20%. Several of the floorbeams have delaminations forming, especially along the bottom edge. Multiple areas have been previously sealed with a white epoxy, but corrosion on the coated reinforcing has begun to reactivate with staining visible through the coating. The floorbeams that have larger areas of spalling with exposed rebar are those located nearest the expansion joints. Multiple column pedestals exhibit cracking and spalling at the intersection with the floorbeams. The spalled areas typically have exposed reinforcing that exhibits up to 15% section loss.

Bearing Devices (EA)

The bearings are in good condition.

Arch (LF)

The arches are in poor condition with numerous large patches, spalls, cracks, map cracks, and delaminations on all faces. The largest spalls are typically on the underside of the arches. Netting has been attached under the floorbeams and the deck over the roadway, Bridle Trail, and paved trail in Span B and Span C. There is no netting around the arches. Over the Bridle Trail there is a delaminated area on the arch that we could not safely remove and should be monitored or wrapped with netting or fiber wrap or the delamination should be removed. Piles of spalled concrete and debris have accumulated on the upslope sides of some of the columns.

The larger spalls noted were as follows:

- Span A, North Arch, 15'L x 3'W on bottom face between Columns AN05-AN07
- Span A, South Arch, 8'L x 1'W on bottom face between Columns AS05-AS06
- Span B, North Arch, 5'L x 6'W x 3" D on bottom face between Columns BN03-BN04
- Span B, North Arch, 1.5'L x 2'W on bottom face under Column BN08
- Span B, South Arch, 4'L x 1.5'W on bottom north edge between Columns BN03-BN04
- Span B, South Arch, 11'L x 2.5'W x 3.5"D on bottom face under Column BS04
- Span C, North Arch, 10'L x 4'W and 2'L x 1'W on bottom face between Columns CN06-CN07
- Span C, North Arch, 2'L x 1'W on top South corner between Columns CN09-CN10
- Span C, South Arch, 6'L x 2.5'W on the edge at Column CS06
- Span C, South Arch, 2.5'L x 1'W on north face under Column CS07
- Span C, North Arch, Two at 4.5'L x 2'W on bottom face between Columns CN10-CN11
- Span D, North Arch, 5'L x 1'W x 2.5"D on bottom face under Column DN06
- Span D, North Arch, 8'L x 1.5'W x 3.5"D on bottom face between Columns DN07-DN08
- Span D, North Arch, 4.5'L on top edge at Column DN09
- Span D, South Arch, 6'L x 1'W x 2"D on bottom face between Columns DS04-DS05
- Span D, South Arch, 10'L x 2'W on bottom face between Columns DS07-DS08
- Span D, South Arch, 6'L x 1.5'W on bottom face between Columns DS01-DS02
- Span E, North Arch, 10'L x 1.5'W on bottom face under Column EN06
- Span E, North Arch, 6'L x 1'W on bottom face under Column EN07

Arch Column/Hanger (EA)

The arch spandrel columns are in poor condition with typical vertical cracks, map cracks, delamination, spalls with exposed reinforcing, and failed patches throughout. The columns in the worst condition are typically located under the deck joints due to being saturated with deck drainage. Most of the map cracks on the arch columns are on the outside face of the columns.

Protective Coating System (LF)

A white epoxy protective coating was previously used to seal the structure. This sealant still visible but has degraded over time. On spalled areas with exposed reinforcement, the reinforcement has continued to corrode in some locations causing staining on the epoxy.

Utilities (LF)

A south side lamp post is missing at pier 10. Its electrical wires are taped off but exposed. There is a utility the runs along the south side of the bridge between the Forward Abutment and Pier 12, where it runs down the pier and underground. No documentation as to what this is. Appears to be telecommunications. The support brackets for the utility line are rusting and the conduit is slightly broken between floorbeams 5 and 6 in span H.

Substructure

Abutment Walls (LF)

The abutments are a cellular type abutment with turned-back wingwalls. Both abutments were widened as part of the major rehabilitation project.

The West Abutment is in fair condition. The West Abutment at NW corner appears to be tilted slightly (Appears to be constructed this way). (A 7'W x 1.5'H x up to 6'D portion of the south end of the West Abutment has spalled off below the Beam 9 bearing with a 3.5'W x 1.5'H area that has exposed rebar near the south side. Below the Beam 2 bearing, the beam seat is cracked/delaminated for a 4.5'L x 1'H area.

The East Abutment has more deterioration but is also rated in fair condition. There are numerous hairline vertical, horizontal, and map cracks, some with corrosion staining. Both the north and south pedestals have spalls on the outer edges and at the tops, the worst being at the south pedestal, south edge, a spall/delamination 4'H x 6"W x 3"D, with exposed reinforcing with up to 50% section loss, and active water seepage coming through the backwall. There are delaminations and corrosion staining beneath Beam 4 and Beam 7 and full height vertical cracks up to 1/16"W beneath Beams 4, 5, and 7. There's a spall on the north end, 6'H x 1'W x 2"D with exposed rebar with up to 50% section loss and a spall beneath Beam 5 measuring 12"L x 6"W x 3"D with exposed corroded reinforcing and undermining up to 15% of the bearing.

Abutment Caps (LF)

The south end of the West Abutment beam seat has spalled off below the Beam 9 bearing, undermining the bearing for an area 18" W x 8" L. At the West Abutment, both the north and south pedestals have spalls on the outer edges and at the tops, the worst being at the south pedestal, south edge, a spall/delamination 7'H x 1.5'W x 6"D, with exposed reinforcing with up to 50% section loss, and active water seepage coming through the backwall.

At the East Abutment, both the north and south pedestals have spalls on the outer edges and at the tops, the worst being at the south pedestal, south edge, a spall/delamination 5'H x 2'W x 3"D, with exposed reinforcing with up to 50% section loss, and active water seepage coming through the backwall.

Pier Caps (LF)

The approach span pier caps are in good condition with only some localized and map cracking. The pier cap of the West Pylon has minor cracks and spalls. Pier 14 has a 6"x1' spall with exposed rebar on West face between Beams 4 & 5 and 1'x1' spall with exposed rebar on the bottom face between Beams 6 & 7.

Pier Columns/Bents (EA)

The concrete piers in the approach spans are in overall fair condition with map cracking, localized spalling with exposed rebar, and vertical cracks. The arch span piers are in fair condition with similar deficiencies, including spalled edges on the bases, with exposed corroded steel. Most of the piers are covered in graffiti.

The following previously noted conditions remain unchanged:

- Pier 1: map cracking on South column, 10" vertical crack
- Pier 2: map cracking on South column
- Pier 3: full-height map cracking on North & South columns; 10" vertical crack; vegetation on South column
- Pier 4: map cracking on North & South columns; random cracks; delamination on North column
- Pier 5: map cracking on North & South columns; 6' vertical crack; vegetation on South column
- West Pylon: map cracking on both columns; spalling with exposed rebar; 10' x 3' delamination on East face; 4' x 3' delamination on West face; vertical cracks on North column up to 3/4 of height; horizontal cracks on East face
- Pier 6: spalling with exposed rebar on the North & South faces of each column; vertical cracking; map cracking and rust staining at strut
- Pier 7: spalling with exposed rebar on the North & South faces of both columns; cracks with efflorescence on East and West faces of both columns; map cracking on interior faces of both columns
- Pier 8: spalling with exposed rebar on the North, South, and East faces of both columns and West face of the strut; vertical cracks; map cracking on West face of both columns and North face of South column
- Pier 9: spalling with exposed rebar on the South face of South column; vertical cracks; map cracking on North and East faces of South column
- Pier 10: spalling with exposed rebar on the South and North faces of South column; vertical cracks; map cracking on South and West faces of North column and North face of South column
- Pier 11: spalling and delaminations; vertical cracks; map cracking on West and South faces of North column
- Pier 12: spalling with exposed rebar on North face of South column and on strut; vertical cracks; map cracking on South and East faces of both columns
- East Pylon: map cracking on both columns; spalling and delaminations
- Pier 13: shallow rebar caused spall on North face of South column; map cracking on West face of South column
- Pier 14: shallow rebar caused spall on North face of center column; map cracking on West and East faces of North column

Backwalls (LF)

No significant deficiencies.

Wingwalls (EA)

No significant deficiencies. There are isolated vertical cracks. Rust staining on northwest, southwest, and southeast wingwalls is coming from the corroded railing above, not from rebar.

Substructure Scour (EA)

The stone protection at the base of Pier 12 has been partially washed away. Concrete rubble has been

placed upstream and around the south column, but it is not adequate.

The East Pylon the weathering shale continues to deteriorate exposing more of the pylon foundation. The north face of the South Pylon is undermined by a few inches.

Slope Protection (EA)

The west slope is in good condition. See channel protection for discussion of slope around the East Pylon. The north column at Pier 13 is immediately adjacent to a very steep slope. Per the original plan, the pier footing is about 18 feet below the ground surface is embedded 4'-6" into the shale.

Culvert

Inspector Comments - Waterway

Waterway Adequacy

Channel Hydraulic Opening (EA)

More than adequate. There is plenty of area for the channel to flow through.

Channel

Channel Alignment (LF)

The river is generally centered under arch Span H but continues to gradually shift eastward and erode the bottom of the east slope weathering shale on the east bank of the river. However, this erosion is minimal compared to the amount of erosion caused by the drainage from the East Pylon.

Channel Protection (LF)

Concrete rubble placed upstream and around the south column of Pier 12 is now partially washed away.

The roadway beneath the East Approach has been removed, and a large retaining wall was constructed on the northeast shoulder, mitigating the runoff problems. However, the east bank is still extremely steep and unprotected. The shale is highly weathering and the downspouts at the East Pylon draining onto the slope appear to be causing more damage/erosion to the slope than the river.

Survey shots of the east slope were included with the 2016 inspection to give a baseline for future slope erosion measurements. Visually there was more loss at the bottom of the shale bluff in the 2020 picture when compared to the 2016, 2017, 2018, and 2019 pictures.

Scour Critical