



Missouri Department of Transportation

STRUCTURAL REHABILITATION CHECKLIST

Bridge No.: **A2943**

Job No.: **J6P3288**

Route: **West Four Ridge Rd**

Over: **Mo 21**

County: **Jefferson**

Date of Field Check: **1/7/2020**

* * * Please include photographs for all items that apply. * * *

1

OVERLAY

- * Type of existing overlay: ☐ None ☐ Asphalt ☐ Low Slump ☐ Silica Fume ☐ Latex ☐ Epoxy ☒ Other: Liquid Sealant
- * Existing overlay thickness: " * Year overlay was applied: 2019 ☐ Unknown
- * % of overlay repaired or patched: 0 % * Replace overlay: ☒ Yes ☐ No
- * Notes: Consider replacing overlay with Latex Modified Concrete wearing surface including approach slabs.
- Maintenance records show bridge was sealed with Indeck in 2019. 10,431 SF, 60 gal used.

Picture # **4, 6**

2A

DECK REPAIRS

(Deck repair quantities are required even if a Deck Test request has been ordered for this structure.)

- * Half-sole repairs: 250 sq. ft. * Full-depth repairs: 225 sq. ft.
(round up to the nearest 50 sq. ft.) (round up to the nearest 25 sq. ft.)
- * Slab edge repairs: 0 lin. ft. * Superstructure repair (Unformed): 0 sq. ft.
(covers the outer 4" of the slab edge) (covers the remaining slab cantilever beyond the outer 4")
- * Clean & seal slab edge: 0 lin. ft. * Existing Deck Patching: 0 sq. ft.
(in lieu of edge repairs) (round up to the nearest 25 sq. ft.)
- * Total surface hydro demolition bridge deck: ☒ Yes ☐ No * Full deck replacement (redeck): ☐ Yes ☒ No ☐ Optional
(half-sole and full depth repair quantities still required)
- * Deck repairs with voided tube replacement: ☐ Yes ☐ No * Superstructure replacement: ☐ Yes ☒ No ☐ Optional
(if applicable) * Full bridge replacement: ☐ Yes ☒ No ☐ Optional
 sq. ft. (Deck repair quantities required for cost comparison of alternatives)
- * How were the quantities obtained? ☒ Visual ☒ Bridge Inspection Report ☐ Sounded ☐ Other
- * Notes: Half-sole repairs estimated at 2% of bridge deck and approach slab area.
- Moderate efflorescence observed on outside cantilever of deck, both left and right sides.
- Consider latex modified concrete wearing surface.

Picture # **7**

DECK REPAIRS CONT.

* ISSUES \ PROBLEMS WITH PRECAST PRESTRESSED DECK PANELS

Spans	Location in Span						Deterioration		Describe
	At Panel Jt.	Btwn (mid) Panel Jt.	End		Mid		Type	Amount	
1	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Sat. & Eff.	90 sq. ft.	10 jts @ 9 SF
2	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Sat. & Eff.	126 sq. ft.	14 jts @ 9 SF
3	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		sq. ft.	
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		sq. ft.	
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		sq. ft.	
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		sq. ft.	

* Notes: **24 locations, quantity shown in previous section under Full-depth Repairs. Locations viewed from underneath deck.**

"Sat. & Eff." means Saturation & Efflorescence

(Deterioration may include water saturation, efflorescence, rust staining, cracking, spalling, exposed steel, disintegration of panel edges at joints, etc. Typically observed at or near panel joints. The location and "Type" of deterioration should be recorded.)

Picture # 39-47

APPROACH SLABS

- * Is there a bridge approach slab in place? ☒ Yes ☐ No * Type: ☒ Concrete ☐ Asphalt ☐ Other _____
- * Is there a rdwy. approach pavement in place? ☒ Yes ☐ No * Type: ☒ Concrete ☐ Asphalt ☐ Other _____
- * Is the approach slab sinking at the end bent? ☐ N/A ☐ Yes ☒ No _____
- * Are repairs needed to the bridge approach slab driving surface? ☐ Yes ☐ No _____
(Typically a roadway item but will be reported to district on the Bridge Memorandum.)
- * Full Replacment of Approach Slab? ☐ Yes ☒ No _____

* Notes: **Approach slab is in satisfactory condition, but consider replacing with latex modified concrete wearing surface.**

Picture # 2, 3, 50, 51

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SLAB DRAINS

* Is the drainage system working adequately? ☒ Yes ☐ No

* Recommendations: _____

* Notes: **No slab drains.** _____

Picture #

5

CURBS & RAILS

* Existing curb (left side): ☒ Safety Barrier Curb ☐ Curb/parapet ☐ Blockouts ☐ Thrie Beam ☐ Baluster ☐ Steel Channel

☐ Other _____ ☐ Handrail ☐ Fence _____

* Does curb need repair ☐ Yes ☒ No * Curb repair _____ lin. ft.

* Remove hand rail ☐ Yes ☐ No * Add curb blockout ☐ Yes ☐ No

* Existing curb (right side): ☒ Safety Barrier Curb ☐ Curb/parapet ☐ Blockouts ☐ Thrie Beam ☐ Baluster ☐ Steel Channel

☐ Other _____ ☐ Handrail ☐ Fence _____

* Does curb need repair ☐ Yes ☒ No * Curb repair _____ lin. ft.

* Remove hand rail ☐ Yes ☐ No * Add curb blockout ☐ Yes ☐ No

* Existing median curb: Type: _____ Width _____ " Height _____ "

* Does curb need repair ☐ Yes ☐ No * Curb repair _____ lin. ft.

* Approach rail attachment: ☐ None ☐ Not attached ☒ 4 Hole ☐ 5 Hole ☐ Turn-down ☐ Other _____

* If the existing handrails will be removed, does the local maintenance supervisor wish to keep them? ☐ Yes ☐ No

Storage address: location: _____

address: _____

city: _____ state: _____ zip: _____

* Notes: **No slide plate at EB 1** _____

Picture #

6

EXPANSION DEVICES

Bent	Type	Recommendations			Gap Left	Gap Right	Temperature & Other Info
1	Silicon Sealed	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	3/4 "	1-3/4 "	40°
3	Silicon Sealed	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	1-1/2 "	1-5/8 "	40°
		USE-IN-PLACE REPAIR REPLACE	<input type="checkbox"/>	<input type="checkbox"/>	"	"	
			<input type="checkbox"/>	<input type="checkbox"/>	"	"	
			<input type="checkbox"/>	<input type="checkbox"/>	"	"	
			<input type="checkbox"/>	<input type="checkbox"/>	"	"	
			<input type="checkbox"/>	<input type="checkbox"/>	"	"	

* Notes: Remove and replace silicon seal at End bents.

Picture # 1, 5

7

BEARINGS

Bent	Coating	Recommendations						Notes (indicate which bearings at each bent)
1	<input type="checkbox"/> CLEAN & OVERCOAT <input checked="" type="checkbox"/> BLAST CLEAN & RECOAT	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
2	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
3	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	<input type="checkbox"/>	USE-IN-PLACE REPAIR RESET REPLACE	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

* Notes: Bearings are in good condition, clean and recoat as part of joint replacement.

Picture # (Provide Pictures of Each Bearing)

14-38

8

COATING SYSTEM (PAINT)

* Existing coating system: Calcium Sulfonate ☐ green ☒ gray ☐ other

* Date last coated: 2015

* Is existing coating peeling? ☐ Yes (Overcoat is not an option) ☒ No

* Coating recommendation:

☐ Blast clean & recoat all steel

☐ Clean & overcoat all steel

☒ Blast clean & recoat only at joint locations

☐ Blast & recoat at joint locations and clean & overcoat all other steel

Note: Pull off test required for overcoat (Calcium Sulfonate) option. Bridge Division will request pull off tests.

* Notes: Minimal rust on top and bottom flange of Girder 1: Span 1, approx 50sf., Span 2, approx 20sf.

Light rust typical on cross-framing at end bents. Paint end 10' of all girders at both end bents as part of joint replacement.

Picture # 42, 44

SUPERSTRUCTURE REPAIRS

(Repairs needed not previously stated.)

Concrete Slab Superstructure or Girder: (above the bearings)(Example: Deck solid slabs, voided slabs, box girder,
deck girders & prestressed girders)**Steel:** (Example: Beams, stringers, girders, diaphragms, cross-frames, misc. steel)**Member** (Check all that apply) (Attach pictures)**Describe & Locate**

<u>1</u>	<input type="checkbox"/> Section Loss	_____ %	<input type="checkbox"/> Cracks	_____ in.	_____
<u>2</u>	<input type="checkbox"/> Section Loss	_____ %	<input type="checkbox"/> Cracks	_____ in.	_____
<u>3</u>	<input type="checkbox"/> Section Loss	_____ %	<input type="checkbox"/> Cracks	_____ in.	_____
<u>4</u>	<input type="checkbox"/> Section Loss	_____ %	<input type="checkbox"/> Cracks	_____ in.	_____

Notes: **No defects observed.**

Picture #

SUBSTRUCTURE REPAIR

Bent	Formed Repair	Unformed Repair	Seal Concrete Beam Cap Bts.	Coat Exposed Pile @ Int. Pile Cap Bts.	Describe (Beam, Backwall, Wing, etc.)
<u>1</u>	_____ sq. ft.	48 sq. ft.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	Beam cap. 82 LF epoxy inject cracks.
<u>2</u>	_____ sq. ft.	_____ sq. ft.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	_____
<u>3</u>	_____ sq. ft.	11 sq. ft.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	Beam cap. 22 LF epoxy inject cracks.
_____	_____ sq. ft.	_____ sq. ft.	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	_____
_____	_____ sq. ft.	_____ sq. ft.	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	_____

* Does the structure need graffiti protection? ☒ No ☐ Bottom 8' of Concrete ☐ End Bents ☐ Other _____* Notes: **See photos of beam cap, backwall, and curtain wall delamination areas and vertical cracks.**Picture # **10-13, 24, 32-35, 48, 49**

SIGNS, SIGNALS &/OR LIGHTING ATTACHED TO STRUCTURE

Picture # 45, 47

UTILITIES ATTACHED TO STRUCTURE

Picture #

13

CATHODIC PROTECTION SYSTEM

* Is there a cathodic system on this structure? ☐ Yes ☒ No ☐ Remove ☐ Do not alter ☐ Abandon in place (grooved system)

* Is it on and working? ☐ Yes ☐ No ☐ Unknown _____

* Notes: _____

Picture #

14

CHANNEL ALIGNMENT, SLOPE PROTECTION & SCOUR

* Is channel aligned to bridge opening? ☐ Yes ☐ No Describe N/A

* Is drift a continual problem? ☐ Yes ☐ No Describe & Locate N/A

* Is erosion a problem? ☒ Yes ☐ No Describe & Locate EB 1, left side, along wing.

* Describe slope protection in place. Concrete slopewall

* Scour	At Footing	At Piling	Depth	Bent	Recommendation
	<input type="checkbox"/>	<input type="checkbox"/>	_____	_____	_____
	<input type="checkbox"/>	<input type="checkbox"/>	_____	_____	_____

* Describe needed work. Add rock or flowable fill to EB 1, left side to repair erosion. Replace concrete slope protection.

Assume 5 CY flowable fill and 10 SY slope protection.

300 LF joint sealing.

Picture # 8, 9

15

TRAFFIC LANES

* Number of lanes striped: on structure 2 under structure 4

* Shoulder width: ☐ None on structure 4.5 5 under structure 13 8
 (left) (right) (left) (right)

* Sidewalk widths: on structure _____ under structure _____
 (left) (right) (left) (right)

* Median width: on structure _____ under structure 41

* Proposed improvements for lanes/shoulders/sidewalks: _____

Picture #

16

GENERAL AREA CONDITIONS

* Primary area: ☐ Commercial ☐ Industrial ☐ Residential ☐ Agricultural ☐ Military ☒ Other Rural

* Posted speed limit on structure: 30 mph

* Posted load on structure: _____ tons @ _____ mph ☒ NA

Single Unit: _____ tons @ _____ mph ☒ NA

Semi (tractor/trailer): _____ tons @ _____ mph ☒ NA

* Are both signs in place?

☐ Yes ☐ No

* Do pedestrians and/or bicyclists regularly use this structure? ☐ Yes ☐ No ☒ Undetermined

* Notes: _____

Picture #

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MAINTENANCE

* What work has been done to this structure that may not be reflected on existing bridge plans? _____

2019-Seal deck with Indeck

2016-Mud-jack slopewall

2016-Repair expansion device

2018-Seal joints in approach roadway

2018-Repair beam caps at EB1

Picture #

18

ADDITIONAL FIELD NOTES

Picture #

19

STAGING / DETOUR

* **Traffic Control:** ☐ Close structure ☒ Stage construction on structure ☐ Cross over traffic to adjacent structure ☐ Detour

☐ Other option _____

* Define probable detour route. _____

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PERSONS ASSISTING WITH CHECKLIST

Name Martin A. Chorkey, Horner & Shifrin Title Senior Project Engineer Ph. (314) 335 - 8631

Name J. Donovan Herpel, Horner & Shifrin Title Engineer Ph. (314) 335 - 8602

Name _____ Title _____ Ph. () -

Name _____ Title _____ Ph. () -

Name _____ Title _____ Ph. () -

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REQUIRED SIGNATURES

I have reviewed the information on this checklist and believe it to be as accurate as possible.

Name _____ Date _____
Transportation Project Manager

Name _____ Date 1/30/2020
District Bridge Engineer

The structural rehabilitation checklist indicates how the bridge is functioning and aging.

All deterioration should be noted, even if it is known that the work will not be completed under the proposed project.

Send **NEW** Structural Rehabilitation Checklist by email

To: "Bridge Survey Processor"

Cc: Structural Project Manager or Structural Resource Manager