



Missouri Department of Transportation

STRUCTURAL REHABILITATION CHECKLIST

Bridge No.: **A3101**

Job No.: **J6P3288**

Route: **West Rock Creek Road**

Over: **MO 21**

County: **Jefferson**

Date of Field Check: **01/07/2020**

* * * 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: **2015** ☐ Unknown
- * % of overlay repaired or patched: _____ % * Replace overlay: ☐ Yes ☐ No
- * Notes: **Maintenance records show the deck was sealed with INDECK in 2015 and will be again in 2020.**
- Apply latex modified concrete wearing surface.**

Picture # **5**

2A

DECK REPAIRS

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

- * Half-sole repairs: **200** sq. ft. (round up to the nearest 50 sq. ft.) * Full-depth repairs: **175** sq. ft. (round up to the nearest 25 sq. ft.)
- * Slab edge repairs: **0** lin. ft. (covers the outer 4" of the slab edge) * Superstructure repair (Unformed): **0** sq. ft. (covers the remaining slab cantilever beyond the outer 4")
- * Clean & seal slab edge: **0** lin. ft. (in lieu of edge repairs) * Existing Deck Patching: **0** sq. ft. (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 (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.**

Picture # **5, 16, 19, 22, 24**

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 type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Sat. & Eff.	70 sq. ft.	8 SF x 9 jts.
2	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Sat. & Eff.	80 sq. ft.	8 SF x 10 jts.
	<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: **Saturation and efflorescence observed underneath the deck.**

(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 # 16, 19, 22, 24

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: **Consider overlaying with Latex Modified Concrete wearing surface.**

Picture # 1-4, 6-8

4

SLAB DRAINS

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

* Recommendations: _____

* Notes: **Water drains to exposed CMP at EB1. It's not clear whether this pipe was once buried and erosion has occurred.**

Picture # **12**

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: **N/A** 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: **4 hole at EB1 and EB3-left side. 5 hole at EB3-right side.**

EB1 safety barrier curb does not have slide plates at expansion joints.

Picture # **4, 11**

6

EXPANSION DEVICES

Bent	Type	Recommendations			Gap Left	Gap Right	Temperature & Other Info
1	Silicone sealed	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	2-5/16 "	2 "	38°
3	Silicone sealed	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	1-7/8 "	2-5/8 "	38°
		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: Original compression seals were replaced with silicone sealant in 2008.

Remove and replace with strip seals at both end bents.

Picture # 4, 6, 10, 11

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"/>	<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: Minor to moderate rust on most bearings. Clean and overcoat as part of expansion joint replacement.

Picture # (Provide Pictures of Each Bearing)

28-54

8

COATING SYSTEM (PAINT)

- * Existing coating system: Calcium Sulfonate ☐ green ☒ gray ☐ other _____
- * Date last coated: 2014
- * 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: Minor rust in discrete locations. Consider epoxy mastic primer touch-up of the following areas:
- Span 1: Approx. 10 sf on bottom flange of Girder 3 near EB1
- Span 1: Approx. 10 sf on bottom flange of Girder 1 near EB1
- Span 2: Approx. 10 sf on Girder 1, 5 sf on Girder 4, and 5 sf on Girder 5
- Minor touch-up on beam ends as well.

Picture # 15-17, 22-24

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**

_____	<input type="checkbox"/> Section Loss	_____ %	<input type="checkbox"/> Cracks	_____ in.	_____
_____	<input type="checkbox"/> Section Loss	_____ %	<input type="checkbox"/> Cracks	_____ in.	_____
_____	<input type="checkbox"/> Section Loss	_____ %	<input type="checkbox"/> Cracks	_____ in.	_____
_____	<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.)
1	20 sq. ft.	16 sq. ft.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	Beam cap, Wing wall.
2	_____ sq. ft.	_____ sq. ft.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	60 LF epoxy inject cracks.
3	_____ sq. ft.	60 sq. ft.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	Pier cap. 15 LF epoxy inject cracks.
_____	_____ sq. ft.	_____ sq. ft.	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	Curtain wall, Beam cap.
_____	_____ sq. ft.	_____ sq. ft.	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	40 LF epoxy inject cracks.

* Does the structure need graffiti protection? ☒ No ☐ Bottom 8' of Concrete ☐ End Bents ☐ Other _____

* Notes: **The upper portion of the end bent beam caps were sounded using a delam sounding tool. The backwalls were not sounded.**

Photos of the bearings and backwalls were taken using a camera pole.

Apply epoxy protective coating to all end bent backwall and beam caps.

Picture # **13, 14, 18, 21, 25, 27**

11

SIGNS, SIGNALS &/OR LIGHTING ATTACHED TO STRUCTURE

* Are there signs attached directly to this structure? ☒ Yes ☐ No quantity 2 location Span 1-G1. Span 2-G5

* Describe proposed work to be done to signs. No work needed.

* Are there signals attached directly to this structure? ☐ Yes ☒ No quantity _____ location _____

* Describe proposed work to be done to signals. _____

* Is there aviation lighting attached to this structure? ☐ Yes ☒ No ☐ N/A ☐ Red _____ ☐ Green _____
qnty. qnty.

* Is there navigational lighting attached to this structure? ☐ Yes ☒ No ☐ N/A ☐ Red _____ ☐ Green _____
qnty. qnty.

* Is there roadway lighting attached to this structure? ☐ Yes ☒ No ☐ N/A

* Describe proposed work to be done to lighting. _____

* Notes: _____

Picture # **20, 23**

12

UTILITIES ATTACHED TO STRUCTURE

Type	Qty.	Size	Owner	Condition
<input type="checkbox"/> Conduit <input type="checkbox"/> Pipeline <input type="checkbox"/> Other	_____	_____	_____	<input type="checkbox"/> Repaint <input type="checkbox"/> Repair <input type="checkbox"/> Replace <input type="checkbox"/> Remove
<input type="checkbox"/> Conduit <input type="checkbox"/> Pipeline <input type="checkbox"/> Other	_____	_____	_____	<input type="checkbox"/> Repaint <input type="checkbox"/> Repair <input type="checkbox"/> Replace <input type="checkbox"/> Remove
<input type="checkbox"/> Conduit <input type="checkbox"/> Pipeline <input type="checkbox"/> Other	_____	_____	_____	<input type="checkbox"/> Repaint <input type="checkbox"/> Repair <input type="checkbox"/> Replace <input type="checkbox"/> Remove
<input type="checkbox"/> Conduit <input type="checkbox"/> Pipeline <input type="checkbox"/> Other	_____	_____	_____	<input type="checkbox"/> Repaint <input type="checkbox"/> Repair <input type="checkbox"/> Replace <input type="checkbox"/> Remove

* Notes: None attached.

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 _____

* Describe slope protection in place. Concrete pavement

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

* Describe needed work. 250 LF of joint sealing

Picture #

15

TRAFFIC LANES

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

* Shoulder width: ☐ None on structure 6 5 under structure 13 9
 (left) (right) (left) (right)

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

* Median width: on structure _____ under structure 40

* 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: 20 mph

* Posted load on structure: 60 tons @ 20 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 #

17

MAINTENANCE

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

2014-Seal semi-deep slab cracks

2008-Seal approach slab joints. Seal semi-deep joint and wing joints. Repair CMP drain @ SE quad and erosion.

2018-Replace seals on expansion device. Mud-jack approach at SE quad.

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	<u>Martin A. Chorkey, Horner & Shifrin</u>	Title	<u>Senior Project Engineer</u>	Ph.	<u>(314) 335 - 8631</u>
Name	<u>J. Donovan Herpel, Horner & Shifrin</u>	Title	<u>Engineer</u>	Ph.	<u>(314) 335 - 8602</u>
Name	_____	Title	_____	Ph.	<u>() -</u>
Name	_____	Title	_____	Ph.	<u>() -</u>
Name	_____	Title	_____	Ph.	<u>() -</u>

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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	_____
	<i>Transportation Project Manager</i>		
Name	_____	Date	<u>1/31/2020</u>
	<i>District Bridge Engineer</i>		

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