



Missouri Department of Transportation

STRUCTURAL REHABILITATION CHECKLIST

Bridge No.: **A2942**

Job No.: **J6P3288**

Route: **Mo 21 N**

Over: **Old HWY 21**

County: **Jefferson**

Date of Field Check: **12/23/2019**

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

1

OVERLAY

* Type of existing overlay: ☐ None ☒ Asphalt ☐ Low Slump ☐ Silica Fume ☐ Latex ☐ Epoxy ☐ Other: _____

* Existing overlay thickness: **3/4** "

* Year overlay was applied: **2012** ☐ Unknown

* % of overlay repaired or patched: **0** %

* Replace overlay: ☒ Yes ☐ No

* Notes: **Moderate deterioration and moderate cracking throughout.**

Replace with Latex Modified Concrete wearing surface including approach slabs.

Picture # **1-3, 5**

2A

DECK REPAIRS

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

* Half-sole repairs: **300** sq. ft.
(round up to the nearest 50 sq. ft.)

* Full-depth repairs: **75** 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: **275** 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
(half-sole and full depth repair quantities still required)

* Full deck replacement (redeck): ☐ Yes ☒ No ☐ Optional

* Superstructure replacement: ☐ Yes ☒ No ☐ Optional

* Deck repairs with voided tube replacement: ☐ Yes ☒ No
(if applicable)
_____ sq. ft.

* 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 taken as 2% of bridge deck and approach slab area. Full-depth repair taken from saturation seen under bridge deck, girder spacing is 9'. Horizontal cracking and efflorescence observed throughout left barrier curb. Assume 275ft of clean and seal slab edge.**

Picture # **10, 18-21, 25, 27-29, 33, 37**

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 type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Sat. & Eff.	27 sq. ft.	9 SF x 3 jts.
2	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		sq. ft.	
3	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		sq. ft.	
4	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Sat. & Eff.	27 sq. ft.	9 SF x 3 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.	

* Notes: Defect areas assumed to require full-depth repairs as qualified in section 2A.

(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 # (see section 2A)

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 slabs are overlayed with asphalt. Replace with latex modified concrete wearing surface.
Erosion at end of NW wing, undermined. A similar problem occurred at the SW wing which was repaired.
Assume 5 CY of flowable fill needed.

Picture # 2, 5

4

SLAB DRAINS

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

* Recommendations: **Basin at SW end. Deck drains also present.**

* Notes:

Picture # 6

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: **NE-no approach rail, slide plates missing at all 4 locations.**

NW,SW,SE-5 hole approach rail

Picture # 4, 8

6

EXPANSION DEVICES

Bent	Type	Recommendations			Gap Left	Gap Right	Temperature & Other Info
1	Wabocrete	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	1-3/8 "	1-3/4 "	50°
5	Wabocrete	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	1 "	1-1/2 "	50°
		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: Slide plate on barrier curb is missing on all 4 corners.

Convert to semi-integral abutments at both ends.

Picture # 2, 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 checked="" type="checkbox"/>	<input type="checkbox"/>	Pad showing expansion at 50°. Bent anchor bolts
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"/>	
4	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
5	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Bent anchor bolts
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

* Notes: All end bent bearings have moderate rust. Clean and recoat all bearings as part of the semi-integral conversion.

Picture # (Provide Pictures of Each Bearing)

13, 15, 32, 34-36

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: Clean and paint end 10' of all girders and diaphragms as part of semi-integral conversion.

Touch-up minor rust spots out in spans with epoxy mastic primer.

Moderate rust on beam end at EB1 & EB5. 24 SF paint touch-up on diaphragm

Picture # 12, 14, 20, 21, 27, 28, 31

Describe & Locate

Notes:

SUBSTRUCTURE REPAIR

11

SIGNS, SIGNALS &/OR LIGHTING ATTACHED TO STRUCTURE

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

* Describe proposed work to be done to signs. _____

* 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 #

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

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

* Describe needed work. 2 SY slope protection at Column 1 and Column 2.

Also, see erosion at NW wing described in section 3.

850 LF of joint sealing for slope protection.

Picture # 7, 22, 23, 25, 38

15

TRAFFIC LANES

* Number of lanes striped: on structure 2 under structure 3

* Shoulder width: ☐ None on structure 10 4 under structure 6 8
(left) (right) (left) (right)

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

* Median width: on structure _____ under structure _____

* 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: 65 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 #

17

MAINTENANCE

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

2015-Repair expansion device, at both abutments.

2015-Repaint with calcium sulfonate.

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>1/30/2020</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