



Missouri Department of Transportation

STRUCTURAL REHABILITATION CHECKLIST

Bridge No.: **A2959**

Job No.: **J6P3288**

Route: **Mo 21 S**

Over: **Rock Creek**

County: **Jefferson**

Date of Field Check: **01/15/2020**

* * * 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: **Replace with latex modified concrete wearing surface, including approach slabs.**

Picture # **1-12**

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: **50** 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: **100** 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
- * Deck repairs with voided tube replacement: ☐ Yes ☒ No (if applicable) * Superstructure replacement: ☐ Yes ☒ No ☐ Optional
- * 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.**

Full depth repair quantity estimate is based on the area of saturated and cracked panel joints.

Picture # **13, 15, 20, 21, 24, 25, 28, 29, 30, 34**

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 type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		sq. ft.	
2	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Saturation	18 sq. ft.	2 jts x 9sf
3	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Saturation	1 sq. ft.	1 jt x 9sf
4	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		sq. ft.	
5	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Saturation	18 sq. ft.	2 jts x 9sf
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		sq. ft.	

* Notes: Qty based on locations of saturation and efflorescence observed from underneath the bridge 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 # 21, 24, 25, 28, 34

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 Several potholes on north and south approach slabs.
(Typically a roadway item but will be reported to district on the Bridge Memorandum.)
- * Full Replacment of Approach Slab? ☐ Yes ☒ No _____

* Notes: Asphalt overlay. 2012-repaired 15sf of approach roadway.

Replace with latex modified concrete wearing surface.

Picture # 2, 3, 5, 8-12

4

SLAB DRAINS

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

* Recommendations: _____

* Notes: **Galvanized deck 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: **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: **No guardrail at south end**
4 hole, EB1, left. 5 hole, EB1, right

Picture #

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"/>	"	"	52°
6	Silicone Sealed	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	"	"	52°
		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: **Wearing surface and concrete spalling along silicone sealed closed expansion joint.**

Remove and fill with new overlay material.

Picture # 3, 6, 7, 10, 11

7

BEARINGS

Bent	Coating		Recommendations				Notes (indicate which bearings at each bent)	
1	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
2	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
3	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
4	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
5	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
6	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		

* Notes: **All bents are integral.**

Picture # (Provide Pictures of Each Bearing)

8

COATING SYSTEM (PAINT)

* Existing coating system: **N/A** ☐ green ☐ gray ☐ other _____

* Date last coated: _____

* 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: _____

Picture #

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)**Prestressed Girder****No defects observed.****Steel:** (Example: Beams, stringers, girders, diaphragms, cross-frames, misc. steel)**Member** (Check all that apply) (Attach pictures)**Describe & Locate**

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

Notes: _____**Picture # 21, 24, 25, 28****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	_____ sq. ft.	_____ sq. ft.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	15 LF epoxy inject crack
2	_____ sq. ft.	3 _____ sq. ft.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	Column 1, 3 SF delam w/exposed rebar.
3	_____ sq. ft.	_____ sq. ft.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	_____
4	_____ sq. ft.	_____ sq. ft.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	_____
5	_____ sq. ft.	_____ sq. ft.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	_____
6	_____ sq. ft.	6 _____ sq. ft.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	Left wingwall. 13 LF epoxy inject cracks
* Does the structure need graffiti protection?			<input checked="" type="checkbox"/> No <input type="checkbox"/> Bottom 8' of Concrete	<input type="checkbox"/> End Bents <input type="checkbox"/> Other _____	

* Notes: **Horizontal cracking, efflorescence, delamination, at EB6, left wingwall.****Picture # 23, 31**

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: **No signals attached.** _____

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: **No utilities 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 _____

* Is drift a continual problem? ☐ Yes ☒ No Describe & Locate _____

* Is erosion a problem? ☒ Yes ☐ No Describe & Locate **Erosion at end bents.**

* Describe slope protection in place. **Rock blanket covered with concrete on north end. South end is a rock bluff.**

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

* Describe needed work. _____

Recommend filling eroded slope at EB1 with rock blanket and cover with concrete, approx 30 CY and 25 SF of slope protection.

Consider placing concrete on front face of each end bent to prevent further erosion.

Picture # 14, 16-19, 22, 26, 27, 32, 33

15

TRAFFIC LANES

* Number of lanes striped: on structure **2** under structure **0**

* Shoulder width: ☐ None on structure _____ (left) _____ (right) under structure _____ (left) _____ (right)

* Sidewalk widths: on structure **5** **9** under structure _____ (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? _____

2010-Seal approach slab joints. Repair erosion on slope protection.

2011-Repair approach roadway. Repair concrete deck >100sf.

2012-Repair approach roadway =15sf

2014-Seal joints in approach and deck.

2018-Seal approach slab joints.

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. _____

20

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>

21

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