



Missouri Department of Transportation

# STRUCTURAL REHABILITATION CHECKLIST

Bridge No.: **A2941**

Job No.: **J6P3288**

Route: **MO 21 S**

Over: **CRD Old Hwy 21**

County: **Jefferson**

Date of Field Check: **11/08/2019**

\* \* \* 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, 2, 3, 23**

2A

## DECK REPAIRS

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

\* Half-sole repairs: **350** sq. ft.  
(round up to the nearest 50 sq. ft.)

\* Full-depth repairs: **200** 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: **50** 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 estimated at 2% of bridge deck and approach slab area.**

**Full-depth repair quantity based on defects observed on underside of precast panels described in section 2B.**

Picture # **11, 12**

## 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 checked="" type="checkbox"/>	<input type="checkbox"/>	Sat. & Eff.	54 sq. ft.	9 SF x 6 jts.
2	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Sat. & Eff.	63 sq. ft.	9 SF x 7 jts.
3	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Sat. & Eff.	72 sq. ft.	9 SF x 8 jts.
4	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		sq. ft.	
5	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		sq. ft.	

\* Notes: "Sat. & Eff." means Saturation & Efflorescence

Assume defective panel joints require full-depth repairs.

(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 # 11, 12

## 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: Replace overlay with latex modified concrete wearing surface.

Picture # 1, 2, 3, 24

4

**SLAB DRAINS**

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

\* Recommendations: \_\_\_\_\_

\* Notes: \_\_\_\_\_

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: \_\_\_\_\_

Picture #

6

## EXPANSION DEVICES

Bent	Type	Recommendations			Gap Left	Gap Right	Temperature & Other Info
1	Compression Seal	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	1.5 "	1.5 "	30°
5	Compression Seal	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2 "	2 "	30°
		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 expansion devices and convert to semi-integral abutments.

Picture # 2, 3

7

## BEARINGS

Bent	Coating	Recommendations				Notes (indicate which bearings at each bent)	
1	<input type="checkbox"/> CLEAN & OVERCOAT	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
2	<input type="checkbox"/> BLAST CLEAN & RECOAT	<input checked="" 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"/>		
4	<input type="checkbox"/>	<input checked="" 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 type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		

\* Notes: Coat bearings along with end 10' of all girders and both end bents as part of semi-integral conversion.

Picture # (Provide Pictures of Each Bearing)

6, 8, 9, 10

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: Spot touch-up rust spots, midspan G1&5, approx. 30-50 SF of Epoxy Mastic Polymer.

Paint end 10' of all girders at both end bents.

Picture # 10, 13, 14

**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: **Only minor paint defects were observed as noted in section 8.**

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.)
<b>1</b>	_____ sq. ft.	<b>11</b> sq. ft.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	<b>Beam cap, curtain wall</b>
<b>2</b>	_____ sq. ft.	_____ sq. ft.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	_____
<b>3</b>	_____ sq. ft.	_____ sq. ft.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	_____
<b>4</b>	_____ sq. ft.	<b>20</b> sq. ft.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	<b>Column 1 = 10SF, Column 2 = 10SF</b>
<b>5</b>	<b>20</b> sq. ft.	_____ sq. ft.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	<b>Beam cap</b>

\* Does the structure need graffiti protection? ☐ No ☐ Bottom 8' of Concrete ☐ End Bents ☐ Other \_\_\_\_\_\* Notes: **Repairs will still be necessary even with semi-integral conversion.**Picture # **4, 6, 7, 15, 16, 25**

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** \_\_\_\_\_

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 \_\_\_\_\_

\* Describe slope protection in place. **Concrete panels** \_\_\_\_\_

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

\* Describe needed work. **Clear vegetation in joints.** \_\_\_\_\_

**Re-seal joints, EB1 approx. 500 LF. EB5 approx. 300 SF**

Picture #

15

**TRAFFIC LANES**

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

\* Shoulder width: ☐ None on structure **4** **10** under structure **10** **10**  
(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: 60 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? \_\_\_\_\_

2012-Concrete repair less than 50 SF

2012-Replace overlay

2012-Repair expansion device

2013-Replace expansion device

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

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. **N/A**

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

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**PERSONS ASSISTING WITH CHECKLIST**

Name	<b>Thomas P. Lohman, Horner &amp; Shifrin</b>	Title	<b>Assistant Business Unit Leader</b>	Ph.	( <b>314</b> ) <b>335</b> - <b>8637</b>
Name	<b>Martin A. Chorkey, Horner &amp; Shifrin</b>	Title	<b>Senior Project Engineer</b>	Ph.	( <b>314</b> ) <b>335</b> - <b>8631</b>
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	_____
	<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