



Missouri Department of Transportation

# STRUCTURAL REHABILITATION CHECKLIST

Bridge No.: **A3100**

Job No.: **J6P3288**

Route: **CRD OLD HWY 21S**

Over: **MO 21**

County: **JEFFERSON**

Date of Field Check: **11/19/2019**

\* \* \* 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: **0.3** "

\* Year overlay was applied: **2003** ☐ Unknown

\* % of overlay repaired or patched: \_\_\_\_\_ %

\* Replace overlay: ☒ Yes ☐ No

\* Notes: **Moderate deterioration throughout.**

**Replace with Latex Modified Concrete wearing surface including approach slabs, which currently has no wearing surface.**

Picture # **3, 4, 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: **0** 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  
(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.**

**Moderate efflorescence throughout underside of deck at transverse cracks and longitudinal construction joint.**

Picture # **20**

## DECK REPAIRS CONT.

## \* ISSUES \ PROBLEMS WITH PRECAST PRESTRESSED DECK PANELS

Spans	Location in Span						Deterioration		Describe
	At Panel Jt.	Btwn (mid) Panel Jt.	End				Type	Amount	
	<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.	
	<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: NONE

(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 #

## 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 Spalling & cracking  
(Typically a roadway item but will be reported to district on the Bridge Memorandum.)
- \* Full Replacment of Approach Slab? ☐ Yes ☒ No \_\_\_\_\_
- \* Notes: Existing patches present on both approach slabs. 20 SF of new patches needed (10 SF per approach).

Shoulders of north & south approach slabs have several longitudinal cracks.

Picture # 1, 3, 5, 6

4

**SLAB DRAINS**

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

\* Recommendations: **CLEAN WEST SIDE OF BRIDGE DECK (SB TRAFFIC)**

\* Notes: **A FEW DRAINS WERE COVERED WITH SEDIMENTATION.**

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: **NONE** 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: **Regular minor cracking with efflorescence along both sides of barrier curb.**

Picture #

6

## EXPANSION DEVICES

Bent	Type	Recommendations			Gap Left	Gap Right	Temperature & Other Info
1	Strip seal & Wabocrete	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	1-3/8 "	2 "	50°F
5	Strip Seal	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	1-5/8 "	1-3/8 "	50°F
		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: Expansion devices leak onto cap, girder ends, and bearings. Replace expansion device at both end bents.

Semi-Integral conversion not recommended due to the curve. Missing slide plate on barrier curb at southwest corner.

Picture # 3, 4

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 type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Girder 2, 4, 5
2	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
3	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
4	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
5	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Girder 1, 2, 3, 4
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

\* Notes: Moderate to severe rust and section loss on bearings listed above.

For estimate, assume all bearings are replaced as condition may worsen for bearing currently in good condition

Picture # (Provide Pictures of Each Bearing) 11, 12, 13, 22

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## 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 corrosion at beam ends and cross-frames between Girder 2&3, 4&5, and EB1.

Clean and recoat end 10' of all girders at both end bents as part of joint replacement.

Picture # 15, 20, 21

**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: **NONE**

Picture #

**SUBSTRUCTURE REPAIR**

<b>Bent</b>	<b>Formed Repair</b>	<b>Unformed Repair</b>	<b>Seal Concrete Beam Cap Bts.</b>	<b>Coat Exposed Pile @ Int. Pile Cap Bts.</b>	<b>Describe (Beam, Backwall, Wing, etc.)</b>
<b>1</b>	<b>0</b> sq. ft.	<b>0</b> sq. ft.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	<b>Backwall. 24 LF epoxy inject cracks.</b>
<b>2</b>	<b>0</b> sq. ft.	<b>6</b> sq. ft.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	<b>Column1, South Face</b>
<b>3</b>	<b>0</b> sq. ft.	<b>0</b> sq. ft.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	
<b>4</b>	<b>0</b> sq. ft.	<b>0</b> sq. ft.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	
<b>5</b>	<b>0</b> sq. ft.	<b>24</b> sq. ft.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	<b>Backwall. 30 LF of epoxy inject cracks.</b>

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

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

Picture # **10, 14, 16, 18, 19**

### SIGNS, SIGNALS &/OR LIGHTING ATTACHED TO STRUCTURE

Picture #

## UTILITIES ATTACHED TO STRUCTURE

Picture #

## CATHODIC PROTECTION SYSTEM

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

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

Picture #

## CHANNEL ALIGNMENT, SLOPE PROTECTION & SCOUR

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



\* Describe needed work. Existing joint seals are intact. Re-evaluate at time of rehab.

**Picture # 23**

## TRAFFIC LANES

\* **Shoulder width:** ☐ None      on structure **10**<sub>(left)</sub> **12**<sub>(right)</sub>      under structure **4**<sub>(left)</sub> **6**<sub>(right)</sub>

\* 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: 50 mph

\* Posted load on structure: 65 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? \_\_\_\_\_

2014-Repaint with calcium sulfonate

2015/2016-Repairs to both approach slabs.

2016-30' of aluminum expansion joint blast cleaned and repalced with Wabocrete.

2016- Repaired column 1 at IB 4.

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 &amp; Shifrin</u>	Title	<u>Senior Project Engineer</u>	Ph.	<u>( 314 ) 335 - 8631</u>
Name	<u>J. Donovan Herpel, Horner &amp; 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