



Missouri Department of Transportation

STRUCTURAL REHABILITATION CHECKLIST

Bridge No.: **A2977**

Job No.: **J6P3299**

Route: **Old HWY 21 S**

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: _____

* 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.**

Repalce with Latex Modified Concrete wearing surface including approach slabs.

Picture # **2-6**

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: **375** 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: **50** 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. Full-depth repairs quantity estimated based on**

slab panel joint defects located in section 2B. Clean and seal 50 LF of slab edge on the left side over IB2.

Picture # **7, 14, 15, 16, 18, 19, 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 checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Sat. & Eff.	180 sq. ft.	9 SF x 20 jts.
2	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Sat. & Eff.	180 sq. ft.	9 SF x 20 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. Minor rust stains observed under 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 # 14, 15, 16, 18, 19

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 on approach slab and bridge deck.**

Picture # 2, 3, 5, 6, 8

4

SLAB DRAINS

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

* Recommendations: _____

* Notes: **Inlet at all four corners and deck drains.**

Picture # **2, 17, 18, 24**

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 **4** 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 **0** 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 slide plates.**

Exposed rebar and cracks at EB3, left side, end of safety barrier curb.

Picture # **9, 10**

6

EXPANSION DEVICES

Bent	Type	Recommendations			Gap Left	Gap Right	Temperature & Other Info
1	Compression Seal	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	2 "	2 "	38°
3	Compression Seal	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	2-5/8 "	2-1/4 "	38°
		<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: **Replace compression seal at both end bents.**

Picture # 3, 4, 6, 11

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"/>	<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"/>	<input type="checkbox"/>	<input type="checkbox"/>	
3	<input type="checkbox"/> BLAST CLEAN & RECOAT	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	<input type="checkbox"/> BLAST CLEAN & RECOAT	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	<input type="checkbox"/> BLAST CLEAN & RECOAT	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	<input type="checkbox"/> BLAST CLEAN & RECOAT	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	<input type="checkbox"/> BLAST CLEAN & RECOAT	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

* Notes: **Bearings are generally in good condition but clean and recoat along with end 10' of each girder at both end bents as part of the expansion device replacement.**

Picture # (Provide Pictures of Each Bearing)

27, 29-43

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: **Due to expansion device replacement, apply System G to 10' within beam ends at both end bents.**

Picture # 27, 31, 32, 36, 39

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**

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

Notes: **No defects observed.**

Picture #

SUBSTRUCTURE REPAIR

<u>Bent</u>	<u>Formed Repair</u>	<u>Unformed Repair</u>	<u>Seal Concrete Beam Cap Bts.</u>	<u>Coat Exposed Pile @ Int. Pile Cap Bts.</u>	<u>Describe (Beam, Backwall, Wing, etc.)</u>
<u>1</u>	_____ sq. ft.	<u>12</u> sq. ft.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	Wingwall, beam cap. 43 LF epoxy inject cracks.
<u>2</u>	_____ sq. ft.	_____ sq. ft.	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	32 LF epoxy inject cracks, in beam cap.
<u>3</u>	_____ sq. ft.	<u>33</u> sq. ft.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	Curtain wall, beam cap. 46 LF epoxy inject cracks.
_____	_____ sq. ft.	_____ sq. ft.	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	_____
_____	_____ sq. ft.	_____ sq. ft.	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	_____

* Does the structure need graffiti protection? ☒ No ☐ Bottom 8' of Concrete ☐ End Bents ☐ Other _____* Notes: **IB2, cracks extend from under the bearing to over column. See photos.**Picture # **12, 20-23, 25, 26, 28, 35, 37, 44**

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 checked="" type="checkbox"/> Conduit <input type="checkbox"/> Pipeline <input type="checkbox"/> Other	380' ±	4"	Charter Communications	<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: **Fiber optic at SE corner. Conduit runs along the outside of the right barrier curb.**

Conduit in good condition.

Picture # 7

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 N/A

* Describe slope protection in place. None

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

* Describe needed work. _____

Picture #

15

TRAFFIC LANES

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

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

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

* Median width: on structure _____ under structure 51

* 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: _____ 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? _____

2009-Seal deck with Star Macro.

2015-Overcoat bridge with calcium sulfonate.

2016-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 Martin A. Chorkey, Horner & Shifrin Title Senior Project Engineer Ph. (314) 335 - 8631

Name J. Donovan Herpel, Horner & Shifrin Title Engineer Ph. (314) 335 - 8602

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 _____
Transportation Project Manager

Name _____ Date 1/31/2020
District Bridge Engineer

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