



Missouri Department of Transportation

STRUCTURAL REHABILITATION CHECKLIST

Bridge No.: **A3176**

Job No.: **J613572**

Route: **IS 170**

Over: **RT D**

County: **St. Louis**

Date of Field Check: **March 26, 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: _____ " * Year overlay was applied: _____ ☐ Unknown

* % of overlay repaired or patched: _____ % * Replace overlay: ☐ Yes ☐ No

* Notes: **Evaluate Between Hydrodemolition with Latex Modified Concrete Overlay, or Full Deck Replacement**

Picture # **0479, 0480, 0482, 0498**

2A

DECK REPAIRS

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

* Half-sole repairs: _____ sq. ft. (round up to the nearest 50 sq. ft.) * Full-depth repairs: **3290** sq. ft. (round up to the nearest 25 sq. ft.)

* Slab edge repairs: _____ lin. ft. (covers the outer 4" of the slab edge) * Superstructure repair (Unformed): _____ sq. ft. (covers the remaining slab cantilever beyond the outer 4")

* Clean & seal slab edge: _____ lin. ft. (in lieu of edge repairs) * Existing Deck Patching: _____ sq. ft. (round up to the nearest 25 sq. ft.)

* Total surface hydro demolition bridge deck: ☒ Yes ☐ No * Full deck replacement (redeck): ☐ Yes ☐ No ☒ Optional (half-sole and full depth repair quantities still required)

* Deck repairs with voided tube replacement: ☐ Yes ☐ No * Superstructure replacement: ☐ Yes ☐ No ☐ Optional (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: **Consider eliminating median gap if re-deck option selected. Consider consultant GPR/IR for refined deck repair quantities**

Estimating 5% Monolithic Halfsole repairs if opting for dense overlay.

Picture # **0469-0474, 0488, 0490**

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	End		Type	Amount	
	<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"/>			sq. ft.	
	<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"/>			sq. ft.	
	<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"/>			sq. ft.	

* Notes: **No Deck Panels**

(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 _____
(Typically a roadway item but will be reported to district on the Bridge Memorandum.)
- * Full Replacement of Approach Slab? ☐ Yes ☐ No **Optional - dependent on hydro or redeck determination.**
- * Notes: **Asphalt Overlay at NE**

Include with consultant GPR/IR for deck sounding

Picture # **0477, 0478, 0484, 0495, 0497, 0502-0504**

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SLAB DRAINS

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

* Recommendations: Clean out Basin at NW Quadrant

* Notes: _____

Picture #

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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 10 lin. ft.

* Remove hand rail ☐ Yes ☐ No * Add curb blockout ☐ Yes ☐ No

* Existing median curb: Type: Safety Barrier Curb Width _____ " Height _____ "

* Does curb need repair ☐ Yes ☐ No * Curb repair 30 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: SB Median @ S Appr - 20x2; North Appr - 10x3; NB Median @ N Appr - 10x3

Update approach rail at NW and SE to MASH Standards

Picture # 0481, 0485, 0501,

6

EXPANSION DEVICES

Bent	Type	Recommendations			Gap Left	Gap Right	Temperature & Other Info
1	Filled Joint	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	"	"	Place Silicone Seal after Latex Mod Overlay
4	Filled Joint	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	"	"	Place Silicone Seal after Latex Mod Overlay
		<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: **If replacing Approach Slabs, tie to deck to minimize joint at abutment fill face.**

Picture # 0478, 0483, 0499, 0500, 0503

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BEARINGS

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

* Notes: **14x2 each**

Picture # (Provide Pictures of Each Bearing)

8

COATING SYSTEM (PAINT)

* Existing coating system: **System B** ☒ green ☐ gray ☐ other _____

* Date last coated: **1982** * 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: **Paint Defects at Splice Plates and Sign Attachments**

Existing System B Paint contains Lead. See LBP Inspection Memo for more details.

Picture # 0493, 0506

SUPERSTRUCTURE REPAIRS

(Repairs needed not previously stated.)

Concrete Slab Superstructure or Girder: (above the bearings)**Concrete Diaph. Repairs - 120 SF**(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>14</u>	<input checked="" type="checkbox"/>	Section Loss	<u>10</u> %	<input type="checkbox"/>	Cracks	_____ in.	<u>Near Abut 1, Lower Web. Minor</u>
_____	<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: _____

Picture # 0475, 0476, 0486

SUBSTRUCTURE REPAIR

Bent	Formed Repair	Unformed Repair	Seal Concrete Beam Cap Bts.	Coat Exposed Pile @ Int. Pile Cap Bts.	Describe (Beam, Backwall, Wing, etc.)
<u>1</u>	<u>120</u> sq. ft.	_____ sq. ft.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	<u>Cap Top Edge</u>
<u>2</u>	_____ sq. ft.	<u>18</u> sq. ft.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	<u>West End of Cap, Col 1</u>
<u>3</u>	_____ sq. ft.	<u>9</u> sq. ft.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	<u>East End of Cap</u>
<u>4</u>	<u>21</u> sq. ft.	_____ sq. ft.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	<u>Cap Top Edge</u>
_____	_____ 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: If Replacing Approaches, place Vertical Drain at Fill Face of Abutment, Seal Caps at end and Under Median (if opting for Dense Overlay), 9 LF each intermediate bent. REQUIRE Shotcrete for unformed repairs

Picture # 0476, 0487

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SIGNS, SIGNALS &/OR LIGHTING ATTACHED TO STRUCTURE

- * Are there signs attached directly to this structure? ☒ Yes ☐ No quantity 2 location Fascia Girders
- * Describe proposed work to be done to signs. Replace
- * 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 # 0468, 0489, 0491, 0506

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UTILITIES ATTACHED TO STRUCTURE

Type			Qty.	Size	Owner	Condition			
<input checked="" type="checkbox"/> Conduit	<input type="checkbox"/> Pipeline	<input type="checkbox"/> Other	<u>2</u>	<u>2.5"</u>	<u>MoDOT (W Ext Barr)</u>	<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: _____
- _____

Picture #

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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. _____

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

* Describe needed work. _____

Picture #

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TRAFFIC LANES

* Number of lanes striped: on structure 6 under structure _____

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

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

* Median width: on structure 16 under structure _____

* Proposed improvements for lanes/shoulders/sidewalks: _____

Picture # 0480, 0498

16

GENERAL AREA CONDITIONS

* **Primary area:** ☒ Commercial ☒ Industrial ☐ Residential ☐ Agricultural ☐ Military ☐ Other _____

* **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?** _____

Approaches Lifted and Repaired multiple times, Continual Chipping of bottom of deck to minimize Overhead Hazards to traffic below

Picture #

18

ADDITIONAL FIELD NOTES

Significant Liveload Deflection. Constant Deck Vibration

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.** Stage in thirds if replacing deck, quarters if placing dense overlay.

Other option is to close one direction at a time to reduce stages. Discuss with Core Team

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PERSONS ASSISTING WITH CHECKLIST

Name	<u>Ryan Semar</u>	Title	<u>Asst. District Bridge Eng.</u>	Ph.	<u>(314) 453 - 1746</u>
Name	<u>Zachary Evans</u>	Title	<u>Sr. Construction Inspector</u>	Ph.	<u>(314) 453 - 5080</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	<u>Joseph Molinaro</u>	Date	<u>4/3/2020</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





ZDCP0472 2020-03-26
J6I3572 St. Louis County
A3176: IS170 over RT D
Span 3 Underdeck

186° S mag



ZDCP0473 2020-03-26
J6I3572 St. Louis County
A3176: IS170 over RT D
Span 2 Underdeck

113° E mag



ZDCP0474 2020-03-26
J6I3572 St. Louis County
A3176: IS170 over RT D
Span 3 Underdeck

227° SW mag



ZDCP0475 2020-03-26
J6I3572 St. Louis County
A3176: IS170 over RT D
Abutment 4 Saturation of Encasement

174° S mag

ZDCP0476 2020-03-26
J6I3572 St. Louis County
A3176: IS170 over RT D
Abutment 4 Saturation of Encasement
Substructure Delaminations



ZDCP0477 2020-03-26
J6I3572 St. Louis County
A3176: IS170 over RT D
Southbound South Approach



ZDCP0479 2020-03-26
J6I3572 St. Louis County
A3176: IS170 over RT D
Typical Deck Surface



ZDCP0480 2020-03-26
J6I3572 St. Louis County
A3176: IS170 over RT D
Southbound General Looking North



ZDCP0481 2020-03-26
J6I3572 St. Louis County
A3176: IS170 over RT D
South Median Barrier Deterioration



ZDCP0482 2020-03-26
J6I3572 St. Louis County
A3176: IS170 over RT D
SRPM's in Deck



ZDCP0484 2020-03-26
J6I3572 St. Louis County
A3176: IS170 over RT D
Sothbound North Approach Condition



ZDCP0485 2020-03-26
J6I3572 St. Louis County
A3176: IS170 over RT D
Update Rail to MASH Standards





ZDCP0486 2020-03-26
J6I3572 St. Louis County
A3176: IS170 over RT D
Span 1 Girder 14 Web Section Loss
Approx 5 Ft from Abutment

139° SE mag



ZDCP0487 2020-03-26
J6I3572 St. Louis County
A3176: IS170 over RT D
Abutment 1 Delaminations

294° WNW mag



ZDCP0488 2020-03-26
J6I3572 St. Louis County
A3176: IS170 over RT D
Span 1 Underdeck

12° NNE mag



ZDCP0489 2020-03-26
J6I3572 St. Louis County
A3176: IS170 over RT D
Light Attachments at Bent 3

209° SSW mag



ZDCP0494 2020-03-26
J6I3572 St. Louis County
A3176: IS170 over RT D
Flush Basin at NE Quadrant



ZDCP0497 2020-03-26
J6I3572 St. Louis County
A3176: IS170 over RT D
Northeast Approach Slab



ZDCP0498 2020-03-26
J6I3572 St. Louis County
A3176: IS170 over RT D
North Bound General Looking South



ZDCP0501 2020-03-26
J6I3572 St. Louis County
A3176: IS170 over RT D
Expansion Damage at North Median Appr Barrier





ZDCP0500 2020-03-26
J6I3572 St. Louis County
A3176: IS170 over RT D
Typical Deck Construcion Joint



ZDCP0503 2020-03-26
J6I3572 St. Louis County
A3176: IS170 over RT D
Norhtbound South Deckend



ZDCP0504 2020-03-26
J6I3572 St. Louis County
A3176: IS170 over RT D
Norhtbound South Approach/Roadway Joint



ZDCP0505 2020-03-26
J6I3572 St. Louis County
A3176: IS170 over RT D
West Overhang



Pictures

2 images, March 2020

