

MICHIGAN DEPARTMENT OF TRANSPORTATION

STR 4379

BRIDGE SAFETY INSPECTION REPORT

Facility PICKARD AVENUE	Latitude / Longitude 43.611831 / -84.779081	MDOT Structure ID 374458400024B01	Structure Condition Fair Condition(5)
Feature CHIPPEWA RIVER	Length / Width 132.91 / 56.43	Owner City: Mt. Pleasant(4584)	
Location IN MT PLEASANT	Built / Recon. / Paint / Ovly. 1979 / 1994 / /	TSC Mt. Pleasant(4A)	Operational Status A Open, no restriction(A)
Region / County Bay(4) / Isabella(37)	Material / Design 5 Prestressed Concrete / 05 Multiple Box Beam	Last NBI Inspection 07/14/2014 / 7Z0W	Scour Evaluation 5 Stable w/in footing



NBI INSPECTION

7Z0W

Inspector Name	Agency / Company Name	Insp. Freq.	Insp. Date
Mark Helinski	ROWE Professional Services Company	24	07/14/2014

GENERAL NOTES

Assisted by: James Brock

Barriers, sidewalks and deck have regions of Alkali Silica Reaction (ASR) failure. There is no guardrail, transition or guardrail ending in the NWQ of the bridge. The aluminum tube above the open parapet wall no longer meets federal requirements for crash worthiness.

DECK

06/10 07/12 07/14

	06/10	07/12	07/14	
1. Surface (SIA-58A)	5	5	5	Concrete deck. Some delamination on < 2% of deck. Hairline map cracking throughout, possible ASR failure. 4 sft spall patched with HMA near pier 2w in the WB lane. (07/14) Concrete deck. Some delamination on < 2% of deck. Hairline longitudinal beam cracks w/ random transverse cracking. (07/12) Concrete deck. Hairline longitudinal beam cracks w/ random transverse cracking. (06/10)
2. Expansion Joints	4	4	4	Compression joints over the piers are leaking water down onto the pier caps. Some spalls and numerous hairline cracks at joints along the joint headers. Reference line joints are HPR with minor leakage. (07/14) Joints over piers are leaching water onto pier caps. Some spalls and numerous hairline cracks at joints. Concrete header spalling. Ref line joints are HPR with minor leakage. (07/12) Joints over Piers are leaching water onto pier caps. Some spalls and numerous hairline cracks at joints. (06/10)
3. Other Joints	N	N	N	N/A (07/14) (07/12) (06/10)
4. Railings	5	5	5	Concrete open parapet barriers with one aluminum tube above. Concrete has map cracking throughout, possible ASR failure. Half of the end blocks are spalled, possible ASR failure. (07/14) Concrete open parapet rail with metal tube above. Concrete has map cracking throughout. Half of the end blocks are spalling with rust and/or frost expanding and breaking them apart. This is a small area based on surface area, but major delamination. Approach rail is in place in all but the NW quadrant. (07/12) Concrete Open Parapet Rail with metal tube above. Concrete has map cracking throughout. Half of the end blocks are spalling with rust and/or frost expanding and breaking them apart. This is a small area based on surface area, but major deterioration. Approach rail is in place in all but the NW quadrant. (06/10)
5. Sidewalks or Curbs	3	3	5	Concrete sidewalks. Approximately 15 to 20% of sidewalk area has been previously repaired. More than 50% of remaining sidewalk area is delaminated based on sounding and extensively map cracked, possible ASR failure. (07/14) Concrete sidewalks. Approximately 10 to 15% of sidewalk area has been previously repaired. More than 50% of remaining sidewalk area is delaminated based on sounding. Monitor sidewalks. They will be spalling soon. (07/12) Concrete sidewalks. Approximately 10 to 15% of sidewalk area has been previously repaired. More than 50% of remaining sidewalk area is delaminated based on sounding. Monitor sidewalks. They will be spalling soon. (06/10)
6. Deck Bottom Surface (SIA-58B)		N	N	Adjacent concrete box beams. (07/14) Adjacent box beams. (07/12) Adj Box beams. (06/10)

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7. Deck (SIA-58)	5	5	5	Concrete deck. Rating is based on top surface condition only. Some delamination on < 2% of deck. Hairline map cracking throughout, possible ASR failure. 4 sft spall patched with HMA near pier 2w in the WB lane. (07/14) Concrete deck. Rating is based on top surface condition only. (07/12) Concrete deck. Rating is based on exposed top surface only. (06/10)
8. Drainage				Off both ends of the structure. (07/14) (07/12) (06/10)

SUPERSTRUCTURE

	06/10	07/12	07/14	
9. Stringer (SIA-59)	7	7	7	(19) Adjacent post tensioned prestressed concrete box beams with grouted joints. Tail spans of the structure are smaller beams (12" tall). Grout is failing in isolated areas between beams in east span with significant leakage. Minor leakage noted in other spans. Stalactites at beams 18/19s along the entire structure. (07/14) Adjacent box beams. Grout is failing in isolated areas between beams in east span with significant leakage. Minor leakage noted in other spans. (07/12) Adj box beams. Grout is failing in isolated areas between beams in east span with significant leakage. Minor leakage noted in other spans (06/10)
10. Paint (SIA-59A)	N	N	N	N/A (07/14) (07/12) Concrete structure (06/10)
11. Section Loss	N	N	N	N/A (07/14) (07/12) Concrete structure (06/10)
12. Bearings	8	8	7	Bearings are not visible at the abutments, but appear to be functioning. 1/2" elastomeric bearings at the piers. (07/14) Bearings are not visible, but appear to be functioning. (07/12) Bearings not visible, but appear to be functioning. (06/10)

SUBSTRUCTURE

	06/10	07/12	07/14	
13. Abutments (SIA-60)	7	7	7	Concrete abutments. Some map cracking at north end of west abutment. (07/14) Concrete abutments. Some map cracking at north end of west abutment. No delaminations found. (07/12) Concrete abutments. Some map cracking at north end of west abutment. No delaminations found. (06/10)
14. Piers (SIA-60)	7	6	6	South end of each original pier is comprised of three square columns with a concrete cap. The widened, north end of the piers are CIP pile bents with concrete caps. Minor spalling at the bottom at the north end of west pier. Minor spalls, delamination, leachate, and rust stains throughout. The west pier cap is wet from joint leakage above. Minor delamination at south end of east pier. Minor spalls on the east pier under beam 5s and 13s. (07/14) Original piers are concrete. Widened piers are galvanized pile bend with concrete pile cap. Minor spalling at the bottom at the north end of west pier. Minor spalling and delamination at centerline of w. pier. Minor delamination at south end of east pier. At 5th and 13th beam from south fascia minor spalling at bearing of east pier. Piers have sheet pile protection visible below the waterline. (07/12) Original piers are concrete. Widened piers are galvanized pile bend with concrete pile cap. Minor spalling at the bottom at the north end of west pier. Minor spalling and delamination at centerline of w. pier. Minor delamination at south end of east pier. At 5 and 13 beam from south fascia minor spalling at bearing of east pier. Piers have sheet pile protection visible below the water line. (06/10)

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15. Slope Protection	7	7	7	Heavy riprap protecting abutments. Sheet pile and riprap protecting piers. Slope protection is in good condition. (07/14) Heavy riprap protecting abutments. Sheet pile and riprap protecting piers. Slope protection is in good condition. (07/12) Heavy riprap protecting abutments. Sheet pile and riprap protecting piers. Slope protection is in good condition. (06/10)
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APPROACH

	06/10	07/12	07/14	
16. Approach Pavement	8	7	7	HMA approach pavement. No deficiencies noted. Sealed longitudinal joints. (07/14) HMA approach pavement. No deficiencies noted. Sealed longitudinal joints. (07/12) HMA approach pavement. No deficiencies noted. (06/10)
17. Approach Shoulders Sidewalks	7	6	6	Concrete sidewalks and curb and gutter along roadway. Delamination in the SWQ. (07/14) Concrete sidewalks and curb and gutter along roadway. Delamination in SW quad. (07/12) Concrete sidewalks and curb and gutter along roadway. Both in good condition. (06/10)
18. Approach Slopes				Heavy vegetation in all four quadrants. (07/14) Heavy vegetation. (07/12) Well vegetated. (06/10)
19. Utilities				Conduit and box on east span of north fascia. (07/14) Conduit and box on east span of north fascia. (07/12) Conduit and box on east span of north fascia. (06/10)
20. Channel (SIA-61)	7	7	7	No scour detected. Steel sheeting visible around the piers at waterline. Channel makes 45 degree bend upstream of the structure. (07/14) No scour. Sheet pile visible at waterline. (07/12) No scour. Sheet pile visible below waterline. (06/10)
21. Drainage Culverts				Culvert in the SEQ. (07/14) Culvert in SE quadrant. (07/12) Culvert in SE Quadrant (06/10)

MISCELLANEOUS

Guard Rail		Other Items	
Item	Rating	Item	Rating
36A. Bridge Railings	0	71. Water Adequacy	8
36B. Transitions	0	72. Approach Alignment	8
36C. Approach Guardrail	0	Temporary Support	0 No Temporary Supports
36D. Approach Guardrail Ends	0	High Load Hit (M)	No
		Special Insp. Equipment	1
		Underwater Insp. Method	0

Critical Feature Inspections (SIA-92)

	Freq	Date
92A. Fracture Critical		
92B. Underwater		
92C. Other Special		
92D. Fatigue Sensitive		

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STRUCTURE INVENTORY AND APPRAISAL

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Bridge History, Type, Materials	
27 - Year Built	1979
106 - Year Reconstructed	1994
202 - Year Painted	
203 - Year Overlay	
43 - Main Span Bridge Type	5 05
44 - Appr Span Bridge Type	
77 - Steel Type	0
78 - Paint Type	0
79 - Rail Type	6
80 - Post Type	1
107 - Deck Type	1
108A - Wearing Surface	2
108B - Membrane	2
108C - Deck Protection	8

Structure Dimensions	
34 - Skew	35
35 - Struct Flared	0
45 - Num Main Spans	3
46 - Num Apprs Spans	0
48 - Max Span Length	62
49 - Structure Length	132.9
50A - Width Left Curb/SW	0
50B - Width Right Curb/SW	4.92
33 - Median	0
51 - Width Curb to Curb	48.0
52 - Width Out to Out	56.43
112 - NBIS Length	Y

Inspection Data	
90 - Inspection Date	07/14/2014
91 - Inspection Freq	24
92A - Frac Crit Req/Freq	N
93A - Frac Crit Insp Date	
92B - Und Water Req/Freq	N
93B - Und Water Insp Date	
92C - Oth Spec Insp Req/Freq	N
93C - Oth Spec Insp Date	
92D - Fatigue Req/Freq	N
93D - Fatigue Insp Date	
176A - Und Water Insp Method	0
58 - Deck Rating	5
58A/B - Deck Surface/Bottom	5 N
59 - Superstructure Rating	7
59A - Paint Rating	N
60 - Substructure Rating	6
61 - Channel Rating	7
62 - Culvert Rating	N

Navigation Data	
38 - Navigation Control	0
39 - Vertical Clearance	0
40 - Horizontal Clearance	0
111 - Pier Protection	
116 - Lift Brgd Vert Clear	

Route Carried By Structure(ON Record)	
5A - Record Type	1
5B - Route Signing	5
5C - Level of Service	1
5D - Route Number	02024
5E - Direction Suffix	0
10L - Best 3m Unclr-Lt	0 0
10R - Best 3m Unclr-Rt	99 99
PR Number	
Control Section	
11 - Mile Point	0.0
12 - Base Highway Network	0
13 - LRS Route-Subroute	0000002423 08
19 - Detour Length	2
20 - Toll Facility	3
26 - Functional Class	16
28A - Lanes On	4
29 - ADT	9495
30 - Year of ADT	1998
32 - Appr Roadway Width	54.0
32A/B - Ap Pvt Type/Width	4 54.0
42A - Service Type On	5
47L - Left Horizontal Clear	0.0
47R - Right Horizontal Clear	47.9
53 - Min Vert Clr Ov Deck	99 99
100 - STRAHNET	0
102 - Traffic Direct	2
109 - Truck %	6
110 - Truck Network	0
114 - Future ADT	15192
115 - Year Future ADT	2018
Freeway	0

Structure Appraisal	
36A - Bridge Railing	0
36B - Rail Transition	0
36C - Approach Rail	0
36D - Rail Termination	0
67 - Structure Evaluation	6
68 - Deck Geometry	2
69 - Underclearance	N
71 - Waterway Adequacy	8
72 - Approach Alignment	8
103 - Temporary Structure	
113 - Scour Criticality	5

Miscellaneous	
37 - Historical Significance	5
98A - Border Bridge State	
98B - Border Bridge %	
101 - Parallel Structure	N
EPA ID	
Stay in Place Forms	
143 - Pin & Hanger Code	
148 - No. of Pin & Hangers	

Route Under Structure (UNDER Record)	
5A - Record Type	
5B - Route Signing	
5C - Level of Service	
5D - Route Number	
5E - Direction Suffix	
10L - Best 3m Unclr-Lt	
10R - Best 3m Unclr-Rt	
PR Number	
Control Section	
11 - Mile Point	
12 - Base Highway Network	
13 - LRS Route-Subroute	
19 - Detour Length	
20 - Toll Facility	
26 - Functional Class	
28B - Lanes Under	
29 - ADT	
30 - Year of ADT	
42B - Service Type Under	5
47L - Left Horizontal Clear	
47R - Right Horizontal Clear	
54A - Left Feature	N
54B - Left Underclearance	99 99
54C - Right Feature	N
54D - Right Clearance	99 99
Under Clearance Year	
55A - Reference Feature	N
55B - Right Horiz Clearance	327.8
56 - Left Horiz Clearance	0
100 - STRAHNET	
102 - Traffic Direct	
109 - Truck %	
110 - Truck Network	
114 - Future ADT	
115 - Year Future ADT	
Freeway	

Proposed Improvements	
75 - Type of Work	
76 - Length of Improvement	
94 - Bridge Cost	
95 - Roadway Cost	
96 - Total Cost	
97 - Year of Cost Estimate	

Load Rating and Posting	
31 - Design Load	5
41 - Open, Posted, Closed	A
63 - Fed Oper Rtg Method	1
64F - Fed Oper Rtg Load	59.1
64M - Mich Oper Rtg	9 124
65 - Inv Rtg Method	1
66 - Inventory Load	46.4
70 - Posting	5
141 - Posted Loading	
195 - Analysis ID	
193 - Overload Class	

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WORK RECOMMENDATIONS

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WORK RECOMMENDATIONS

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Inspector Name	Agency / Company Name	Insp. Freq.	Insp. Date
Mark Helinski	ROWE Professional Services Company	24	07/14/2014

RECOMMENDATIONS & ACTION ITEMS

Recommendation Type	Priority	Description
Railing Repair	L	Monitor railing for ASR failure. Sidewalk replacement may impact railing
Joint Repair	H	Replace expansion joints.
Deck Patching	M	Hand chip delaminated areas and patch
Deck Replace	M	Due to possible ASR failure, deck and sidewalk may have to be replaced.