

MICHIGAN DEPARTMENT OF TRANSPORTATION

STR 6940

BRIDGE SAFETY INSPECTION REPORT

Facility CURTIS ROAD	Latitude / Longitude 43.7992 / -84.3886	MDOT Structure ID 56200042000B010	Structure Condition Good Condition(7)
Feature TITTABAWASSEE RIVER	Length / Width 316.6 / 41.67	Owner County: Midland(56)	
Location .05 MI W OF WATER RD	Built / Recon. / Paint / Ovlly. 1997 / / /	TSC Mt. Pleasant(4A)	Operational Status A Open, no restriction(A)
Region / County Bay(4) / Midland(56)	Material / Design 5 Prestressed Concrete / 05 Multiple Box Beam	Last NBI Inspection 09/10/2015 / 3OVP	Scour Evaluation 5 Stable w/in footing



NBI INSPECTION

3OVP

Inspector Name	Agency / Company Name	Insp. Freq.	Insp. Date
Eric Rickert	Great Lakes Engineering Group	24	09/10/2015

GENERAL NOTES

DECK

	09/11	09/13	09/15	
1. Surface (SIA-58A)	7	7	6	Healer/sealer on deck, 80% worn off in lanes, intact in both shoulders. Visible longitudinal cracks along beam lines. Map cracks in span 2W, west end. (09/15) Healer/sealer on deck, starting to wear off in wheel lines. (09/13) New healer/sealer on concrete deck, no visible cracks. (09/11)
2. Expansion Joints	7	6	6	EJ3 joints over both piers are full of dirt. Some neoprene missing at E3 joints. At west and east E3 joint, HMA patch in joint header, approximately 5 sft with 3 sft of spall. (09/15) EJ3 joints over both piers are full of dirt. Some neoprene missing at E3 joints. At east E3 joint, HMA patch in joint header, approximately 3 sft. (09/13) Over both piers, joints are full of dirt. (09/11)
3. Other Joints	6	N	N	(09/15) (09/13) Some neoprene missing at E3 joints. At east E3 joint, spall in joint header, approximately 3 sft. (09/11)
4. Railings	7	7	7	New surface sealer on inside, hairline shrinkage/ASR cracks on outside. No open cracks in railing. North rail has horizontal leaching cracks in span 2W (09/15) New surface sealer on inside, hairline shrinkage/ASR cracks on outside. No open cracks in railing (09/13) New surface sealer on inside, hairline shrinkage/ASR cracks on outside. No open cracks in railing (09/11)
5. Sidewalks or Curbs	N	N	N	(09/15) (09/13) (09/11)
6. Deck Bottom Surface (SIA-58B)	N	N	N	Side by side box beams (09/15) Side by side box beams (09/13) Side by side box beams (09/11)
7. Deck (SIA-58)	7	7	7	Healer/sealer wearing off in lanes, still intact in shoulders. Hairline vertical cracks in both fascias. Efflorescence at joint grout joint near west abutment. (09/15) Healer/sealer on deck starting to wear off. Hairline vertical cracks in both fascias. (09/13) New healer/sealer on deck. Hairline vertical cracks in both fascias. (09/11)
8. Drainage				(09/15) (09/13) (09/11)

SUPERSTRUCTURE

09/11 09/13 09/15

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9. Stringer (SIA-59)	7	7	7	SW fascia beam has hairline shear crack, NW has 3 hairline shear cracks (difficult to see with vegetation). NE fascia has 2 hairline shear cracks. North and South fascias over both piers, both beam ends have hairline shear cracks. North & South fascias have hairline horizontal cracks, approx 5"-12" from bottom of beam, all spans. Hairline cracks propagating from post tension pockets. Span 1W, beam 4S has hairline longitudinal crack on bottom, approximately 4'-6' long. (09/15) SW fascia beam has hairline shear crack, NW has 3 hairline shear cracks (difficult to see with vegetation). NE fascia has 2 hairline shear cracks. North and South fascias over both piers, both beam ends have hairline shear cracks. North & South fascias have hairline horizontal cracks, approx 5"-12" from bottom of beam, all spans. (09/13) SW fascia beam has hairline shear crack, NW has 3 hairline shear cracks. NE fascia has 2 hairline shear cracks. North and South fascias over both piers, both beam ends have hairline shear cracks. North & South fascias have hairline horizontal cracks, approx 12" from btm of beam, all spans (only visible in south fascia). (09/11)
10. Paint (SIA-59A)	N	N	N	(09/15) (09/13) (09/11)
11. Section Loss	N	N	N	(09/15) (09/13) (09/11)
12. Bearings	8	8	8	Elastomeric pads (09/15) Elastomeric pads (09/13) Elastomeric pads (09/11)

SUBSTRUCTURE

	09/11	09/13	09/15	
13. Abutments (SIA-60)	7	7	7	Both abutments have ASR/shrinkage cracking outside of bearing area. All 4 slope walls have ASR/shrinkage cracks throughout, some open to 1/8" wide (09/15) Both abutments have ASR/shrinkage cracking outside of bearing area. All 4 slope walls have ASR/shrinkage cracks, some open to 1/8" wide (09/13) Both abutments have ASR/shrinkage cracking outside of bearing area. All 4 slope walls have ASR/shrinkage cracks also (09/11)
14. Piers (SIA-60)	7	7	7	Pier walls have hairline-1/16" cracks. East pier cap, east face has 3 patched areas (09/15) Pier walls have hairline-1/16" cracks. East pier cap, east face has 3 patched areas (09/13) Pier walls have hairline-1/16" cracks. No footing exposed on either pier. East pier cap, east face has 3 patched areas (09/11)
15. Slope Protection	7	7	7	Estimate 80% of riprap in place, original abutments left in place. (09/15) Estimate 80% of riprap in place, original abutments left in place. (09/13) Estimate 80% of riprap in place, original abutments left in place. (09/11)

APPROACH

	09/11	09/13	09/15	
16. Approach Pavement	5	5	5	Approach slabs have hairline-1/16" map cracking spaced every 2"-4" throughout. Both approaches have a 1/4" wide longitudinal crack in WBD lane. (09/15) Approach slabs have hairline-1/16" map cracking spaced every 2"-4" throughout. Both approaches have a 1/4" wide longitudinal crack in WBD lane. (09/13) Approach slabs have hairline-1/16" map cracking spaced every 2"-4" throughout. (09/11)
17. Approach Shoulders Sidewalks	7	7	6	Concrete approach shoulders have hairline-1/16" map cracks. Approach curb and gutter has shrinkage cracks. (09/15) Concrete approach shoulders have hairline-1/16" map cracks. Approach curb and gutter in place (09/13) Concrete approach shoulders have hairline-1/16" map cracks. Approach curb and gutter in place (09/11)

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- 18. Approach Slopes** NW approach rail, end terminal damaged. SE approach C&G has undermining penetrating 3' under curb, no erosion in slope. (09/15)
NW approach rail, end terminal damaged. SE approach C&G has undermining penetrating 3' under curb, no erosion in slope. (09/13)
NW approach rail, end terminal ok. SE approach C&G has undermining penetrating 3' under curb, no erosion in slope. New riprap on SE slope. (09/11)
- 19. Utilities** Overhead south of bridge (09/15)
Overhead south of bridge (09/13)
None noted on bridge (09/11)
- 20. Channel (SIA-61)** 8 8 8 Bridge over very upstream end of impoundment (09/15)
Bridge over very upstream end of impoundment (09/13)
Bridge over very upstream end of impoundment (09/11)
- 21. Drainage Culverts** (09/15)
(09/13)
(09/11)

MISCELLANEOUS

Guard Rail		Other Items	
<u>Item</u>	<u>Rating</u>	<u>Item</u>	<u>Rating</u>
36A. Bridge Railings	1	71. Water Adequacy	8
36B. Transitions	1	72. Approach Alignment	8
36C. Approach Guardrail	1	Temporary Support	0 No Temporary Supports
36D. Approach Guardrail Ends	1	High Load Hit (M)	No
		Special Insp. Equipment	1
		Underwater Insp. Method	3
False Decking (Timber) Removed to Complete Inspection		N/A - No False Decking	

Critical Feature Inspections (SIA-92)

	<u>Freq</u>	<u>Date</u>
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	1997
106 - Year Reconstructed	
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	0
107 - Deck Type	1
108A - Wearing Surface	1
108B - Membrane	0
108C - Deck Protection	1

Structure Dimensions

34 - Skew	25
35 - Struct Flared	0
45 - Num Main Spans	3
46 - Num Apprs Spans	0
48 - Max Span Length	124.7
49 - Structure Length	316.6
50A - Width Left Curb/SW	0
50B - Width Right Curb/SW	0
33 - Median	0
51 - Width Curb to Curb	39.04
52 - Width Out to Out	41.67
112 - NBIS Length	Y

Inspection Data

90 - Inspection Date	09/10/2015
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	3
58 - Deck Rating	7
58A/B - Deck Surface/Bottom	6 N
59 - Superstructure Rating	7
59A - Paint Rating	N
60 - Substructure Rating	7
61 - Channel Rating	8
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	4
5C - Level of Service	0
5D - Route Number	05694
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
12 - Base Highway Network	0
13 - LRS Route-Subroute	0000008883 07
19 - Detour Length	17
20 - Toll Facility	3
26 - Functional Class	07
28A - Lanes On	2
29 - ADT	2067
30 - Year of ADT	1999
32 - Appr Roadway Width	39.04
32A/B - Ap Pvt Type/Width	4 39.01
42A - Service Type On	1
47L - Left Horizontal Clear	0.0
47R - Right Horizontal Clear	24.0
53 - Min Vert Clr Ov Deck	99 99
100 - STRAHNET	0
102 - Traffic Direct	2
109 - Truck %	7
110 - Truck Network	0
114 - Future ADT	3072
115 - Year Future ADT	2019
Freeway	0

Structure Appraisal

36A - Bridge Railing	1
36B - Rail Transition	1
36C - Approach Rail	1
36D - Rail Termination	1
67 - Structure Evaluation	7
68 - Deck Geometry	5
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	1
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	
54B - Left Underclearance	99 99
54C - Right Feature	
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	99.9
64MA - Mich Oper Rtg Method	
64MB - Mich Oper Rtg	150
64MC - Mich Oper Truck	
65 - Inv Rtg Method	1
66 - Inventory Load	73.9
70 - Posting	5
141 - Posted Loading	
193 - Overload Class	

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WORK RECOMMENDATIONS

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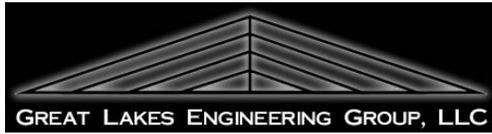
WORK RECOMMENDATIONS

3OVP

Inspector Name	Agency / Company Name	Insp. Freq.	Insp. Date
Eric Rickert	Great Lakes Engineering Group	24	09/10/2015

RECOMMENDATIONS & ACTION ITEMS

Recommendation Type	Priority	Description
Detailed Insp.	L	Investigate cause of cracking in fascias
Appr. Pavement	L	Replace approach slab in future
Slope Repair	H	Repair undermining at SE approach curb
Joint Repair	M	Clean out joints yearly
Overlay	M	New healer/sealer in 2-4 years.

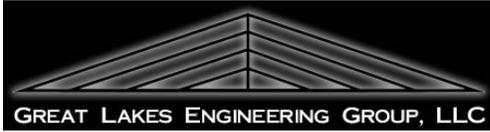


*Road and
bridge section
facing east*



*Longitudinal
crack in west
approach slab*



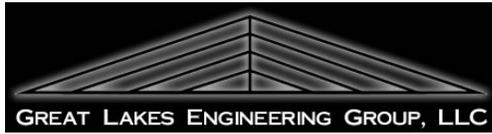


West end joint



Concrete surface





*Upstream
channel section*



*Downstream
channel section*



*Cracks in
concrete deck*



*West expansion
joint*



*Map cracks in
concrete
surface*



*Longitudinal
cracks in
concrete
surface*



*Heavy map
cracks in east
approach slab*



*Hairline cracks
in south fascia
beam*



*Cracks in west
abutment
outside bearing
area*



West pier



*Bottom of box
beams*



West abutment



*Leaching
cracks in north
railing*



*Hairline cracks
in north fascia*



*Shear cracks in
SW fascia
beam*



East pier



*Bottom of box
beams*



West abutment





*Hairline crack
in bottom of
beam 4S, span
1W*



*North elevation
of bridge*



*Hairline map
cracks in pier
wall*



*Bottom of box
beams*



*Hairline cracks
propagating
from post
tension pocket*



*Hairline cracks
in beam ends
over pier*

