

MICHIGAN DEPARTMENT OF TRANSPORTATION

STR 6992

BRIDGE SAFETY INSPECTION REPORT

Facility	Latitude / Longitude	MDOT Structure ID	Structure Condition
MAGRUDDER ROAD	43.4928 / -84.5087	56307H00012B020	Fair Condition(5)
Feature	Length / Width	Owner	
PINE RIVER	179.79 / 34.12	County: Midland(56)	
Location	Built / Recon. / Paint / Ovly.	TSC	Operational Status
0.2 MI S OF PINE RIVER RD	1982 / / /	Mt. Pleasant(4A)	A Open, no restriction(A)
Region / County	Material / Design	Last NBI Inspection	Scour Evaluation
Bay(4) / Midland(56)	5 Prestressed Concrete / 05 Multiple Box Beam	09/14/2015 / 96N5	5 Stable w/in footing



NBI INSPECTION

96N5

Inspector Name	Agency / Company Name	Insp. Freq.	Insp. Date
Eric Rickert	Great Lakes Engineering Group	24	09/14/2015

GENERAL NOTES

Fair.

DECK

	09/11	09/13	09/15	
1. Surface (SIA-58A)	4	4	4	Map cracking throughout HMA, spaced 1-2'. HMA patch along open centerline joint. (09/15) Map cracking throughout HMA, spaced 1-2'. (09/13) Map cracking throughout HMA, spaced 1-2'. Outer 3' covered with gravel. (09/11)
2. Expansion Joints	6	5	5	Joint at south pier is full of dirt, 1sft spall in header in NBD lane, and steel header is loose in SBD lane. Compression joint at north pier, missing 75% of hot poured rubber, vegetation growing out of joint, pier cap wet from leakage. (09/15) Joint at south pier is full of dirt, 1sft spall in header in NBD lane, and steel header is loose in SBD lane. Compression joint at N pier, missing 50% of hot poured rubber, vegetation growing out of joint, pier cap wet from leakage. (09/13) Joint at south pier is full of dirt. 1sft spall in header in NBD lane. (09/11)
3. Other Joints	5	5	N	Corrected per guidelines (09/15) Abutment joints cracked with patched areas. (09/13) Compression joint at N pier, missing 50% of hot poured rubber, vegetation growing out of joint. (09/11)
4. Railings	7	7	7	Concrete open parapet with 1' stems and round ped tube. Loose tube mid span of span 2s in east rail. Concrete surface sealer on railing. (09/15) Concrete open parapet with 1' stems and round ped tube. Loose tube mid span of span 2s in east rail. Concrete surface sealer on railing. (09/13) Concrete surface sealer on 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	Adjacent box beams. (09/15) Adjacent box beams. (09/13) Side by side box beams (09/11)
7. Deck (SIA-58)	6	6	6	HMA surface is map cracked throughout. Efflorescence at grout joints, heavist at piers. (09/15) HMA surface is map cracked throughout. Efflorescence at grout joints, heavist at piers. (09/13) Efflorescence at grout joints, heavist at piers. (09/11)
8. Drainage				(09/15) Off fascias. (09/13) (09/11)

SUPERSTRUCTURE

09/11 09/13 09/15

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9. Stringer (SIA-59)	6	6	6	Hairline cracks in west fascia beam ends over north pier. Post tension pocket grout spalled in west fascia beam ends over south pier, east fascia over north pier. Span 3S, beam 6W has a 14"x7" spall on bottom with no exposed steel, east fascia has hairline leaching cracks on bottom near midspan. Span 2S, beam 6W at south pier has a 1sft delamination. Span 1S, beam 1W at pier, 1'x3' spall with exposed resteel and 2 exposed strands. County patched east fascia beam on span 3S. Vegetation growth between beam ends at piers. (09/15) Hairline cracks in west fascia beam ends over north pier. Post tension pocket grout spalled in west fascia beam ends over south pier, east fascia over north pier. North span, beam 6W has a 14"x7" spall on bottom with no exposed steel. South span, beam 1W at pier, hairline longitudinal leaching crack and 1'x0.5' spall with 1 strand exposed. County patched east fascia beam on north span. Vegetation growth between beam ends at piers. (09/13) Hairline cracks in west fascia beam ends over north pier. Post tension pocket grout spalled in west fascia beam ends over south pier, east fascia over north pier. North span, beam 6 has a 14"x7" spall on bottom with no exposed steel. South span, beam 1W at pier, hairline longitudinal leaching crack and 1'x0.5' spall with steel. North span, east fascia, 3'x0.5' spall with 2 exposed strands and a 1'x4' delamination at midspan. On 10/11/11, County patched east fascia beam on north span, no exposed strand. (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	7	7	7	Fiber paper in front of bearing pads. (09/15) Fiber paper in front of bearing pads. (09/13) Fiber paper in front of bearing pads. (09/11)

SUBSTRUCTURE

	09/11	09/13	09/15	
13. Abutments (SIA-60)	7	7	7	North abutment has shrinkage/ASR cracks outside of bearing area. South abutment has ASR outside bearing area, both east and west sides. (09/15) North abutment has shrinkage/ASR cracks outside of bearing area. South abutment has ASR outside bearing area, both east and west sides. (09/13) North abutment has shrinkage/ASR cracks outside of bearing area. South abutment has ASR outside bearing area, both east and west sides. (09/11)
14. Piers (SIA-60)	5	5	5	Hammerhead piers. Both piers have shrinkage/ASR cracks throughout. Shallow steel in areas is creating rust. Cracks are hairline. Ends of pier caps have vegetation growing. Stem on N pier has a 1/16" vertical crack at each end with some spalling around cracks. Incipient spall (2 sft) on hammerhead south face of north pier. (09/15) Hammerhead piers. Both piers have shrinkage/ASR cracks throughout. Shallow steel in areas is creating rust. Cracks are hairline. Ends of pier caps have vegetation growing. Stem on N pier has a 1/16" vertical crack at each end with some spalling around cracks. Incipient spall (2 sft) on hammerhead south face of north pier. (09/13) Hammerhead piers. Both piers have shrinkage/ASR cracks throughout. Shallow steel in areas is creating rust. Cracks are hairline. Eastend of pier caps has vegetation growing. Stem on N pier has a 1/16" vert crack at each end. Debris stuck on south pier is removed. (09/11)
15. Slope Protection	5	5	5	Estimate 5% of riprap missing at south abutment and 10% missing at north abutment. Erosion on north slope at west fascia. (09/15) Estimate 5% of riprap missing at south abutment and 10% missing at north abutment. Erosion on north slope at west fascia. (09/13) Estimate 5% of riprap missing at south abutment and 10% missing at north abutment. Erosion on north slope at west fascia. (09/11)

APPROACH

09/11 09/13 09/15

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16. Approach Pavement	6	6	5	Chip seal has alligator patching/wedging at ref lines, alligator cracks along centerline. (09/15) Chip seal has alligator cracking/patching at ref lines. (09/13) Chip seal has alligator cracking/patching at ref lines (09/11)
17. Approach Shoulders Sidewalks	6	6	6	Grass shoulders. (09/15) Grass shoulders. (09/13) Grass shoulders (09/11)
18. Approach Slopes				Vegetated slopes. (09/15) Vegetated slopes. (09/13) Vegetated slopes (09/11)
19. Utilities				None noted on bridge. (09/15) None noted on bridge. (09/13) None noted on bridge (09/11)
20. Channel (SIA-61)	7	7	7	Wide channel with heavy trees and vegetation on banks. Fallen tree against Pier 2s wall on upstream end. (09/15) Wide channel with heavy trees and vegetation on banks. Fallen tree against Pier 2s wall on upstream end. (09/13) Wide channel with heavy trees and vegetation on banks. (09/11)
21. Drainage Culverts				(09/15) None noted. (09/13) (09/11)

MISCELLANEOUS

Guard Rail

<u>Item</u>	<u>Rating</u>
36A. Bridge Railings	0
36B. Transitions	0
36C. Approach Guardrail	1
36D. Approach Guardrail Ends	1

Other Items

<u>Item</u>	<u>Rating</u>
71. Water Adequacy	8
72. Approach Alignment	8
Temporary Support	0 No Temporary Supports
High Load Hit (M)	No
Special Insp. Equipment	2
Underwater Insp. Method	1

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		

STR 6992		STRUCTURE INVENTORY AND APPRAISAL		
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Bridge History, Type, Materials		
27 - Year Built	1982	
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	2	
108A - Wearing Surface	6	
108B - Membrane	1	
108C - Deck Protection	1	

Structure Dimensions	
34 - Skew	20
35 - Struct Flared	0
45 - Num Main Spans	3
46 - Num Apprs Spans	0
48 - Max Span Length	59.7
49 - Structure Length	179.8
50A - Width Left Curb/SW	0
50B - Width Right Curb/SW	0
33 - Median	0
51 - Width Curb to Curb	32.15
52 - Width Out to Out	34.12
112 - NBIS Length	Y

Inspection Data		
90 - Inspection Date	09/14/2015	
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	1	
58 - Deck Rating	6	
58A/B - Deck Surface/Bottom	4	N
59 - Superstructure Rating	6	
59A - Paint Rating	N	
60 - Substructure Rating	5	
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 Brdg Vert Clear	

Route Carried By Structure(ON Record)		
5A - Record Type	1	
5B - Route Signing	4	
5C - Level of Service	0	
5D - Route Number	00000	
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	0000008899 01	
19 - Detour Length	3	
20 - Toll Facility	3	
26 - Functional Class	09	
28A - Lanes On	2	
29 - ADT	530	
30 - Year of ADT	1999	
32 - Appr Roadway Width	32.15	
32A/B - Ap Pvt Type/Width	4	31.99
42A - Service Type On	1	
47L - Left Horizontal Clear	0.0	
47R - Right Horizontal Clear	32.2	
53 - Min Vert Clr Ov Deck	99	99
100 - STRAHNET	0	
102 - Traffic Direct	2	
109 - Truck %	5	
110 - Truck Network	0	
114 - Future ADT	788	
115 - Year Future ADT	2019	
Freeway	0	

Structure Appraisal	
36A - Bridge Railing	0
36B - Rail Transition	0
36C - Approach Rail	1
36D - Rail Termination	1
67 - Structure Evaluation	5
68 - Deck Geometry	6
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		
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	6		
41 - Open, Posted, Closed	A		
63 - Fed Oper Rtg Method	1		
64F - Fed Oper Rtg Load	55.9		
64MA - Mich Oper Rtg Method			
64MB - Mich Oper Rtg	80		
64MC - Mich Oper Truck			
65 - Inv Rtg Method	1		
66 - Inventory Load	33.5		
70 - Posting	5		
141 - Posted Loading			
193 - Overload Class			

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WORK RECOMMENDATIONS

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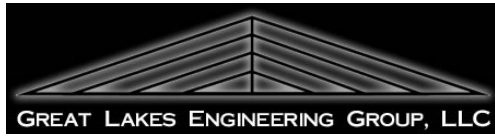
WORK RECOMMENDATIONS

96N5

Inspector Name	Agency / Company Name	Insp. Freq.	Insp. Date
Eric Rickert	Great Lakes Engineering Group	24	09/14/2015

RECOMMENDATIONS & ACTION ITEMS

Recommendation Type	Priority	Description
Detailed Insp.	M	Investigate cause of cracking in piers.
Slope Repair	M	Fill abutment erosion.
Joint Repair	H	Blow out joints yearly. Replace all joints
Overlay	M	Mill HMA and place membrane with new HMA.
Super Repair	H	Patch box beams
Substr Repair	H	Clean off tops of piers.



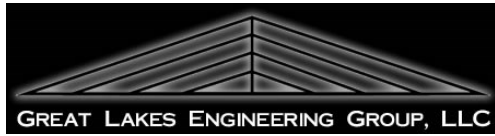
Midland County 2015 Bridge Inspections
Magruder Rd over Pine River
SN 6992
GLEG Project No. 1015-2-336
September 14, 2015

*Road and
bridge section
facing north*



*Cracking
throughout
HMA surface*





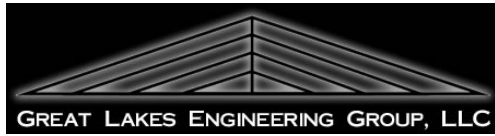
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Bridge railing



Expansion joint





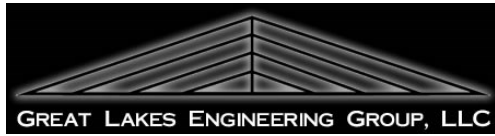
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*Upstream
channel section*



*Downstream
channel section*





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*Loose tube on
east rail*



*South
abutment*



South pier



*Bottom of box
beams*

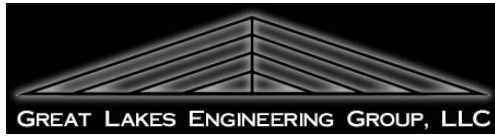


*Leakage along
grout joint*



*Span 1S, beam
1W, spall on
bottom at pier*





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*Hairline
cracking
throughout
pier*



*Center span
box beams*

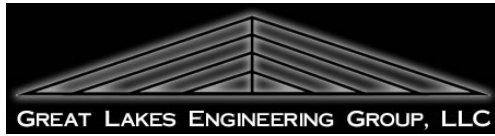


*Delamination
on bottom of
beam 6W, span
2S*



*Spalled grout
in post tension
pockets on west
fascia*





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*Debris stuck on
north pier*



*Map cracks in
north pier*

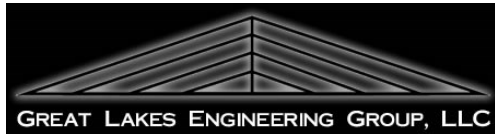


*Leakage in
grout joints at
pier*



*Patched area
on east fascia
beam, span 3S*





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*Leaching crack
on east fascia
beam, span 3S*



*West elevation
of bridge*

