

**MICHIGAN DEPARTMENT OF TRANSPORTATION**

**STR 6945**

**BRIDGE SAFETY INSPECTION REPORT**

<b>Facility</b>	<b>Latitude / Longitude</b>	<b>MDOT Structure ID</b>	<b>Structure Condition</b>
MAGRUDDER ROAD	43.5855 / -84.5084	56200053000B010	Fair Condition(5)
<b>Feature</b>	<b>Length / Width</b>	<b>Owner</b>	
CHIPPEWA RIVER	161.71 / 34.12	County: Midland(56)	
<b>Location</b>	<b>Built / Recon. / Paint / Ovly.</b>	<b>TSC</b>	<b>Operational Status</b>
100 FT S OF CHIPPEWA RD	1989 / / /	Mt. Pleasant(4A)	A Open, no restriction(A)
<b>Region / County</b>	<b>Material / Design</b>	<b>Last NBI Inspection</b>	<b>Scour Evaluation</b>
Bay(4) / Midland(56)	5 Prestressed Concrete / 05 Multiple Box Beam	09/22/2015 / KERG	5 Stable w/in footing



**NBI INSPECTION**

**KERG**

<b>Inspector Name</b>	<b>Agency / Company Name</b>	<b>Insp. Freq.</b>	<b>Insp. Date</b>
Eric Rickert	Great Lakes Engineering Group	24	09/22/2015

**GENERAL NOTES**

Good/fair. Patch fascia beams over pier. Remove debris on pier.

**DECK**

	09/11	09/13	09/15	
<b>1. Surface (SIA-58A)</b>	5	5	5	Chip seal with map cracks in north 20 ft of both lanes. (09/15) Chip seal with reflective map cracks in northbound lane in south span. (09/13) In south span, map cracks in bit throughout northbound lane and in half of southbound lane, in north span map cracks in both lanes. Crack spacing 1'-6". (09/11)
<b>2. Expansion Joints</b>	5	5	5	Estimate 75% of concrete header spalled/patched. Joint full of sand. Chip seal over joint. (09/15) Estimate 75% of concrete header spalled/patched. Joint full of sand. Chip seal over joint. (09/13) Estimate 75% of concrete header spalled/patched. Joint full of sand (09/11)
<b>3. Other Joints</b>	N	N	N	(09/15) (09/13) (09/11)
<b>4. Railings</b>	7	7	7	Concrete open parapet rail. Surface sealer on inside of railing, hairline cracks on outside. (09/15) Concrete open parapet rail. Surface sealer on inside of railing, hairline cracks on outside. (09/13) Surface sealer on inside of railing, hairline cracks on outside. (09/11)
<b>5. Sidewalks or Curbs</b>	N	N	N	(09/15) (09/13) (09/11)
<b>6. Deck Bottom Surface (SIA-58B)</b>	N	N	N	Adjacent box beams. (09/15) Adjacent box beams. (09/13) Side by side box beams (09/11)
<b>7. Deck (SIA-58)</b>	7	7	6	Noted efflorescence with stalactites in north and south span grout joints. (09/15) Noted efflorescence in north and south span grout joints. (09/13) Noted efflorescence in north and south span grout joints (09/11)
<b>8. Drainage</b>				(09/15) Off fascias. (09/13) (09/11)

**SUPERSTRUCTURE**

09/11 09/13 09/15

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<b>9. Stringer (SIA-59)</b>	5	5	5	Both east and west fascia beams over pier have spalls full beam height with exposed stirrups. Stirrups are rusting with heavy scale. South span: east fascia has a hairline leaching crack, hairline shear crack in west fascia south end and north end, 1'x2' delamination at abutment in west fascia, west fascia has a 1sft spall at north 1/4 point, west fascia post tension pocket 2S has a spall in grout. North span: east fascia has a 1sft spall near south end, hairline shear crack in east fascia north and south ends, east fascia has hairline cracks propagating from post tension pockets 2S, 3S, 4S, spalled grout at east fascia post tension pocket 5S, 2 hairline shear cracks at pier in west fascia. (09/15) Both east and west fascia beams over pier have spalls full beam height with exposed stirrups. Stirrups are rusting with heavy scale. South span: hairline shear crack in west fascia south end and north end, 1'x2' delamination at abutment in west fascia, west fascia post tension pocket 2S has a spall in grout. North span: hairline shear crack in east fascia north end, east fascia has hairline cracks propagating from post tension pockets 2S, 3S, 4S, spalled grout at east fascia post tension pocket 5S, 2 hairline shear cracks at pier in west fascia. (09/13) Both east and west fascia beams over pier have spalls full beam height with exposed stirrups. Stirrups are rusting with heavy scale. South span: hairline shear crack in west fascia southend and northend, 1'x2' delamination at abutment in west fascia, west fascia post tension pocket 2S has a spall in grout. North span: hairline shear crack in east fascia northend, east fascia has hairline cracks propagating from post tension pockets 2S 3S 4S, spalled grout at east fascia post tension pocket 5S, 2 hairline shear cracks at pier in west fascia (09/11)
<b>10. Paint (SIA-59A)</b>	N	N	N	(09/15) (09/13) (09/11)
<b>11. Section Loss</b>	N	N	N	(09/15) (09/13) (09/11)
<b>12. Bearings</b>	8	8	8	Elastomeric pads in place. (09/15) Elastomeric pads in place. (09/13) Elastomeric pads in place (09/11)

**SUBSTRUCTURE**

	09/11	09/13	09/15	
<b>13. Abutments (SIA-60)</b>	7	7	7	All 4 abutment corners/returnwall have hairline shrinkage/ASR cracks. (09/15) All 4 abutment corners/returnwall have hairline shrinkage/ASR cracks. (09/13) All 4 abutment corners/returnwall have hairline shrinkage/ASR cracks. (09/11)
<b>14. Piers (SIA-60)</b>	7	7	6	Hairline to 1/16" vertical crack at west end. 2 logs stuck on pier (09/15) Hairline to 1/16" vertical crack at west end. (09/13) Hairline to 1/16" vertical crack at westend. (09/11)
<b>15. Slope Protection</b>	5	5	5	Estimate 50% of riprap at north abutment has been moved into stream. Noted erosion along edges of riprap from roadway runoff. At south abutment, 5-10% missing. (09/15) Estimate 50% of riprap at north abutment has been moved into stream. Noted erosion along edges of riprap from roadway runoff. At south abutment, 5-10% missing. (09/13) Estimate 50% of riprap at north abutment has been moved into stream. Noted erosion along edges of riprap from roadway runoff. At south abutment, 5-10% missing (09/11)

**APPROACH**

	09/11	09/13	09/15	
<b>16. Approach Pavement</b>	6	7	6	Chip sealed. South approach has approx. 1" settlement. North approach has alligator cracking. (09/15) Chip sealed. Wedging at north and south reference lines visible through chip seal. (09/13) Wedging at north and south reference lines. Both approaches have alligator cracking in SBD lane at centerline (09/11)

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<b>17. Approach Shoulders Sidewalks</b>	6	6	6	HMA shoulders with approach curb and gutter. (09/15) HMA shoulders with approach curb and gutter. (09/13) HMA shoulders with approach curb and gutter (09/11)
<b>18. Approach Slopes</b>				Northeast radius rail repaired. (09/15) Northeast radius rail damaged. (09/13) NE radius rail damaged (09/11)
<b>19. Utilities</b>				Conduit on west side. (09/15) Conduit on west side. (09/13) Conduit on westside (09/11)
<b>20. Channel (SIA-61)</b>	7	7	7	Wooded channel banks, debris stuck on pier (09/15) Wooded channel banks. (09/13) Wooded channel banks. (09/11)
<b>21. Drainage Culverts</b>				(09/15) (09/13) (09/11)

**MISCELLANEOUS**

**Guard Rail**

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

**Other Items**

<u>Item</u>	<u>Rating</u>
71. Water Adequacy	8
72. Approach Alignment	6
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		

## STRUCTURE INVENTORY AND APPRAISAL

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**WORK RECOMMENDATIONS**

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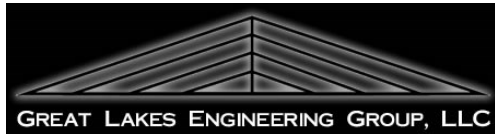
**WORK RECOMMENDATIONS**

**KERG**

<b>Inspector Name</b>	<b>Agency / Company Name</b>	<b>Insp. Freq.</b>	<b>Insp. Date</b>
Eric Rickert	Great Lakes Engineering Group	24	09/22/2015

**RECOMMENDATIONS & ACTION ITEMS**

<b>Recommendation Type</b>	<b>Priority</b>	<b>Description</b>
Slope Repair	L	Place riprap at north slope and repair eroded areas
Scour Repair	H	Remove debris stuck on pier
Joint Repair	M	Replace joint
Overlay	M	Mill and apply waterproofing membrane and repave
Super Repl.	H	Patch beam ends over pier and replace joint.



Midland County 2015 Bridge Inspections  
Magruder Rd over Chippewa River  
SN 6945  
GLEG Project No. 1015-2-336  
September 22, 2015

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*Road and  
bridge section  
facing north*



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*Chip seal  
surface*







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*Bridge railing*



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*Patching over  
expansion joint*







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*Upstream  
channel section*



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*Downstream  
channel section*





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*East elevation  
of bridge*



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*Leaching shear  
crack in east  
fascia beam*







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*South  
abutment*



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*Pier*





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*Bottom of box  
beams*



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*Spall in west  
fascia, south  
span*



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*Exposed resteel  
in east fascia  
over pier*



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*Spall and  
leaching crack  
in east fascia,  
north span*







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*Bottom of box  
beams*



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*North  
abutment*





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*ASR cracks in  
north abutment*



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*North  
abutment*

