

**REQUEST FOR PROPOSAL
FEDERAL AID BRIDGE DESIGN
TUSCOLA COUNTY
BOARD OF COUNTY ROAD COMMISSIONERS
1733 S. MERTZ RD.
CARO, MI 48723**

COMPANY: _____

ADDRESS: _____

SIGN & PRINT: _____

DATE: _____

PHONE & FAX: _____

EMAIL: _____

Federal Aid Bridge Design:

Completed Proposal and Plans to MDOT for First Quarter 2019 Letting

1. **VanBuren over Sheboygan I/C Drain Structure 10488**
Denmark Township, Section 29
Replacement Application Estimate: \$715,000

Cost for Design Package: \$_____

Suggested Replacement Structure: _____

***Qualification statements/quote proposals shall be received no later than 3:30 pm
Monday, August 28, 2017, to Michele Zawerucha P.E., County Highway Engineer.
Can be faxed or emailed.***

REQUEST FOR PROPOSAL FEDERAL AID BRIDGE DESIGN

Project Description

The Tuscola County Road Commission (TCRC) is soliciting qualification statements and quote proposals to perform bridge design services for the structure listed on page one. Such statements shall contain, at a minimum, the following items:

- Familiarization with Michigan Department of Transportation Bridge Design Requirements, including the following documents:
Type, Size and Location Procedures for Bridge Replacement Projects, Dated: 2-9-17
Items Required for Local Agency Bridge Plan Review, Dated: 2-9-17
Items Required for Final Plan Submission, Dated: 6-14-2007
- Statement of Credentials for all Team Members Involved.

Van Buren Road over Sheboygan I/C Drain (Str. No. 10488) - This 1940 structure is being **replaced** during the **2019** fiscal year. The structure is located on a paved County Primary Road on the outskirts of Unincorporated Village of Richville. Van Buren Road is a commercial link from M-81 to M-46 for the Village of Reese and Star of the West Milling Company. This road also acts as a truck bypass from M-46 to M-15 due to the extreme angle (30 degrees) at the intersection of M-15 and M-46. It also provides access to business, recreational and agricultural developments. In 2009 the Average Daily Traffic was 830.

The Consultant(s) chosen should expect to give monthly updates, at a minimum. The Highway Engineer shall be consulted on design of the bridge replacement, detour routes, and review any submittals prior to being sent to MDOT.

Soil Borings shall be obtained by the consultant prior to Winter 2017.

If Right of Way is needed the Consultant will assist the Engineer with survey drawings, proper documents, and procedure. Statement that you are qualified, example of experience is requested.

Award and Payment



Award will be made in the best interest of the Road Commission. Payment will be made by monthly invoicing.

Please limit your package to a description of the proposed design, a summary of each person involved, their qualifications/experience and with your companies hourly fee schedule. Any questions should be made to Michele at mzawerucha@tuscolaroad.org or 989.673.2128 ext. 107.

MICHIGAN DEPARTMENT OF TRANSPORTATION

STR 10488

BRIDGE SAFETY INSPECTION REPORT

Facility	Latitude / Longitude	MDOT Structure ID	Structure Condition	
VAN BUREN ROAD	43.4173 / -83.6798	79200167000B010	Serious Condition(3)	
Feature	Length / Width / Spans	Owner		
SHEBOYGAN 1/C DRAIN	23 / 29.5 / 1	County: Tuscola(79)		
Location	Built / Recon. / Paint / Ovly.	TSC	Operational Status	
SEC 29-30 DENMARK TWP	1940 / / / 1992	Huron(28)	P Posted for load(192648)	
Region / County	Material / Design	Last NBI Inspection	Scour Evaluation	
Bay(4) / Tuscola(79)	3 Steel / 02 Multi Str Non Comp	04/04/2017 / 9QJQ	3 SC - Unstable	

NBI INSPECTION

9QJQ

Inspector Name	Agency / Company Name	Insp. Freq.	Insp. Date
Evan Currie	Great Lakes Engineering Group	12	04/04/2017

GENERAL NOTES

COORDINATES ABOVE ARE NOT CORRECT
Latitude = 43.4079 / Longitude = -83.6796

Posting Signs in Place YES



DECK

	04/15	04/16	04/17	
1. Surface (SIA-58A)	5	4	4	HMA upper surface with widespread block cracking spaced 1'-2'. Some of the open unsealed cracks are up to 1/4" wide. Road section carried over deck. (04/17) HMA upper surface with widespread block cracking spaced 1'-2'. Some of the open unsealed cracks are up to 1/4" wide. Road section carried over deck. (04/16) HMA upper surface with widespread block cracking spaced 1'-2'. Some of the open unsealed cracks are up to 1/4" wide. Road section carried over deck. (04/15)
2. Expansion Joints	N	N	N	(04/17) N/A (04/16) (04/15)
3. Other Joints	N	N	N	(04/17) N/A (04/16) (04/15)
4. Railings	5	4	4	Solid concrete barriers. Only approximately 6" of the top of the barrier protrudes above the pavement surface over the structure. No approach guardrail present. The barriers in the present state do not act as railings, but retain road fill over deck. Rating based on low barrier height. (04/17) Solid concrete barriers. Only approximately 6" of the top of the barrier protrudes above the pavement surface over the structure. No approach guardrail present. The barriers in the present state do not act as railings, but retain road fill over deck. Rating based on low barrier height. (04/16) Solid concrete barriers. Only approximately 6" of the top of the barrier protrudes above the pavement surface over the structure. No approach guardrail present. The barriers in the present state do not act as railings, but retain road fill over deck. (04/15)
5. Sidewalks or Curbs	N	N	N	(04/17) N/A (04/16) (04/15)
6. Deck Bottom Surface (SIA-58B)	6	6	6	Concrete bottom surface. Bay 6w, 2' long by full bay width area of delamination near the south abutment. Bay 8w, 3' long by full bay width area of delamination near the north abutment. Bay 9w, 1sft spall at north abutment Random cracks with efflorescence and moisture present. (04/17) Concrete bottom surface. Bay 6w, 2' long by full bay width area of delamination near the south abutment. Bay 8w, 3' long by full bay width area of delamination near the north abutment. Bay 9w, 1sft spall at north abutment Random cracks with efflorescence and moisture present. (04/16) Concrete bottom surface. Bay 6w, 2' long by full bay width area of delamination near the south abutment. Bay 8w, 3' long by full bay width area of delamination near the north abutment. Bay 9w, 1sft spall at north abutment Random cracks with efflorescence and moisture present. (04/15)

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7. Deck (SIA-58) 6 6 6 Surface: HMA upper surface with widespread block cracking spaced 1'-2'. Some of the open unsealed cracks are up to 1/4" wide. Road section carried over deck.
 Soffit: Small delaminations in bay 6w and 8w. Small spall in bay 9w. (04/17)
 Top: HMA upper surface with widespread block cracking spaced 1'-2'. Some of the open unsealed cracks are up to 1/4" wide. Road section carried over deck.
 Bottom: Concrete bottom surface.
 Bay 6w, 2' long by full bay width area of delamination near the south abutment.
 Bay 8w, 3' long by full bay width area of delamination near the north abutment.
 Bay 9w, 1sft spall at north abutment
 Random cracks with efflorescence and moisture present. (04/16)
 Road section carried over deck. Spalls, delaminations, random leaching cracks in deck bottom (04/15)

8. Drainage (04/17)
 Off structure. (04/16)
 (04/15)

SUPERSTRUCTURE

04/15 04/16 04/17

9. Stringer (SIA-59) 3 3 3 15 painted steel I-beams with full length cover plates. Fascia beams are encased in concrete up to 90% of their overall height. Interior beams are encased in concrete up to 75% of their overall height. Welded cover plates along bottom flanges have separated from beams 6w, 8w, 9w, 10w, 11w and provide zero capacity. Beam 6w has heavy scale along entire length with a 2" diameter hole through the web, 4' from south abutment. Beam 13w has a 8"x6" hole through the web at the south abutment. Beam 14w has a 9"x2" long hole through the web at the south abutment. (04/17)
 (15) Painted steel I-beams with full length cover plates. Fascia beams are encased in concrete up to 90% of their overall height. Interior beams are encased in concrete up to 75% of their overall height. Welded cover plates along bottom flanges have separated from beams 6w, 8w, 9w, 10w, 11w and provide zero capacity. Beam 6w has heavy scale along entire length with a 2" diameter hole through the web, 4' from south abutment. Beam 13w has a 7"x4" hole through the web at the south abutment. Beam 14w has a 9" long hole through the web at the south abutment. (04/16)
 (15) Steel I-beams with full length cover plates. Fascia beams are encased in concrete up to 90% of their overall height. Interior beams are encased in concrete up to 75% of their overall height. Welded cover plates along bottom flanges have separated from beams 6W, 8W, 9W, 10W, 11W and provide zero capacity. Beam 6W has heavy scale along entire length with a 2" diameter hole through the web, 4' from south abutment. Beam 2E has a 9" long hole through the web at the south abutment. Beam 3E has a 7"x4" hole through the web at the south abutment. (04/15)

10. Paint (SIA-59A) 2 2 2 Approximately 95% of the paint system has failed. (04/17)
 Approximately 95% of the paint system has failed. (04/16)
 100% paint failure on the steel I-beams. (04/15)

11. Section Loss 0 0 0 Holes near south abutment in beam 6w (2"x2"), beam 13w (8"x6"), and beam 14w (9"x2"). (04/17)
 Beam 6w has heavy scale along entire length with a 2" diameter hole through the web, 4' from south abutment. Beam 13w has a 7"x4" hole through the web at the south abutment. Beam 14w has a 9" long hole through the web at the south abutment. (04/16)
 Holes through 3 beams (04/15)

12. Bearings N N N No bearing devices. (04/17)
 No bearing devices. (04/16)
 (04/15)



SUBSTRUCTURE

04/15 04/16 04/17

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13. Abutments (SIA-60)	4	4	4	Concrete cantilever abutment walls. The main walls under the structure are in overall fair condition. All four corners of the concrete return walls are scaled, with delaminations and surface spalls, the northwest corner is spalled up to 9" deep, the southwest and southeast corners are spalled up to 6" deep. North abutment footing is exposed as follows: Beam 1w - 0", 3w - 1", 8w - 2". (04/17) Concrete cantilever abutment walls. The main walls under the structure are in overall fair condition. All four corners of the concrete return walls are scaled, with delaminations and surface spalls, the northwest corner is spalled up to 9" deep, the southwest and southeast corners are spalled up to 6" deep. North abutment has a 2'x2' spall near the center. North abutment footing is exposed as follows: Beam 1w - 0", 3w - 1", 5w - 8", 8w - 0". (04/16) Concrete full height abutment walls. The main walls under the structure are in overall fair condition. All four corners of the concrete return walls are scaled, with delaminations and surface spalls, the northwest corner is spalled up to 9" deep, the southwest and southeast corners are spalled up to 6" deep. North abutment has a 2'x2' spall near the center. North abutment footing face exposed as follows: Beam 1W - 0", 3W - 1", 5W - 8", 8W - 0". (04/15)
14. Piers (SIA-60)	N	N	N	(04/17) N/A (04/16) (04/15)
15. Slope Protection	N	N	N	(04/17) None present. (04/16) (04/15)
16. Channel (SIA-61)	7	7	7	Water flows up against each abutment wall. Banks are stable, sandy channel bottom. (04/17) Water flows up against each abutment wall. Banks are stable, sandy channel bottom. (04/16) Water flows up against each abutment wall. Banks are stable, sandy channel bottom. (04/15)
17. Scour Inspection		4	4	Probed, north abutment footing is exposed, not undermined. North abutment footing is exposed as follows: Beam 1w - 0", 3w - 1", 8w - 2". (04/17) Probed, north abutment footing is exposed, not undermined. North abutment footing is exposed as follows: Beam 1w - 0", 3w - 1", 5w - 8", 8w - 0". (04/16) (04/15)

APPROACH



	04/15	04/16	04/17	
18. Approach Pavement	5	5	5	HMA approach pavement off each end of the structure. Widespread block cracking spaced 4'-6', some of the open unsealed cracks are up to 1/4" wide. (04/17) HMA approach pavement off each end of the structure. Widespread block cracking spaced 4'-6', some of the open unsealed cracks are up to 1/4" wide. (04/16) HMA approach pavement off each end of the structure. Widespread block cracking spaced 4'-6', some of the open unsealed cracks are up to 1/4" wide. (04/15)
19. Approach Shoulders Sidewalks	5	N	N	(04/17) None present (04/16) Narrow gravel shoulders (04/15)
20. Approach Slopes				Grass covered slopes in the southeast and northeast. Grass covered with small brush in the northwest and southwest. (04/17) Grass covered slopes in the southeast and northeast. Grass covered with small brush in the northwest and southwest. (04/16) Grass covered slopes in the southeast and northeast. Grass covered with small brush in the northwest and southwest. (04/15)
21. Utilities				One 4" diameter rusted steel conduit along the east fascia of the structure. (04/17) (1) 4" diameter rusted steel conduit along the east fascia of the structure. (04/16) (1) 4" diameter rusted steel conduit along the east fascia of the structure. (04/15)
22. Drainage Culverts				(04/17) 15" diameter CSP in the NEQ. (04/16) (04/15)

MISCELLANEOUS

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Guard Rail

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

Other Items

<u>Item</u>	<u>Rating</u>
71. Water Adequacy	6
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		

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SUPPORTING IMAGES

9QJQ 04/04/2017



Document Name: IMG_0066.JPG
Category: Elevation
Comments: East elevation



Document Name: IMG_0069.JPG
Category: Elevation
Comments: West elevation



Document Name: IMG_0058.JPG
Category: Approach
Comments: Looking south





Document Name: IMG_0060.JPG
Category: Railing
Comments: West railing

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Document Name: IMG_0063.JPG

Category: Railing

Comments: East railing



Document Name: IMG_0065.JPG

Category: Deck

Comments: HMA pavement



Document Name: IMG_0071.JPG

Category: Superstructure

Comments: Typical beam



Document Name: IMG_0072.JPG



Category: Superstructure

Comments: Holes in beams 13w and 14w at south abutment

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Document Name: IMG_0079.JPG
Category: Superstructure
Comments: Hole in web of beam 6w near south abutment



Document Name: IMG_0068.JPG
Category: Substructure
Comments: South abutment, east end



Document Name: IMG_0070.JPG
Category: Substructure
Comments: North abutment





Document Name: IMG_0075.JPG
Category: Substructure
Comments: North abutment, west end

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Document Name: IMG_0077.JPG
Category: Substructure
Comments: South abutment, west end



Document Name: IMG_0080.JPG
Category: Substructure
Comments: South abutment



Document Name: IMG_0061.JPG
Category: Channel
Comments: West channel





Document Name: IMG_0064.JPG
Category: Channel
Comments: East channel

MICHIGAN DEPARTMENT OF TRANSPORTATION

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STRUCTURE INVENTORY AND APPRAISAL



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Bridge History, Type, Materials		Route Carried By Structure(ON Record)		Route Under Structure (UNDER Record)	
27 - Year Built	1940	5A - Record Type	1	5A - Record Type	
106 - Year Reconstructed		5B - Route Signing	4	5B - Route Signing	
202 - Year Painted		5C - Level of Service	1	5C - Level of Service	
203 - Year Overlay	1992	5D - Route Number	07903	5D - Route Number	
43 - Main Span Bridge Type	3 02	5E - Direction Suffix	0	5E - Direction Suffix	
44 - Appr Span Bridge Type		10L - Best 3m Unclr-Lt	0 0	10L - Best 3m Unclr-Lt	
77 - Steel Type	1	10R - Best 3m Unclr-Rt	99 99	10R - Best 3m Unclr-Rt	
78 - Paint Type	0	PR Number		PR Number	
79 - Rail Type	5	Control Section		Control Section	
80 - Post Type	0	11 - Mile Point	0	11 - Mile Point	
107 - Deck Type	1	12 - Base Highway Network	0	12 - Base Highway Network	
108A - Wearing Surface	6	13 - LRS Route-Subroute	0000037900 63	13 - LRS Route-Subroute	
108B - Membrane	0	19 - Detour Length	1	19 - Detour Length	
108C - Deck Protection	0	20 - Toll Facility	3	20 - Toll Facility	
Structure Dimensions		26 - Functional Class	07	26 - Functional Class	
34 - Skew	10	28A - Lanes On	2	28B - Lanes Under	
35 - Struct Flared	0	29 - ADT	830	29 - ADT	
45 - Num Main Spans	1	30 - Year of ADT	2009	30 - Year of ADT	
46 - Num Apprs Spans	0	32 - Appr Roadway Width	29.9	42B - Service Type Under	5
48 - Max Span Length	21	32A/B - Ap Pvt Type/Width	5 20.01	47L - Left Horizontal Clear	
49 - Structure Length	23	42A - Service Type On	1	47R - Right Horizontal Clear	
50A - Width Left Curb/SW	0	47L - Left Horizontal Clear	0.0	54A - Left Feature	
50B - Width Right Curb/SW	0	47R - Right Horizontal Clear	27.9	54B - Left Underclearance	99 99
33 - Median	0	53 - Min Vert Clr Ov Deck	99 99	54C - Right Feature	
51 - Width Curb to Curb	27.9	100 - STRAHNET	0	54D - Right Clearance	99 99
52 - Width Out to Out	29.5	102 - Traffic Direct	2	Under Clearance Year	
112 - NBIS Length	Y	109 - Truck %	0	55A - Reference Feature	N
Inspection Data		110 - Truck Network	0	55B - Right Horiz Clearance	99.9
90 - Inspection Date	04/04/2017	114 - Future ADT	1500	56 - Left Horiz Clearance	0
91 - Inspection Freq	12	115 - Year Future ADT	2029	100 - STRAHNET	
92A - Frac Crit Req/Freq	N	Freeway	0	102 - Traffic Direct	
93A - Frac Crit Insp Date		Structure Appraisal		109 - Truck %	
92B - Und Water Req/Freq	N	36A - Bridge Railing	0	110 - Truck Network	
93B - Und Water Insp Date		36B - Rail Transition	0	114 - Future ADT	
92C - Oth Spec Insp Req/Freq	N	36C - Approach Rail	0	115 - Year Future ADT	
93C - Oth Spec Insp Date		36D - Rail Termination	0	Freeway	
92D - Fatigue Req/Freq	N	67 - Structure Evaluation	3	Proposed Improvements	
93D - Fatigue Insp Date		68 - Deck Geometry	5	75 - Type of Work	31 1
176A - Und Water Insp Method	1	69 - Underclearance	N	76 - Length of Improvement	45
58 - Deck Rating	6	71 - Waterway Adequacy	6	94 - Bridge Cost	444
58A/B - Deck Surface/Bottom	4 6	72 - Approach Alignment	8	95 - Roadway Cost	178
59 - Superstructure Rating	3	103 - Temporary Structure		96 - Total Cost	728
59A - Paint Rating	2	113 - Scour Criticality	3	97 - Year of Cost Estimate	2013
60 - Substructure Rating	4	Miscellaneous		Load Rating and Posting	
61 - Channel Rating	7	37 - Historical Significance	5	31 - Design Load	2
62 - Culvert Rating	N	98A - Border Bridge State		41 - Open, Posted, Closed	P
Navigation Data		98B - Border Bridge %		63 - Fed Oper Rtg Method	1
38 - Navigation Control	0	101 - Parallel Structure	N	64F - Fed Oper Rtg Load	27.6
39 - Vertical Clearance	0	EPA ID		64MA - Mich Oper Rtg Method	1
40 - Horizontal Clearance	0	Stay in Place Forms		64MB - Mich Oper Rtg	45.5
111 - Pier Protection		143 - Pin & Hanger Code	1	64MC - Mich Oper Truck	18
116 - Lift Brdg Vert Clear		148 - No. of Pin & Hangers		65 - Inv Rtg Method	1
				66 - Inventory Load	16.5
				70 - Posting	0
				141 - Posted Loading	192648
				193 - Overload Class	

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SAFETY INSPECTION REPORT - AASHTO ELEMENTS

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Location	Built / Recon. / Paint / Ovly.	TSC	Operational Status	
SEC 29-30 DENMARK TWP	1940 / / / 1992	Huron(28)	P Posted for load(192648)	
Region / County	Material / Design	Last NBI Inspection	Scour Evaluation	
Bay(4) / Tuscola(79)	3 Steel / 02 Multi Str Non Comp	04/04/2017 / 9QJQ	3 SC - Unstable	

No inspections available for bridge key 79200167000B010

MICHIGAN DEPARTMENT OF TRANSPORTATION

LOAD RATING ASSUMPTIONS

Facility	Latitude / Longitude	MDOT Structure ID	Structure Condition	
VAN BUREN ROAD	43.4173 / -83.6798	79200167000B010	Serious Condition(3)	
Feature	Length / Width / Spans	Owner		
SHEBOYGAN 1/C DRAIN	23 / 29.5 / 1	County: Tuscola(79)		
Location	Built / Recon. / Paint / Ovly.	TSC	Operational Status	<div><div>BRIDGE</div><div>WEIGHT LIMIT</div><div>XX TON</div><div>XX MILES AHEAD</div></div>
SEC 29-30 DENMARK TWP	1940 / / / 1992	Huron(28)	P Posted for load(192648)	
Region / County	Material / Design	Last NBI Inspection	Scour Evaluation	
Bay(4) / Tuscola(79)	3 Steel / 02 Multi Str Non Comp	04/04/2017 / 9QJQ	3 SC - Unstable	

Inspection Date: 04/15/2015

Used 15% section loss for moment and 50% for shear. Bottom cover plates on beams. 2 beams have missing cover plates, did not include cover plates in section properties. Beams 2E and 3E have holes in web, beam ends failed, used X2 beam spacing.

History of work that impacts Load rating:

Year of HMA overlays unknown	
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Composite: Yes **Number of Beams:** 15 **Shop Drawings Verified:** No

Size of Beams/Beam #'s and spans:	S12x31.8
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Wearing Surface:	Mat'l: HMA	Thickness (in.): 21.0	Unit Weight (pcf.): 150.0
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Barrier: Type / Weight (plf.): / /

Clear Roadway (ft.):

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Top 3.5" of beam encased in deck, assumed composite section.
Bridge and beam data based on Spicers 2005 calculations. Used 21" of HMA in calculations, this includes 24" of road fill over deck at 120 pcf.

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MICHIGAN DEPARTMENT OF TRANSPORTATION

STR 10488

LOAD RATING SUMMARY

Facility	Latitude / Longitude	MDOT Structure ID	Structure Condition	
VAN BUREN ROAD	43.4173 / -83.6798	79200167000B010	Serious Condition(3)	
Feature	Length / Width / Spans	Owner		
SHEBOYGAN 1/C DRAIN	23 / 29.5 / 1	County: Tuscola(79)		
Location	Built / Recon. / Paint / Ovly.	TSC	Operational Status	
SEC 29-30 DENMARK TWP	1940 / / / 1992	Huron(28)	P Posted for load(192648)	
Region / County	Material / Design	Last NBI Inspection	Scour Evaluation	
Bay(4) / Tuscola(79)	3 Steel / 02 Multi Str Non Comp	04/04/2017 / 9QJQ	3 SC - Unstable	

Compliance Issue: None
Compliance Verified: No
The above structure was analyzed using: Hand Calcs
Version or Other: Mathcad

Rating Considers Field Condition of Members: Yes **Inspection Date:** 04/15/2015

Controlling component and failure mode:

Midspan bending

NEW INVENTORY CODING

NBI Item 63- Operating Rating Method	1 LFR in US tons
NBI Item 64F- Federal Operating Rating	27.6
MDOT Item 64MA- Michigan Operating Method	1 LFR in US Tons
MDOT Item 64MB- Michigan Operating Rating	45.5
MDOT Item 64MC- Michigan Operating Truck	18
NBI Item 65- Inventory Rating Method	1 LFR in US tons
NBI Item 66- Federal Inventory Rating	16.5
NBI Item 41- Structure Open Posted Closed	P P Posted for load
NBI Item 70- Bridge Posting	0 0 - 59% or less
NBI Item 141- Posted Loading	192648
MDOT Item 193A- Michigan Overload Class	
MDOT Item 193C- Overload Status	

Analyzed By: Eric Rickert **Date:** 04/30/2015
Checked By: Casey Collings **Date:** 04/30/2015