

MICHIGAN DEPARTMENT OF TRANSPORTATION

STR 12496

BRIDGE SAFETY INSPECTION REPORT

Facility YOUNG DRIVE	Latitude / Longitude 42.0857 / -83.196	MDOT Structure ID 825263600020B01	Structure Condition Poor Condition(4)
Feature W GIBRALTAR WATERWAY	Length / Width / Spans 77.1 / 31.2 / 2	Owner City: GIBRALTAR(2636)	
Location EAST OF WORTH	Built / Recon. / Paint / Ovly. 1990 / / /	TSC Taylor(25)	Operational Status P Posted for load(081216)
Region / County Metro(7) / Wayne(82)	Material / Design 5 Prestressed Concrete / 05 Box Bm/Gird- Multiple	Last NBI Inspection 08/02/2023 / Q11J	Scour Evaluation 3 SC - Unstable



NBI INSPECTION

Q11J

Inspector Name	Agency / Company Name	Insp. Freq.	Insp. Date
Joel Thorne	Great Lakes Engineering Group	12	08/02/2023

GENERAL NOTES

Intersections at both ends of bridge do not allow proper spacing per MMUTCD for Advanced Posting Signs, therefore they are not required.
Apply for PM work

Weight limit signs in place on both ends of bridge	YES
Weight limit shown on signs at bridge	_81216
Required advance warning weight limit signs in place	YES
Weight limit shown on advance warning signs	_81216


DECK

	08/21	08/22	08/23	
1. Surface (SIA-58A)	6	6	6	Concrete deck. Open beam line cracks along full length with some transverse cracks. At west reference line, approx 12sft spall/HMA patch. Delamination noted at joints. Open block cracking near joint 1w. East: several bit patches at reference line. (08/23) Concrete deck. Open beam line cracks along full length. At west reference line, approx 12sft spall/HMA patch. Delamination noted at joints. Open block cracking near joint 1w. East: several bit patches at reference line. (08/22) Concrete deck. Open beam line cracks along full length. At west reference line, approx 8sft spall/HMA patch. Delamination noted at joints. (08/21)
2. Expansion Joints	4	4	4	Pourable joint at pier is debris filled, 80% loss of adhesion. There is a 1 sft bit spall at the joint. (08/23) Pourable joint at pier is debris filled, 80% loss of adhesion. There is a 1 sft bit spall at the joint. (08/22) Pourable joints at pier is debris filled. There is a 1 sft spall at the joint. (08/21)
3. Other Joints	4	4	4	Pourable joints at abutment reference lines. Spalled and bit patched over 75% of length with veg growth. Leakage noted below. (08/23) Pourable joints at abutment reference lines. Spalled and bit patched over 50% of length. Leakage noted below. (08/22) Pourable joints at abutment reference lines. Spalled and bit patched over 50% of length. Leakage noted below. (08/21)
4. Railings	6	6	6	Type 4 railing has vertical leaching cracks at 3' to 5' spacing. Spalls at botom of north railing at pier and east abutment. 12 sft spall in south side of south rail. (08/23) Type 4 railing has vertical leaching cracks at 3' to 5' spacing. Spalls at botom of north railing at pier and east abutment. (08/22) Type 4 railing has vertical cracks at 3' to 5' spacing. Spalls at botom of north railing at pier and east abutment. (08/21)
5. Sidewalks or Curbs	N	N	N	(08/23) (08/22) (08/21)
6. Deck Bottom Surface (SIA-58B)	N	N	N	Adjacent box beams .Leakage with efflorescence at all west abutment joints and few joints at pier and east abutment. (08/23) Adjacent box beams. (08/22) Adjacent box beams. (08/21)

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7. Deck (SIA-58)	6	6	6	<p>Deck surface: Concrete deck. Open beam line cracks along full length with some transverse cracks. At west reference line, approx 12sft spall/HMA patch. Delamination noted at joints. Open block cracking near joint 1w. East: several bit patches at reference line. Deck bottom: Adjacent box beams .Leakage with efflorescence at all west abutment joints and few joints at pier and east abutment. (08/23)</p> <p>Deck surface: Concrete deck. Open beam line cracks along full length. At west reference line, approx 12sft spall/HMA patch. Delamination noted at joints. Open block cracking near joint 1w. East: several bit patches at reference line. Deck bottom: Adjacent box beams. (08/22)</p> <p>Surface: Concrete deck. Open beam line cracks along full length. At west reference line, approx 8sft spall/HMA patch. Delamination noted at joints. Bottom Surface: Leakage between beams, worse at abutment Fascias: North fascia spalled over pier with leaching cracks throughout, south fascia has a 8' STS in span 2W (08/21)</p>
8. Drainage				<p>(08/23)</p> <p>(08/22)</p> <p>(08/21)</p>

SUPERSTRUCTURE

	08/21	08/22	08/23	
9. Stringer (SIA-59)	5	5	5	<p>10 (EA) Adjacent box beams. Beam ends have spalls at pier; beam 10s STS with 1 exposed stirrup. Areas of rust staining, 1 in. dia, on the north fascia box beams and south fascia box beams, approx 9 per beam. Hairline horizontal cracks over 30% of length of south fascia in span 2w. South fascia, span 2w has a 1sft STS. Several joints leaching with stalactites along all west abutment joints and few joints at pier and east abutment. (08/23)</p> <p>Adjacent box beams. Beam ends have spalls at pier; beam 10s STS with 1 exposed stirrup. Areas of rust staining, 1 in. dia, on the north fascia box beams and south fascia box beams, approx 9 per beam. Hairline horizontal cracks over 30% of length of south fascia in east span. South fascia, east span has a 1sft STS. There is some efflorescence between beams. Several joints leaching with stalactites, all near west abutment. (08/22)</p> <p>Adjacent box beams. Beam ends have spalls at pier with no exposed stirrups. Areas of rust staining, 1 in. dia, on the north fascia box beams and south fascia box beams, approx 9 per beam. Hairline horizontal cracks over 30% of length of south fascia in east span. South fascia, east span has a 1sft STS. There is some efflorescence between beams. (08/21)</p>
10. Paint (SIA-59A)	N	N	N	<p>(08/23)</p> <p>(08/22)</p> <p>(08/21)</p>
11. Section Loss	2	2	2	<p>Spalls at beam end at piers with 1 exposed stirrups. (08/23)</p> <p>Spalls at beam ends at piers with no exposed stirrups. (08/22)</p> <p>Spalls at beam ends at piers with no exposed stirrups. (08/21)</p>
12. Bearings	7	7	7	<p>Elastomeric pads. No deficiencies noted. (08/23)</p> <p>Elastomeric pads. (08/22)</p> <p>Elastomeric pads. (08/21)</p>


SUBSTRUCTURE

08/21 08/22 08/23

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13. Abutments (SIA-60)	4	5	5	<p>Concrete cap on steel H-pile with steel sheet piling. Abutments are pile supported however the sheeting does support the backfill behind the abutment and below the approach pavement. Sheeting is rusty with heavy scale, worse at concrete interface. West abutment: heavy rust/scale and pitting in steel sheet piling, no holes present. East abutment: heavy scale in sheet piling. Riprap lining the abutment. Rating based on condition of steel sheet pile. (08/23)</p> <p>Concrete cap on steel H-pile with steel sheet piling. Abutments are pile supported however the sheeting does support the backfill behind the abutment and below the approach pavement. Sheeting is rusty with heavy scale, worse at concrete interface. West abutment: heavy rust/scale and pitting in steel sheet piling, no holes present. East abutment: heavy scale in sheet piling. Riprap lining the abutment. Rating based on condition of steel sheet pile. (08/22)</p> <p>Concrete cap on steel sheet pile. Sheeting is rusty with heavy scale, worse at concrete interface. Heavy pitting, but no holes found. (08/21)</p>
14. Piers (SIA-60)	4	4	4	<p>Concrete cap on pile bent. H Pile covered with corrugated steel pipe and filled with concrete. Water level high , only concrete cap is visible during routine inspection. UW report notes: Corrugated steel pile shells have 100% section loss in various areas. Concrete pile encasement has spalling with exposed H piles in various locations. Scaling near the waterline on pile cap. (08/23)</p> <p>Concrete cap on pile bent. H Pile covered with corrugated steel pipe and filled with concrete. Water level high, previous inspection noted: Steel pipe is heavily corroded with holes, worse at top of encasement. Concrete fill is spalled with pile visible at several locations. Only concrete cap is visible during routine inspection. Pier 1w: Steel encasement heavily corroded. Concrete visible through steel encasement, with areas of spalling. Steel H-pile visible in several locations. (08/22)</p> <p>Concrete cap on pile bent. H Pile covered with corrugated steel pipe and filled with concrete. Steel pipe is heavily corroded with holes, worse at top of encasement. Concrete fill is spalled with pile visible at several locations. Only concrete cap is visible during routine inspection. (08/21)</p>
15. Slope Protection		N	N	<p>(08/23)</p> <p>(08/22)</p> <p>(08/21)</p>
16. Channel (SIA-61)	6	6	6	<p>Channel is lined with riprap through the bridge. Little flow, weedy. (08/23)</p> <p>Channel is lined with riprap through the bridge. Little flow, weedy. (08/22)</p> <p>Channel is lined with riprap through the bridge. Little flow, weedy. (08/21)</p>
17. Scour Inspection	7	7	7	<p>Steel sheeting at abutments and encased pile bent pier are protected by riprap. West abutment: Heavy scale in steel sheet piling. Heavy pitting in steel sheet piling, no holes present. Riprap lining the abutment. East abutment: Heavy scale in steel sheet piling. Heavy pitting in steel sheet piling, no holes present. Riprap lining the abutment. Pier 1w: Steel encasement heavily corroded. Concrete visible through steel encasement, with areas of spalling. Steel H-pile visible in several locations. (08/23)</p> <p>Steel sheeting at abutments and encased pile bent pier are protected by riprap. West abutment: Heavy scale in steel sheet piling. Heavy pitting in steel sheet piling, no holes present. Riprap lining the abutment. East abutment: Heavy scale in steel sheet piling. Heavy pitting in steel sheet piling, no holes present. Riprap lining the abutment. Pier 1w: Steel encasement heavily corroded. Concrete visible through steel encasement, with areas of spalling. Steel H-pile visible in several locations. (08/22)</p> <p>Steel sheeting at abutments and encased pile bent pier are protected by riprap. No scour noted. (08/21)</p>


APPROACH

08/21 08/22 08/23

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18. Approach Pavement	4	4	4	Bit approaches. Both approaches have been wedged several times. Settlement estimated at 3"-5" with impact loading at reference lines. East: bit spalled along centerline. West: Isolated longitudinal cracking. (08/23) Bit approaches. Both approaches have been wedged several times. Settlement estimated at 3"-5" with impact loading at reference lines. East: bit spalled along centerline. West: Isolated longitudinal cracking. (08/22) Bit approaches. Both approaches have been wedged several times. Settlement estimated at 3"-5" with impact loading at reference lines. (08/21)
19. Approach Shoulders Sidewalks	7	4	4	Gravel/grass shoulders are stable. Settlement at reference lines, drops off 4"-6" at concrete header below railing. Bit wedging. (08/23) Gravel/grass shoulders are stable. Settlement at reference lines, drops off 4"-6" at concrete header below railing. Bit wedging. (08/22) Gravel/grass shoulders are stable. (08/21)
20. Approach Slopes				Seawalls in all quadrants. Well vegetated between shoulders and walls. Approach guardrail in place, thrie beam. (08/23) Seawalls in all quadrants. Well vegetated between shoulders and walls. Approach guardrail in place, thrie beam. (08/22) Seawalls in all quadrants. Well vegetated between shoulders and walls. Approach guardrail in place. (08/21)
21. Utilities				Overhead south of bridge (08/23) Overhead south of bridge (08/22) Overhead south of bridge (08/21)
22. Drainage Culverts				(08/23) (08/22) (08/21)

MISCELLANEOUS

Guard Rail		Other Items	
Item	Rating	Item	Rating
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	0	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)

	Freq	Date
92A. Fracture Critical		
92B. Underwater	24	08/25/2022
92C. Other Special		
92D. Fatigue Sensitive		

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SUPPORTING IMAGES

Q11J 08/02/2023



Document Name: IMG_4606.JPG
 Category: Elevation
 Span Number:
 Comments: North elevation



Document Name: IMG_4610.JPG
 Category: Elevation
 Span Number:
 Comments: South elevation



Document Name: IMG_4591.JPG
 Category: Posting
 Span Number:
 Comments: EB load posting




Document Name: IMG_4592.JPG
 Category: Posting
 Span Number:
 Comments: WB load posting

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Document Name: IMG_4593.JPG
 Category: Approach
 Span Number:
 Comments: Looking west through structure



Document Name: IMG_4594.JPG
 Category: Approach
 Span Number:
 Comments: West approach



Document Name: IMG_4600.JPG
 Category: Approach
 Span Number:
 Comments: East approach




Document Name: IMG_4601.JPG
 Category: Railing
 Span Number:
 Comments: South rail

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Document Name: IMG_4603.JPG
 Category: Railing
 Span Number:
 Comments: North rail



Document Name: IMG_4596.JPG
 Category: Deck
 Span Number:
 Comments: Deck surface span 1w



Document Name: IMG_4598.JPG
 Category: Deck
 Span Number:
 Comments: Deck surface, span 2w




Document Name: IMG_4605.JPG
 Category: Deck
 Span Number:
 Comments: Longitudinal cracks in deck surface

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Document Name: IMG_4595.JPG
 Category: Joints
 Span Number:
 Comments: West reference line



Document Name: IMG_4597.JPG
 Category: Joints
 Span Number:
 Comments: Joint 1w



Document Name: IMG_4599.JPG
 Category: Joints
 Span Number:
 Comments: east reference line




Document Name: IMG_4609.JPG
 Category: Superstructure
 Span Number:
 Comments: Leakage at beams

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Document Name: IMG_4612.JPG
 Category: Superstructure
 Span Number:
 Comments: Spall to steel in beam 10s



Document Name: IMG_4607.JPG
 Category: Substructure
 Span Number:
 Comments: West abutment



Document Name: IMG_4608.JPG
 Category: Substructure
 Span Number:
 Comments: Pier 1w




Document Name: IMG_4611.JPG
 Category: Substructure
 Span Number:
 Comments: Spalling of concrete at top of abutments

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Document Name: IMG_4613.JPG
 Category: Substructure
 Span Number:
 Comments: East abutment



Document Name: IMG_4602.JPG
 Category: Channel
 Span Number:
 Comments: South channel



Document Name: IMG_4604.JPG
 Category: Channel
 Span Number:
 Comments: North channel