

MICHIGAN DEPARTMENT OF TRANSPORTATION

STR 4035

BRIDGE SAFETY INSPECTION REPORT

Facility LONG LAKE ROAD	Latitude / Longitude 43.1102 / -85.2055	MDOT Structure ID 34200038000B020	Structure Condition Serious Condition(3)
Feature DICKERSON CREEK	Length / Width / Spans 88.9 / 29.5 / 3	Owner County: Ionia(34)	
Location 3.25 MI NE INT M44 & M91	Built / Recon. / Paint / Ovly. 1950 / / / 1999	TSC Grand Rapids(11)	Operational Status P Posted for load(33NNNN)
Region / County Grand(3) / Ionia(34)	Material / Design 4 Steel Continuous / 32 Multi Str Comp	Last NBI Inspection 10/18/2017 / JG14	Scour Evaluation 5 Stable w/in footing



NBI INSPECTION

JG14

Inspector Name	Agency / Company Name	Insp. Freq.	Insp. Date
Robert Lothschutz	Scott Civil Engineering Company	12	10/18/2017

GENERAL NOTES

Poor. Posted at 33 tons. Keep frequency at 12 months. Scheduled for replacement in 2020.

Posting signs in place on both ends of bridge YES

DECK

	10/15	10/16	10/17	
1. Surface (SIA-58A)	7	7	7	Chip seal surface over bridge, no cracks noted. Edges have some dirt and vegetation along brush block. (10/17) Chip seal surface over bridge, no cracks noted. Edges have some dirt and vegetation along brush block. (10/16) Chip seal surface over bridge, no cracks noted. Edges have some dirt and debris along brush block. (10/15)
2. Expansion Joints	N	N	N	(10/17) (10/16) (10/15)
3. Other Joints	N	5	5	Efflorescence through joints over piers. (10/17) Efflorescence through joints over piers. (10/16) (10/15)
4. Railings	5	6	6	Thrie beam retrofit. North side brush block face is spalled along entire length. South fascia outside spalled along length of deck. (10/17) Thrie beam retrofit. North side brush block face is spalled along entire length. South fascia outside spalled along length of deck. (10/16) Thrie beam retrofit. North side brush block face is spalled along entire length. South fascia outside spalled along length of deck. (10/15)
5. Sidewalks or Curbs	N	N	N	(10/17) (10/16) (10/15)
6. Deck Bottom Surface (SIA-58B)	7	7	7	Bottom of deck spalled along center beam in center span and at west end of west span with a few rust stains, no exposed steel noted. Spall with exposed steel at deck drain south side near east pier. 1-2 hairline transverse cracks in each span with no leakage. Transverse cracks with efflorescence over piers, worse at east pier. (10/17) Bottom of deck spalled along center beam in center span and at west end of west span with a few rust stains, no exposed steel noted. Spall with exposed steel at deck drain south side near east pier. 1-2 hairline transverse cracks in each span with no leakage. Transverse cracks with efflorescence over piers. (10/16) Bottom of deck spalled along center beam in center span and at W end of W span with a few rust stains, no exposed steel noted. Spall with exposed steel at deck drain south side near east pier. 1-2 hairline transverse cracks in each span with no leakage. Transverse cracks with efflorescence over east pier. (10/15)
7. Deck (SIA-58)	6	6	6	Approx 40-50% of south fascia spalled off with exposed steel. North fascia has horizontal cracking with efflorescence. Some leakage noted over piers at construction joints. (10/17) Approx 25 ft of south fascia spalled off with exposed steel. North fascia has hairline cracking. Some leakage noted over piers at construction joints. (10/16) Approx 25 ft of south fascia spalled off with exposed steel. North fascia has hairline cracking. Some leakage noted over piers at construction joints. (10/15)

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8. Drainage South side, west deck drain is plugged with dirt and vegetation. (10/17)
South side deck drains are plugged with dirt and vegetation. (10/16)
South side deck drains are plugged with leaves. (10/15)

SUPERSTRUCTURE

	10/15	10/16	10/17	
9. Stringer (SIA-59)	3	3	3	Rust along the top flange of all beams, some rust on bottom flange. Beams near deck drains are rusting. Diaphragms rusting over each pier. Section loss to web and flanges of each fascia over east pier. Holes in fascia webs over west pier. North fascia has a 42" long x 1" wide hole at bottom of web and a 5"x 5" hole under east diaphragm connection. South fascia has a 11" x 2" hole over west pier. Both fascias have section loss to bottom flange. Measured 0.4" remaining on beam 1N west side of west pier, flange and web showing signs of possible buckling. (10/17) Rust along the top flange of all beams, some rust on bottom flange. Beams near deck drains are rusting. Diaphragms rusting over each pier. Section loss to web and flanges of each fascia over east pier. Holes in fascia webs over west pier. North fascia has a 38" long x 1" wide hole at bottom of web and a 4"x 5" hole under east diaphragm connection. South fascia has a 6" x 1" hole over west pier. Both fascias have section loss to bottom flange. (10/16) Rust along the top flange of all beams, some rust on bottom flange. Beams near deck drains are rusting. Diaphragms rusting over each pier. Section loss to web and flanges of each fascia over east pier. Holes in fascia webs over west pier. North fascia has a 35" long x 1" wide hole at bottom of web and a 3"x 1.5" hole under east diaphragm connection. South fascia has a 4.5" x 1" hole over west pier. Both fascias have section loss to bottom flange. (10/15)
10. Paint (SIA-59A)	3	3	3	Most significant paint failure on fascia beams at piers. Interior beams have speckled rust on flanges and webs. Est 30%-40% paint failed. (10/17) Most significant paint failure on fascia beams at piers. Interior beams have speckled rust on flanges and webs. Est 30%-40% paint failed. (10/16) Most significant paint failure on fascia beams at piers. Interior beams have speckled rust on flanges. Est 30%-40% paint failed. (10/15)
11. Section Loss	0	0	0	Holes in each fascia web over west pier, largest in north fascia. (10/17) Holes in each fascia web over west pier, largest in north fascia. (10/16) Holes in each fascia web over west pier. Largest in north fascia. (10/15)
12. Bearings	4	4	4	Heavy rust on bearings at each pier, two outer beams at west pier and fascia at east pier. Anchor bolts rusted away on fascias. Light rust on remaining bearings. (10/17) Heavy rust on bearings at each pier, two outer beams at west pier and fascia at east pier. Anchor bolts rusted away on fascias. Light rust on remaining bearings. (10/16) Heavy rust on bearings at each pier, two outer beams at west pier and fascia at east pier. Anchor bolts rusted away on fascias. Light rust on remaining bearings. (10/15)

SUBSTRUCTURE

	10/15	10/16	10/17	
13. Abutments (SIA-60)	7	7	7	No cracks noted. Bottom of SW backwall is spalled. (10/17) No cracks noted. Bottom of SW backwall is spalled. (10/16) No cracks noted. Bottom of SW backwall is spalled. (10/15)
14. Piers (SIA-60)	5	5	5	Steel pier cap is rusting with scale under fascia beams. H-pile rusting with scale at concrete footing interface. Fascia pile have worst rust. East pier piles lean slightly east (~1" in 4'). (10/17) Steel pier cap is rusting with scale under fascia beams. H-pile rusting with scale at concrete footing interface. Fascia pile have worst rust. East pier piles lean slightly east. (10/16) Steel pier cap is rusting with scale under fascia beams. H pile rusting with scale at concrete footing interface. Fascia pile have worst rust. (10/15)
15. Slope Protection	N	N	N	(10/17) (10/16) (10/15)

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16. Channel (SIA-61)	5	5	5	<p>Cobble stream bottom, weir placed with riprap under bridge. All flow through center span. High water scouring slope in front of each abutment. Raw sand slopes are eroding. Erosion not to abutments yet. Top of slope eroded to 3' from west abutment, east slope not as bad. (10/17)</p> <p>Cobble stream bottom, weir placed with riprap under bridge. All flow through center span. High water scouring slope in front of each abutment. Raw sand slopes are eroding. Erosion not to abutments yet. Top of slope eroded to 3' from west abutment, east slope not as bad. (10/16)</p> <p>All flow through center span. High water scouring slope in front of each abutment. Raw sand slopes are eroding. Erosion not to abutments yet. Cobble stream bottom, weir placed with riprap under bridge. (10/15)</p>
17. Scour Inspection	5	5	5	<p>High water scouring slope in front of each abutment. Raw sand slopes are eroding. Erosion not to abutments yet. Top of slope eroded to 3' from west abutment, east slope not as bad. (10/17)</p> <p>High water scouring slope in front of each abutment. Raw sand slopes are eroding. Erosion not to abutments yet. Top of slope eroded to 3' from west abutment, east slope not as bad. (10/16)</p> <p>High water scouring slope in front of each abutment. Raw sand slopes are eroding. Erosion not to abutments yet. (10/15)</p>

APPROACH

	10/15	10/16	10/17	
18. Approach Pavement	7	7	7	<p>Chip seal has some transverse cracking. Cracked at west reference line. (10/17)</p> <p>Chip seal has some transverse cracking. (10/16)</p> <p>Chip seal has some transverse cracking. (10/15)</p>
19. Approach Shoulders Sidewalks	5	5	5	<p>Narrow grass shoulders. Berms under guardrail block drainage. (10/17)</p> <p>Narrow grass shoulders. (10/16)</p> <p>Narrow grass shoulders. (10/15)</p>
20. Approach Slopes				<p>Slopes are vegetated. Minor damage to NW and SE approach guardrail. (10/17)</p> <p>Slopes are vegetated. Approach rail in place. (10/16)</p> <p>Slopes are vegetated. Approach rail in place. (10/15)</p>
21. Utilities				<p>None noted on bridge. (10/17)</p> <p>None noted on bridge. (10/16)</p> <p>None noted on bridge. (10/15)</p>
22. Drainage Culverts				<p>None noted. (10/17)</p> <p>None noted. (10/16)</p> <p>None noted. (10/15)</p>

MISCELLANEOUS

Guard Rail		Other Items	
Item	Rating	Item	Rating
36A. Bridge Railings	1	71. Water Adequacy	7
36B. Transitions	1	72. Approach Alignment	5
36C. Approach Guardrail	1	Temporary Support	0 No Temporary Supports
36D. Approach Guardrail Ends	1	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)

	Freq	Date
92A. Fracture Critical		

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- 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	1950
106 - Year Reconstructed	
202 - Year Painted	
203 - Year Overlay	1999
43 - Main Span Bridge Type	4 32
44 - Appr Span Bridge Type	
77 - Steel Type	0
78 - Paint Type	0
79 - Rail Type	4
80 - Post Type	0
107 - Deck Type	1
108A - Wearing Surface	6
108B - Membrane	0
108C - Deck Protection	0

Structure Dimensions

34 - Skew	0
35 - Struct Flared	0
45 - Num Main Spans	3
46 - Num Apprs Spans	0
48 - Max Span Length	32.8
49 - Structure Length	88.9
50A - Width Left Curb/SW	1.3
50B - Width Right Curb/SW	1.3
33 - Median	0
51 - Width Curb to Curb	23
52 - Width Out to Out	29.5
112 - NBIS Length	Y

Inspection Data

90 - Inspection Date	10/18/2017
91 - Inspection Freq	12
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	7 7
59 - Superstructure Rating	3
59A - Paint Rating	3
60 - Substructure Rating	5
61 - Channel Rating	5
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	0

Route Carried By Structure(ON Record)

5A - Record Type	1
5B - Route Signing	4
5C - Level of Service	8
5D - Route Number	03498
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	0000005119 03
19 - Detour Length	9
20 - Toll Facility	3
26 - Functional Class	07
28A - Lanes On	2
29 - ADT	1273
30 - Year of ADT	2016
32 - Appr Roadway Width	29.9
32A/B - Ap Pvt Type/Width	4 27.99
42A - Service Type On	1
47L - Left Horizontal Clear	0.0
47R - Right Horizontal Clear	26.9
53 - Min Vert Clr Ov Deck	99 99
100 - STRAHNET	0
102 - Traffic Direct	2
109 - Truck %	4
110 - Truck Network	0
114 - Future ADT	1376
115 - Year Future ADT	2036
Freeway	0

Structure Appraisal

36A - Bridge Railing	1
36B - Rail Transition	1
36C - Approach Rail	1
36D - Rail Termination	1
67 - Structure Evaluation	3
68 - Deck Geometry	3
69 - Underclearance	N
71 - Waterway Adequacy	7
72 - Approach Alignment	5
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	0
143 - Pin & Hanger Code	0
148 - No. of Pin & Hangers	0

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	99.9
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	P
63 - Fed Oper Rtg Method	6
64F - Fed Oper Rtg Load	.89
64MA - Mich Oper Rtg Method	6
64MB - Mich Oper Rtg	.52
64MC - Mich Oper Truck	17
65 - Inv Rtg Method	6
66 - Inventory Load	.53
70 - Posting	0
141 - Posted Loading	33NNNN
193 - Overload Class	

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SAFETY INSPECTION REPORT - CORE ELEMENTS

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NBI INSPECTION

ATNL

Inspector Name Eric Rickert	Agency / Company Name Scott Civil Engineering Co.	Insp. Freq. 24	Insp. Date 10/17/2009
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CoRE ELEMENTS


(English Units)

Element Number	Element Name	Total Quantity	Unit	State 1	State 2	State 3	State 4	State 5
Decks/Slabs								
13/ 2	Conc Dk HMA No Memb	2648	(SF)	2648 100%	0 0%	0 0%	0 0%	0 0%
Superstructure								
107/ 2	Pnted Stl Girder /Bm	623	(LF)	0 0%	0 0%	297 48%	271 43%	17 9%
333/ 2	Misc Bridge Railing	177	(LF)	87 49%	90 51%	0 0%	xxxxx xxxxx	xxxxx xxxxx
Bearings								
311/ 2	Movable Bearing	21	(EA)	0 0%	19 90%	2 10%	xxxxx xxxxx	xxxxx xxxxx
313/ 2	Fixed Bearing	21	(EA)	0 0%	19 90%	2 10%	xxxxx xxxxx	xxxxx xxxxx
Substructure								
202/ 2	Paint Stl Column	10	(EA)	0 0%	0 0%	6 60%	3 30%	1 10%
210/ 2	Reinf Conc Pier Wall	59	(LF)	59 100%	0 0%	0 0%	0 0%	xxxxx xxxxx
215/ 2	Reinf Conc Abut	59	(LF)	59 100%	0 0%	0 0%	0 0%	xxxxx xxxxx
231/ 2	Paint Stl Pier Cap	59	(LF)	0 0%	13 22%	13 22%	13 22%	6 34%

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WORK RECOMMENDATIONS

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WORK RECOMMENDATIONS

JG14

Inspector Name	Agency / Company Name	Insp. Freq.	Insp. Date
Robert Lothschutz	Scott Civil Engineering Company	12	10/18/2017

RECOMMENDATIONS & ACTION ITEMS

Recommendation Type	Priority	Description
Slope Repair	M	Replace riprap at east and west abutment.
Bridge Repl.	H	Scheduled for replacement in 2020.
Other	M	Clean edges of deck, open deck drains. Remove soil berms under guardrail.

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SCOUR CRITICAL BRIDGE ACTION PLAN

Facility	Latitude / Longitude	MDOT Structure ID	Structure Condition
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Feature	Length / Width / Spans	Owner	
DICKERSON CREEK	88.9 / 29.5 / 3	County: Ionia(34)	
Location	Built / Recon. / Paint / Ovly.	TSC	Operational Status
3.25 MI NE INT M44 & M91	1950 / / / 1999	Grand Rapids(11)	P Posted for load(33NNNN)
Region / County	Material / Design	Last NBI Inspection	Scour Evaluation
Grand(3) / Ionia(34)	4 Steel Continuous / 32 Multi Str Comp	10/18/2017 / JG14	5 Stable w/in footing




No plan available for bridge key 34200038000B020

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LOAD RATING ASSUMPTIONS

Facility LONG LAKE ROAD	Latitude / Longitude 43.1102 / -85.2055	MDOT Structure ID 34200038000B020	Structure Condition Serious Condition(3)	
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Rating Considers Field Condition of Members: Yes **Inspection Date:** 10/18/2017

Deterioration:

Holes in fascia beams over west pier, section loss over east pier.

Most Recent Year Construct / Reconstruct / Overlay: 2003

History of work that impacts Load rating:

HMA overlay

Superstructure Component: 4 Steel Continuous **Beam fy:** 36.0 ksi **Beam f'c / fb:** ksi

Composite: No **Number of Beams:** 7 **Shop Drawings Verified:** No

Size of Beams/Beam #'s and spans: 18x70 WF, 3 spans - assumed 28'-33'-28'

Deck: **Thickness (in.):** 10.0 **Fy / fc':** / ksi **Deck Design Load > H15:** No

Wearing Surface: **Mat'l:** HMA **Thickness (in.):** 4.5 **Unit Weight (pcf.):** 150.0

	LEFT	CENTER	RIGHT
Barrier: Type / Weight (plf.):	R-4/thrie beam / 200.0	/	R-4/thrie beam / 200.0
Sidewalk: Width / Thick (in.):	32.0 / 10.0	/	32.0 / 10.0

Clear Roadway (ft.): 23.0

Additional Loads:

Unique Factors That Affect Capacity:

Continuous spans, negative moment controls. Used deterioration factor of 30%.

Analyzed By: Robert Lothschutz, P.E.

Date: 10/30/2017

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LOAD RATING SUMMARY

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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:** 10/18/2017
Controlling component and failure mode:

Negative moment controls.

NEW INVENTORY CODING

NBI Item 63 - Operating Rating Method	6 LFR in Rating Factor
NBI Item 64F - Federal Operating Rating	0.89
MDOT Item 64MA - Michigan Operating Method	6 LFR in Rating Factor
MDOT Item 64MB - Michigan Operating Rating	0.52
MDOT Item 64MC - Michigan Operating Truck	17
NBI Item 65 - Inventory Rating Method	6 LFR in Rating Factor
NBI Item 66 - Federal Inventory Rating	0.53
NBI Item 41 - Structure Open Posted Closed	P P Posted for load
NBI Item 70 - Bridge Posting	0 0 - 59% or less
Posted By	Gross Load
MDOT Item 141 - Posted Loading	33NNNN
MDOT Item 193A - Michigan Overload Class	
MDOT Item 193C - Overload Status	

Sample Sign



R12-1

Analyzed By: Robert Lothschutz, P.E. **Date:** 10/30/2017
Checked By: Ryan Worden, P.E. **Date:** 10/30/2017

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REQUEST FOR ACTION

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LONG LAKE ROAD	43.1102 / -85.2055	34200038000B020	Serious Condition(3)
Feature	Length / Width / Spans	Owner	
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3.25 MI NE INT M44 & M91	1950 / / / 1999	Grand Rapids(11)	P Posted for load(33NNNN)
Region / County	Material / Design	Last NBI Inspection	Scour Evaluation
Grand(3) / Ionia(34)	4 Steel Continuous / 32 Multi Str Comp	10/18/2017 / JG14	5 Stable w/in footing




No inspections available for bridge key 34200038000B020

MICHIGAN DEPARTMENT OF TRANSPORTATION

STR 4035

OUTSTANDING WORK

Facility LONG LAKE ROAD	Latitude / Longitude 43.1102 / -85.2055	MDOT Structure ID 34200038000B020	Structure Condition Serious Condition(3)	
Feature DICKERSON CREEK	Length / Width / Spans 88.9 / 29.5 / 3	Owner County: Ionia(34)		
Location 3.25 MI NE INT M44 & M91	Built / Recon. / Paint / Ovly. 1950 / / / 1999	TSC Grand Rapids(11)	Operational Status P Posted for load(33NNNN)	
Region / County Grand(3) / Ionia(34)	Material / Design 4 Steel Continuous / 32 Multi Str Comp	Last NBI Inspection 10/18/2017 / JG14	Scour Evaluation 5 Stable w/in footing	

WORK RECOMMENDATIONS

OTHER

Request For	Contact/User	Agency/Company Name	Estimated Quantity	Unit
Slope Repair				
Activity	Material	Other Material	Actual Quantity	Unit
Personnel Hours	Equipment			Complete Date

Comments

Replace riprap at east and west abutment. (Robert Lothschutz 12/20/2017)

Request For	Contact/User	Agency/Company Name	Estimated Quantity	Unit
Bridge Repl.				
Activity	Material	Other Material	Actual Quantity	Unit
Personnel Hours	Equipment			Complete Date

Comments

Scheduled for replacement in 2020. (Robert Lothschutz 12/20/2017)

Request For	Contact/User	Agency/Company Name	Estimated Quantity	Unit
Other				
Activity	Material	Other Material	Actual Quantity	Unit
Personnel Hours	Equipment			Complete Date

Comments

Clean edges of deck, open deck drains. Remove soil berms under guardrail. (Robert Lothschutz 12/20/2017)