



Town: 41 - CAMBRIDGE

District 8, 15 - LAMOILLE County

Owner: 1 - State Highway Agency

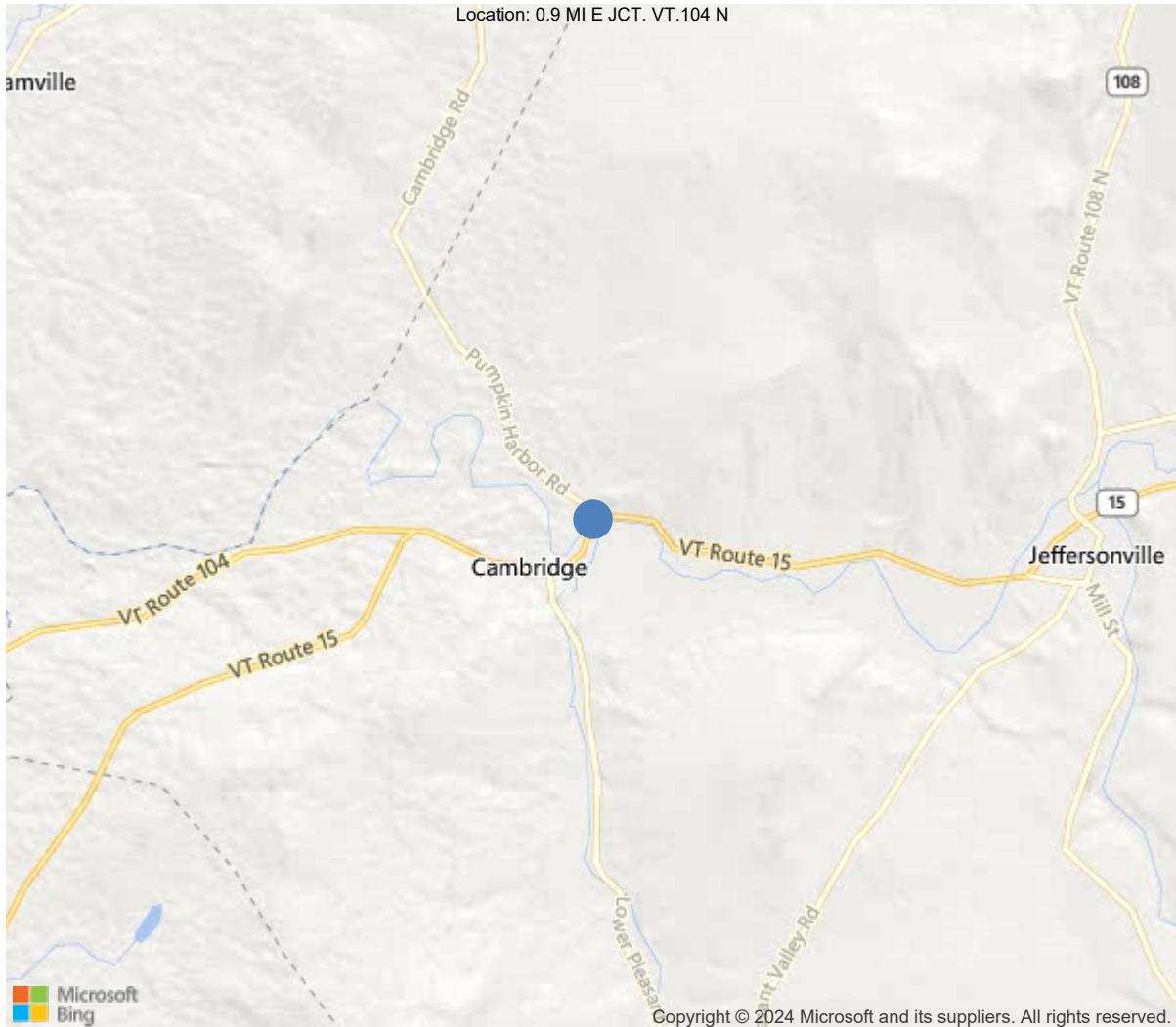
Maintenance Responsibility: 1 - State Highway Agency



Route VT15 /
Structure #00020 / (Routine)

VT 00015 ML over LAMOILLE RIVER

Team Lead: Stephen Piro, Inspection Date: 09/27/2023



44.64779, -72.87252

Team Lead: Stephen Piro, Inspection Date: 09/27/2023

IDENTIFICATION	
(1) State Name	50 - Vermont
(8) Structure Number	200030002008022
(5) Inventory Route	1
(2) Highway Agency District	8 - District 8
(3) County Code	15 - LAMOILLE
(4) Place Code	11425
(6) Features Intersected	LAMOILLE RIVER
(7) Facility Carried	VT 00015 ML
(9) Location	0.9 MI E JCT. VT.104 N
(11) Mile Point	24.576 mi
(12) Base Highway Network	Yes
(13) LRS Inventory Rte & Subrt	0013100015
(16) Latitude	44.64779444444444
(17) Longitude	-72.87251944444444
(98) Border Bridge State Code	
(99) Border Bridge Structure No.	
STRUCTURE TYPE AND MATERIAL	
(43) Main Structure Type	32
Material	3 - Steel
Type	2 - Stringer/Multi-beam or girder
(44) Approach Structure Type	00
Material	0 - Other
Type	0 - Other
(45) No. of Spans in Main Unit	5
(46) No. of Approach Spans	0
(107) Deck Structure Type	1 - Concrete Cast-in-Place
(108) Wearing Surface/Protective System	
Type of Wearing Surface	6 - Bituminous
Type of Membrane	2 - Preformed Fabric
Type of Deck Protection	1 - Epoxy Coated Reinforcing
AGE AND SERVICE	
(27) Year Built	1950
(106) Year Reconstructed	2008
(42) Type of Service	15
On	1 - Highway
Under	5 - Waterway
(28) Lane	
On	2
Under	0
(29) Average Daily Traffic	8400
(30) Year of ADT	2018
(109) Truck ADT	5 %
(19) Bypass, Detour Length	41 mi
GEOMETRIC DATA	
(48) Length of Maximum Span	83 ft
(49) Structure Length	399 ft
(50) Curb or Sidewalk Width	
Left	5 ft
Right	0.2 ft
(51) Bridge Roadway Width Curb to Curb	37.3 ft
(52) Deck Width Out to Out	40.4 ft
(32) Approach Roadway Width (W/Shoulders)	32 ft
(33) Bridge Median	0 - No median
(34) Skew	15 Deg
(35) Structure Flared	0 - No flare
(10) Inventory Route Min Vert Clear	99.99 ft
(47) Inventory Route Total Horiz Clear	37.3 ft
(53) Min Vert Clear Over Bridge Rdwy	99.99 ft
(54) Min Vert Underclear	0 ft
Ref:	
(55) Min Lat Underclear RT	0 ft
Ref:	
(56) Min Lat Underclear LT	0 ft
NAVIGATION DATA	
(38) Navigation Control	0 - No navigation control on w
(111) Pier Protection	
(39) Navigation Vertical Clearance	0 ft
(116) Vert-Lift Bridge Nav Min Vert Clear	0 ft
(40) Navigation Horizontal Clearance	0 ft

CLASSIFICATION	
(112) NBIS Bridge Length	Y
(104) Highway System	0
(26) Functional Class	6 - Rural Minor Arterial
(100) Defense Highway	1 - The inventory route is on
(101) Parallel Structure	N - No parallel structure exists
(102) Direction of Traffic	2 - way traffic
(103) Temporary Structure	
(105) Federal Lands Highways	0 - N/A
(110) Designated National Network	0 - The inventory route is not
(20) Toll	3 - On free road. The structure
(21) Maintain	1 - State Highway Agency
(22) Owner	1 - State Highway Agency
(37) Historical Significance	5 - Bridge is not eligible for
CONDITION	
(58) Deck	7
(59) Superstructure	6
(60) Substructure	7
(61) Channel & Channel Protection	6
(62) Culverts	N
LOAD RATING AND POSTING	
(31) Design Load	9 - MS 22.5 / HS 25
(63) Operating Rating Method	1
(64) Operating Rating	
Type	1 - Load Factor(LF)
Rating	90
(65) Inventory Rating Method	1 - Load Factor(LF)
(66) Inventory Rating	
Type	
Rating	54
(70) Bridge Posting	5 - Equal to or above legal loads
(41) Structure Open/Posted/Closed	A - Open, no restriction
APPRaisal	
(67) Structural Evaluation	6
(68) Deck Geometry	4
(69) Clearances, Vertical/Horizontal	N
(71) Waterway Adequacy	7
(72) Approach Roadway Alignment	4
(36A) Bridge Railings	1 - Inspected feature meets current
(36B) Transitions	1 - Inspected feature meets current
(36C) Approach Guardrail	1 - Inspected feature meets current
(36D) Approach Guardrail Ends	1 - Inspected feature meets current
(113) Scour Critical Bridges	8 - Bridge foundations determined t
PROPOSED IMPROVEMENTS	
(75) Type of Work	
(76) Length of Structure Improvement	ft
(94) Bridge Improvement Cost (Multiply value by 1000)	\$
(95) Roadway Improvement Cost (Multiply value by 1000)	\$
(96) Total Project Cost (Multiply value by 1000)	\$
(97) Year of Improvement Cost Estimate	
(114) Future ADT	8820
(115) Year of Future ADT	2028
INSPECTIONS *	
(90) Inspection Date	09/27/2023
(91) Frequency	24
(92) Critical Feature Inspection	Done Freq. (Mon) Date
A: Fracture Critical Detail	No
B: Underwater Inspection	No
C: Other Special Inspection	

* The inspection date and frequency information in this box contains the current NBI date and frequency information. Please refer to the report header for the date this inspection was conducted.

Deck

ELEMENTS	DESCRIPTION	UNITS	TOTAL				
				CS1	CS2	CS3	CS4
12	Reinforced Concrete Deck	SF	16740	16665	75	0	0
1130	Cracking (RC and Other)	SF	75	0	75	0	0
510	Wearing Surfaces	SF	13287	13287	0	0	0
301	Pourable Joint Seal	LF	95	95	0	0	0
304	Open Expansion Joint	LF	79	0	79	0	0
2350	Debris Impaction	LF	79	0	79	0	0
330	Metal Bridge Railing	LF	812	737	0	75	0
7000	Damage	LF	75	0	0	75	0
804	Concrete Fascia	LF	812	787	25	0	0
1130	Cracking (RC and Other)	LF	25	0	25	0	0

58 - Deck (7 - GOOD CONDITION - some minor problems.)

Reinforced concrete deck is in fairly good condition. Deck soffit has multiple hairline transverse shrinkage cracks present.

200 - Existing Wearing Surface Depth (3")**A21 - Deck Wearing Surface Condition** (Good)

Asphalt is in fairly good condition having some light wearing in the wheel paths.

A24 - Deck Curb Condition (Good)

Concrete curbs are in fairly good condition having some very light surface scaling and a few scattered hairline cracks.

A25 - Deck Sidewalk Condition (Good)

Concrete sidewalk is present along the downstream side only having some very light surface scaling and a few hairline transverse cracks scattered throughout.

A36 - Deck Joint Trough Condition (Good)

Fabric troughs are present at pier #1 and pier #2 and are in fairly good condition however are full of debris and have vegetation growth present.

A38 - Deck Drain Condition (Good)

Grated deck drains with steel tube downspouts are in fairly good condition having some light surface corrosion along the lower portions.

A39 - Deck Fascia Condition (Good)

Reinforced concrete fascia's are in fairly good condition having multiple vertical hairline cracks.

B.C.05 Bridge Railing Condition Rating (GOOD - Some minor defects.)

Triple painted aluminum tear drop bridge rail is in fairly good condition having some various scrapes and gouges along the front face. Heavier damage is present with dents and tears present in span #5 on the upstream side and in span #2. Pedestal mounted painted aluminum posts have offsets along the upstream side only and are in fairly good condition. Upstream posts in span #2 and #5 have impact damage with offsets and posts have heavy to significant twisting, minor to moderate scrapings and gouges and some tears in the offset blocks due to impact damage from vehicles.

B.C.08 Bridge Joints Condition Rating (GOOD - Some minor defects.)

Asphaltic plug joints are present over both abutments and are in fairly good condition. Vermont type joints are present over pier #1 and pier #2 being in fairly good condition. Concrete headers have some minor wearing in the concrete (mainly in the wheel paths) and some hairline cracking present. Due to wearing in concrete headers the steel plates have some wearing in the wheel paths with some minor scrapes and gouges present along the edges of steel plating. Vermont type joint measures ~1-3/4" over pier #2 and ~1" over pier #1 for separation at 52 degrees at time of inspection.

APPROACH

72 - Approach Roadway Alignment (4 - Meets minimum tolerable limits to be left in place as is)

Roadway alignment has a sharp turn onto structure from the Eastern approach while the western approach has only a slight angle. Elevation is fairly flat.

A13 - Approach Rail Condition (Good)

Galvanized steel beam rail is in fairly good condition.

A16 - Approach Post Condition (Good)

Galvanized steel posts with composite offsets are in fairly good condition.

B.C.06 Bridge Railing Transitions Condition Rating (GOOD - Some minor defects.)

Triple aluminum tear drop bridge rail transitions into double tear drop rail on all four (4) approaches and is in fairly good condition.

Superstructure

ELEMENTS	DESCRIPTION	UNITS	TOTAL	CS1	CS2	CS3	CS4
107	Steel Open Girder/Beam	LF	2820	2290	200	330	0
1000	Corrosion	LF	530	0	200	330	0
515	Steel Protective Coating	SF	25255	25255	0	0	0
311	Movable Bearing	EA	35	35	0	0	0
313	Fixed Bearing	EA	35	35	0	0	0

59 - Superstructure (6 - SATISFACTORY CONDITION - structural elements show some minor deterioration.)

Seven (7) painted steel rolled beams are in satisfactory condition having scattered minor to moderate previous pitting along the flanges and webs throughout. Superstructure was painted in 2008 and is holding up fairly well with a few areas where the top layer of paint is starting to peel.

A55 - Lateral Bracing Condition (Good)

Spans #1 and #5 have five (5) painted steel c-channels while remaining spans have six (6) painted steel c-channels present per bay that are welded to steel T-plates that are welded to the webs of the rolled beams are in fairly good condition.

B.C.07 Bridge Bearings Condition Rating (GOOD - Some minor defects.)

Fabric bearings are in good condition.

Substructure

ELEMENTS	DESCRIPTION	UNITS	TOTAL	CS1	CS2	CS3	CS4
205	Reinforced Concrete Column	EA	7	7	0	0	0
210	Reinforced Concrete Pier Wall	LF	175	11	139	25	0
1080	Delamination/Spall/Patched Area	LF	65	0	65	0	0
1120	Efflorescence/Rust Staining	LF	55	0	30	25	0
1190	Abrasion/Wear (PSC/RC)	LF	44	0	44	0	0
234	Reinforced Concrete Pier Cap	LF	171	126	0	45	0
1120	Efflorescence/Rust Staining	LF	45	0	0	45	0

60 - Substructure (7 - GOOD CONDITION - some minor problems.)

Reinforced concrete abutment #1 is in fairly good condition having some slight undermining between the columns that penetrates to the backside along the downstream side and less along the upstream side.

Reinforced concrete abutment #2 is in fairly good condition.

A71 - Abutment End Walls Condition (Good)

Reinforced concrete curtain walls are present over both abutments are in fairly good condition.

A77 - Retaining/Wingwall Condition (Good)

Concrete wingwalls are in fairly good condition.

A81 - Pier Seat/Cap Condition (Good)

Reinforced concrete pier caps are in fairly good condition having scattered various size rust stains, efflorescence leakage and minor cracking.

A83 - Pier Shaft Condition (Good)

Reinforced concrete pier shafts are in fairly good condition having scattered previously patched areas along the pier walls with various size rust stains scattered along the faces. Lower portions of each pier has minor abrasion along the channel flow line.

A86 - Pier Footings Condition (Good)

Pier #3 footing is exposed along the upstream side and is in fairly good condition. Depths vary up to ~2'-0" to the top of footing along the upstream nose of pier #3. Pier #4 also has the top of footing exposed and should be considered to be dived.

CHANNEL

61 - Channel Condition (6 - Bank is beginning to slump. River control devices and embankment protection have widespread minor damage. There is minor stream bed movement evident. Debris is restricting the channel slightly.)

Lamoille River flows mainly through span #4 with remaining spans having smaller portions of flow due to elevation.

Channel bottom is gravel and silty. Channel banks are well vegetated with good brush and tree growth. Abutment #2 has stone riprap and sandy material in front for protection while abutment #1 has sand build up in front.

B.C.10 Channel Protection Condition Rating (GOOD - Some minor defects.)

Both abutments are out of water with having stone and grubbing material. Piers have little to no protection present.

B.C.11 Scour Condition Rating (Widespread minor or isolated moderate scour.)

Piers have varying levels of scouring present with upstream end of pier #1, pier #3 and pier #4 having moderate scouring. The upstream footing along pier #3 and #4 are exposed due to heavier scouring present with depths of up to ~2'-0" on pier #3 to top of footing.



Route VT15 /

Structure #00020 / (Routine)

VT 00015 ML over LAMOILLE RIVER

Team Lead: Stephen Piro, **Inspection Date:** 09/27/2023

GENERAL OBSERVATION

Structure is in fairly good to satisfactory condition. Both Vermont type joint troughs over pier #1 and #2 are full of debris and sediment with vegetation growth and are in need of cleaning. Areas of bridge rail have impact damage on the upstream side along the upper tiers of aluminum tear drop rail and along the offsets. Offsets have areas of gouges and scrapes with some offsets being bent in the direction of traffic (eastern direction). The upper tiers of rail have areas of large gouges, scrapes and even some tearing present. Due to the flooding in July of 2023 pier #3 has localized scouring along the upstream end exposing the footing and should see some channel repairs.

ELEMENTS	DESCRIPTION	UNITS	TOTAL	CS1	CS2	CS3	CS4
12	Reinforced Concrete Deck	SF	16740	16665	75	0	0
1130	Cracking (RC and Other)	SF	75	0	75	0	0
510	Wearing Surfaces	SF	13287	13287	0	0	0
107	Steel Open Girder/Beam	LF	2820	2290	200	330	0
1000	Corrosion	LF	530	0	200	330	0
515	Steel Protective Coating	SF	25255	25255	0	0	0
205	Reinforced Concrete Column	EA	7	7	0	0	0
210	Reinforced Concrete Pier Wall	LF	175	11	139	25	0
1080	Delamination/Spall/Patched Area	LF	65	0	65	0	0
1120	Efflorescence/Rust Staining	LF	55	0	30	25	0
1190	Abrasion/Wear (PSC/RC)	LF	44	0	44	0	0
234	Reinforced Concrete Pier Cap	LF	171	126	0	45	0
1120	Efflorescence/Rust Staining	LF	45	0	0	45	0
301	Pourable Joint Seal	LF	95	95	0	0	0
304	Open Expansion Joint	LF	79	0	79	0	0
2350	Debris Impaction	LF	79	0	79	0	0
311	Movable Bearing	EA	35	35	0	0	0
313	Fixed Bearing	EA	35	35	0	0	0
330	Metal Bridge Railing	LF	812	737	0	75	0
7000	Damage	LF	75	0	0	75	0
804	Concrete Fascia	LF	812	787	25	0	0
1130	Cracking (RC and Other)	LF	25	0	25	0	0

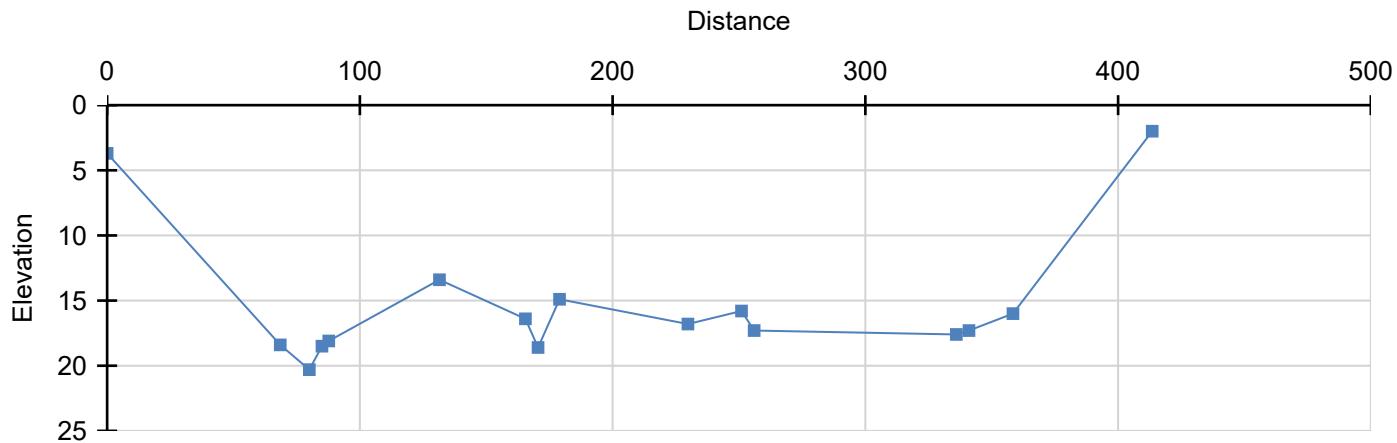
Channel Profile

Waterway Flow: Right to Left (Against Stationing)
 Origin: Deck Underside (Abutment #1)

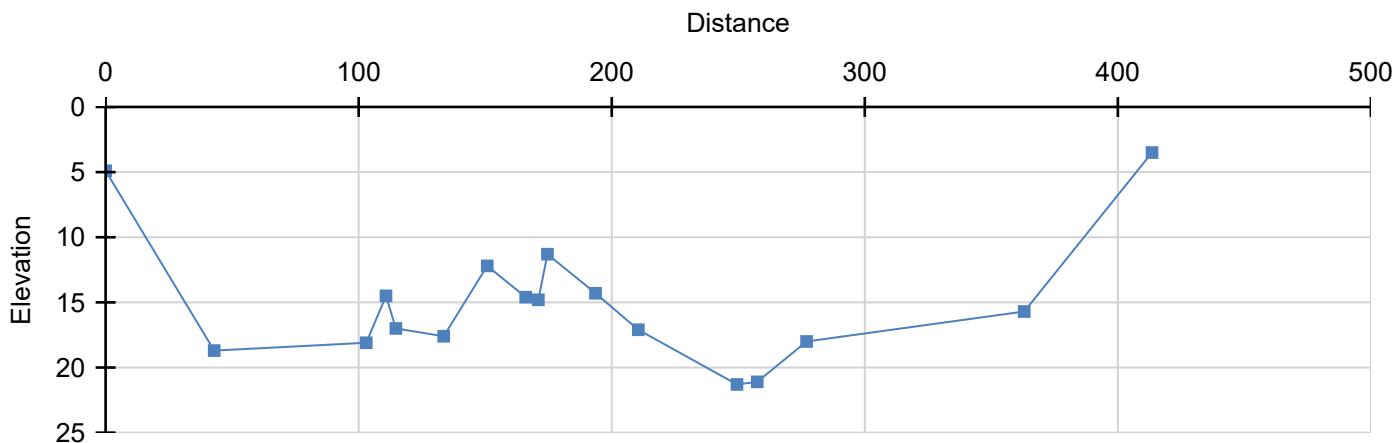
Top of Water:
 Bottom of Beam:

Station	Distance	Downstream	Upstream
Abutment #1	0	3.7	4.9
Edge of Channel	42.9		18.7
Edge of Channel	68.5	18.4	
Pier #1 Span #1	80	20.3	
Pier #1 Span #2	85	18.5	
Edge of Channel	87.7	18.1	
Edge of Channel	103		18.1
High Point	110.8		14.5
Low Point	114.7		17
High Point	131.5	13.4	
Low Point	133.6		17.6
High Point	150.8		12.2
Pier #2 Span #2	165.5	16.4	
Pier #2 Span #2	166		14.6
Pier #2 Span #3	170.5	18.6	
Pier #2 Span #3	171		14.8
High Point	174.6		11.3
High Point	179	14.9	
Low Point	193.6		14.3
Edge of Channel / Span #3	210.5		17.1
Low Point	229.8	16.8	
Bottom of Footing	249.5		21.3
Pier #3 Span #3	251	15.8	
Pier #3 Span #4	256	17.3	
Bottom Foot Pier #3 Span #4	257.5		21.1
High Point	277		18
Pier #4 Span #4	336	17.6	
Pier #4 Span #5	341	17.3	
Edge of Channel Span #5	358.4	16	
Edge of Channel Span #5	363		15.7
Abutment #2	413.5	2	3.5

Downstream Elevation



Upstream Elevation





Span 5 abutment 2 beams 5, 6, 7 & upstream superstructure



Span 5 abutment 2



Abutment 2 from downstream



Span 5 pier 4



Pier 4 from span 5



Drain near abutment 1 upstream



Span 4 pier 4



Pier 4 from span 4



Span 4 pier 3



Pier 3 from span 4



Downstream elevation spans 5, 4 & 3



Downstream elevation spans 2 & 1



Span 3 pier 3



Pier 3 from span 3



Downstream from span 3



Upstream from span 3



Span 3 pier 2



Pier 2 from span 3



Pier 2 from span 3 upstream



Span 2 pier 2



Pier 2 from span 2



Span 2 pier 1



Pier 1 from span 2



Span 1 pier 1



Pier 1 from span 1



Span 1 abutment 1



Bay 1 abutment 1



Abutment 1



Beam 1 span 1 downstream



Abutment 1 from downstream



Approach abutment 1



Deck from abutment 1



Approach rail abutment 1



Downstream rail & sidewalk from abutment 1



Joint abutment 1



Pier 1 joint



Pier 1 joint near sidewalk westbound lane



Deck along sidewalk from pier 2 facing abutment 1



Joint over pier 2



Downstream



Sidewalk facing abutment 1



Along upstream curb facing abutment 1



Upstream



Deck from abutment 2



Joint abutment 2



Upstream elevation



Approach abutment 2



Damaged Bridge Rail in Span #5 on Upstream Side over Deck Flare

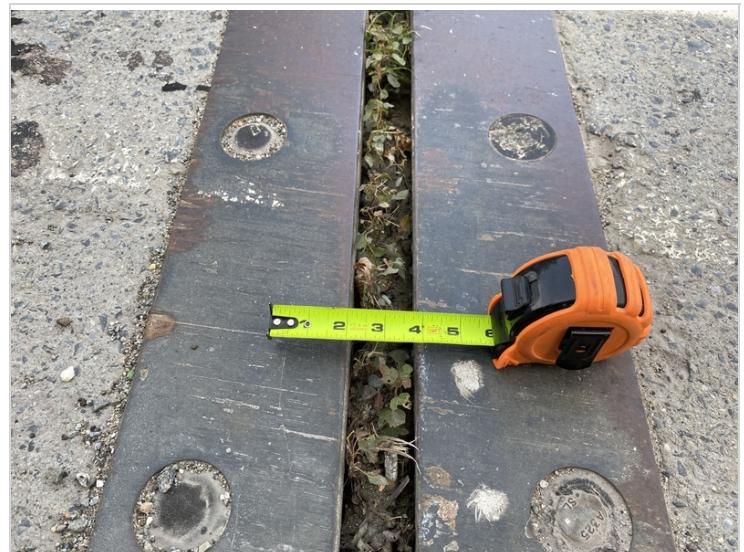


Damaged Bridge Rail in Span #5 on Upstream Side over Deck Flare

Damaged Bridge Rail in Span #5 on Upstream Side over Deck Flare



Vermont Type Joint over Pier #2



Vermont Type Joint over Pier #2



Damaged Bridge Rail in Span #2 on Upstream Side

Damaged Bridge Rail in Span #2 on Upstream Side



Damaged Bridge Rail in Span #2 on Upstream Side

Damaged Bridge Rail in Span #2 on Upstream Side



Vermont Type Joint over Pier #1



Vermont Type Joint over Pier #1



Asphaltic Plug Joint over Abutment #2



Typical Transition Rail



Upstream Pier #3 Footing



Beam #1 in Span #2 Typical Pitting



Upstream Elevation from Abutment #2



Span #4 Superstructure from Pier #4

Maintenance Needs

Date Reported: 08/23/2023

Priority: Flood Event

Status: Open

Type of Work: 38 - Channel - Scour/Undermining repair

Component: Channel

Deficiency Description

Pier 3 footing along the upstream end has localized scouring that has exposed the bottom of footing. Large stone should be added to protect this area so that scour does not continue grow in this area.

Remarks



Upstream Pier #3 Footing

Maintenance Needs

Date Reported: 09/27/2023

Priority: 4 - Maintenance Finding - Next
Inspection Cycle

Type of Work: 46 - Deck - Joint cleaning

Status: Open

Component: Deck

Deficiency Description

Both vermont type joint troughs over pier #1 and #2 are full of debris and sediment with vegetation growth and are in need of cleaning.

Remarks



Vermont Type Joint over Pier #2



Vermont Type Joint over Pier #1