VERMONT
AGENCY OF TRANSPORTATION

Route C2002 /
Structure #00035 / (Routine, Fracture Critical)
C2002 over WHITE RIVER
Team Lead: Justin White, **Inspection Date:** 09/09/2024

Town: 215 - STOCKBRIDGE

District 4, 27 - WINDSOR County

Owner: 3 - Town or Township Highway Agency

Maintenance Responsibility: 3 - Town or Township Highway Agency

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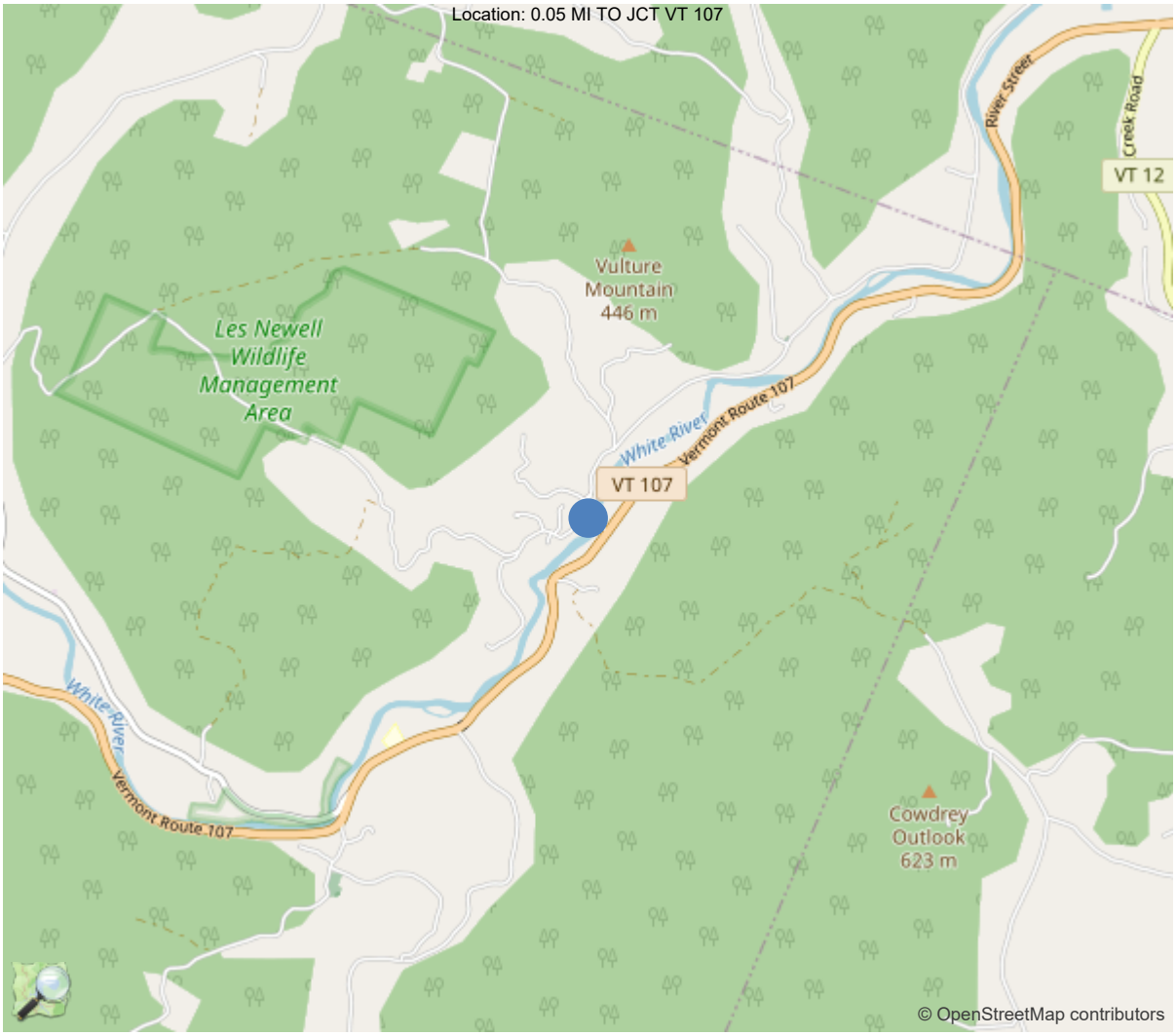

43.77847, -72.70045

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IDENTIFICATION	
(1) State Names	50 - Vermont
(8) Structure Number	101419003514191
(5) Inventory Route	1
(2) Highway Agency District	4 - District 4
(3) County Code	27 - WINDSOR
(4) Place Code	70375
(6) Features Intersected	WHITE RIVER
(7) Facility Carried	C2002
(9) Location	0.05 MI TO JCT VT 107
(11) Mile Point	0 mi
(12) Base Highway Network	No
(13) LRS Inventory Rte & Subrte	
(16) Latitude	43.7784722222222
(17) Longitude	-72.7004527777778
(98) Border Bridge State Code	
(99) Border Bridge Structure No.	
STRUCTURE TYPE AND MATERIAL	
(43) Main Structure Type	310
Material	3 - Steel
Type	10 - Truss - Thru
(44) Approach Structure Type	00
Material	0 - Other
Type	0 - Other
(45) No. of Spans in Main Unit	1
(46) No. of Approach Spans	0
(107) Deck Structure Type	4 - Closed Grating
(108) Wearing Surface/Protective System	
Type of Wearing Surface	6 - Bituminous
Type of Membrane	0 - None
Type of Deck Protection	0 - None
AGE AND SERVICE	
(27) Year Built	1929
(106) Year Reconstructed	1972
(42) Type of Service	15
On	1 - Highway
Under	5 - Waterway
(28) Lane	
On	1
Under	0
(29) Average Daily Traffic	430
(30) Year of ADT	2019
(109) Truck ADT	2 %
(19) Bypass, Detour Length	7 mi
GEOMETRIC DATA	
(48) Length of Maximum Span	150 ft
(49) Structure Length	155 ft
(50) Curb or Sidewalk Width	
Left	0.5 ft
Right	0.5 ft
(51) Bridge Roadway Width Curb to Curb	15.9 ft
(52) Deck Width Out to Out	16.4 ft
(32) Approach Roadway Width (W/Shoulders)	30 ft
(33) Bridge Median	0 - No median
(34) Skew	0 Deg
(35) Structure Flared	0 - No flare
(10) Inventory Route Min Vert Clear	13.5 ft
(47) Inventory Route Total Horiz Clear	15.9 ft
(53) Min Vert Clear Over Bridge Rdwy	13.5 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	9 - Rural Local
(100) Defense Highway	0 - The inventory route is not
(101) Parallel Structure	N - No parallel structure exis
(102) Direction of Traffic	3 - One lane bridge for 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 structu
(21) Maintain	3 - Town or Township Highway A
(22) Owner	3 - Town or Township Highway A
(37) Historical Significance	3 - Bridge is possibly eligibl
CONDITION	
(58) Deck	4
(59) Superstructure	1
(60) Substructure	5
(61) Channel & Channel Protection	8
(62) Culverts	N
LOAD RATING AND POSTING	
(31) Design Load	2 - M 13.5 / H 15
(63) Operating Rating Method	2
(64) Operating Rating	
Type	2 - Allowable Stress(AS)
Rating	36
(65) Inventory Rating Method	2 - Allowable Stress(AS)
(66) Inventory Rating	
Type	
Rating	20
(70) Bridge Posting	5 - Equal to or above legal loads
(41) Structure Open/Posted/Closed	P - Posted for load (may inclu
APPRAISAL	
(67) Structural Evaluation	5
(68) Deck Geometry	2
(69) Clearances, Vertical/Horizontal	N
(71) Waterway Adequacy	7
(72) Approach Roadway Alignment	4
(36A) Bridge Railings	0 - Inspected feature does not meet
(36B) Transitions	0 - Inspected feature does not meet
(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	31 - Replacement of bridge or
(76) Length of Structure Improvement	186 ft
(94) Bridge Improvement Cost (Multiply value by 1000)	$ 1022
(95) Roadway Improvement Cost (Multiply value by 1000)	$ 150
(96) Total Project Cost (Multiply value by 1000)	$ 1172
(97) Year of Improvement Cost Estimate	2020
(114) Future ADT	452
(115) Year of Future ADT	2029

INSPECTIONS *

(90) Inspection Date			09/09/2024
(91) Frequency			24
(92) Critical Feature Inspection	Done	Freq. (Mon)	Date
A: Fracture Critical Detail	Yes	24	09/09/2024
B: Underwater Inspection	Yes	48	08/24/2021
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.

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Deck

ELEMENTS	DESCRIPTION	UNITS	TOTAL	CS1	CS2	CS3	CS4
29	Steel Deck Concrete Filled Grid	SF	2542	0	1224	1313	5
1000	Corrosion	SF	1193	0	0	1193	0
1080	Delamination/Spall/Patched Area	SF	1349	0	1224	120	5
510	Wearing Surfaces	SF	2465	0	12	2453	0
3210	Delam/Spall/Patched Area/Pothole	SF	12	0	12	0	0
3220	Crack (Wearing Surface)	SF	2453	0	0	2453	0
302	Compression Joint Seal	LF	33	0	0	0	33
2330	Seal Damage	LF	33	0	0	0	33
330	Metal Bridge Railing	LF	310	0	0	310	0
1000	Corrosion	LF	295	0	0	295	0
7000	Damage	LF	15	0	0	15	0

58 - Deck (4 - POOR CONDITION - advanced section loss, deterioration, spalling or scour)
Much of the lower corrugation of the steel form work is rotted out revealing the concrete. The exposed concrete has moderate spalling with scaling throughout and some scattered small voided spalls exposing deteriorated longitudinal reinforcing. Deep voided spalls surround the openings of the failed deck drains and in some cases have spread to reveal the (interior) top flange of the exterior stringers.

200 - Existing Wearing Surface Depth (3")

A21 - Deck Wearing Surface Condition (Fair)
Deep tire wear depressions and wide map cracking throughout. Small spalled areas (of the first layer) are scattered along the tire wear depressions in the abutment 2 half.

A24 - Deck Curb Condition (Satisfactory)
Map cracking throughout the curbs. The roadway faces have lineal cracking with separation, scattered small delams and voided spalls.

A38 - Deck Drain Condition (Poor)
All of the deck drains have rotted out with insignificant or no section remaining and is the root cause to the deterioration in the fascia stringers.

B.C.05 Bridge Railing Condition Rating (SATISFACTORY - Widespread minor or isolated moderate defects.)
Paint peel with rust staining/scaling throughout and scattered small areas of heavy pack rust with deep pitting. The downstream end over abutment 2 has been impacted and is no longer attached to the end post.

B.C.08 Bridge Joints Condition Rating (FAIR - Some moderate defects.)
The replaced compression joints have both had the compressions seals fall out allowing runoff and debris to fall on the abutment and beam ends below.

APPROACH

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

A13 - Approach Rail Condition (Good)
Scattered minor bending along the abutment 2 approach rail. The upstream rails have minor freckled rust throughout. The upstream abutment 1 rail is in good condition.

A16 - Approach Post Condition (Very Good)

B.C.06 Bridge Railing Transitions Condition Rating (NOT APPLICABLE - Component does not exist.)

Superstructure

ELEMENTS	DESCRIPTION	UNITS	TOTAL	CS1	CS2	CS3	CS4
113	Steel Stringer	LF	1008	0	0	950	58
1000	Corrosion	LF	1008	0	0	950	58
120	Steel Truss	LF	300	0	0	300	0
1000	Corrosion	LF	300	0	0	300	0
152	Steel Floor Beam	LF	149	0	0	149	0
1000	Corrosion	LF	149	0	0	149	0
311	Movable Bearing	EA	2	0	0	2	0
1000	Corrosion	EA	1	0	0	1	0
2240	Loss of Bearing Area	EA	1	0	0	1	0
313	Fixed Bearing	EA	2	0	0	2	0
1000	Corrosion	EA	2	0	0	2	0

59 - Superstructure (1 - IMMINENT FAILURE CONDITION - major deterioration or section loss present in critical structural components or obvious vertical or horizontal movement affecting structure stability. Bridge is closed to traffic but corrective action may put back in light service.)
See stringer notes. The abutment 2 end of the structure was found to have visible transverse movement at the joint when loaded as vehicles passed over it.

A50 - Super Verticals/Diagonals Condition (Satisfactory)
Paint peel with rust staining/scaling throughout. A few of the members have small 1”+/- diameter holes in the lower ends of the webs.

A51 - Top Chords Condition (Good)
Scattered paint peel with rust staining/scaling.

A52 - Bot. Chords Condition (Fair)
Areas of paint peel with rust scale and minor to moderate section loss throughout. Many of the keep plates in scattered locations have rotted out.

A53 - Gusset Condition (Fair)
Small lineal areas of minor to moderate section loss and deep pitting along the bottom chord connections (mainly along the interior). There are some small 1”+/- holes in the interior smaller gusset vertical beam connections near the portal ends. Upper gusset plates have scattered areas of paint peel with minor rust staining/scaling.

A55 - Lateral Bracing Condition (Fair)
Paint peel with rust staining/scaling throughout. The lower cross bracing has areas of heavy rust scale with minor to moderate section loss in the ends. The cross bracing at the abutment ends and below the deck drain openings have significant section loss and perforations in their ends.

A56 - Floor Beams Condition (Satisfactory)
Heavy rust scale in the beam ends with minor to moderate section loss.

A58 - Stringer Condition (Poor)

The stringer flanges have paint peel with rust scale, pitting, and minor to moderate section loss throughout. The exterior (fascia) stringers have more wide spread rust scale and section loss. Areas at the abutment ends and below the deck drain locations have moderate to heavy section loss with some small perforations in the flanges and lower areas of the webs. Heavy section loss in the downstream fascia stringer near the node 3 end (below the deck drain opening) has developed into a 2’ long x 1”+/- high lineal perforation in the lower area of the web. The upstream fascia stringers at the abutment ends have had secondary beams added along their interior to compensate for their advanced section loss. Stringer 2 at abutment 2 has now started to crush with buckling in the lower area of the web extending out beyond the beam's floorbeam bearing seat. The downstream fascia stringer's abutment 2 end has advanced section loss in the lower flange and is no longer attached to the bearing/floorbeam. Typical remaining section in the abutment 2 stringer ends of the lower area of the webs and flanges is 1/8”- 1/16".

B.C.07 Bridge Bearings Condition Rating (SATISFACTORY - Widespread minor or isolated moderate defects.)

Areas of rust scale with minor section loss and deep pitting throughout.

B.C.14 NSTM Inspection Condition (FAIR - Some moderate defects; strength and performance of the component are not affected.)

Substructure

ELEMENTS	DESCRIPTION	UNITS	TOTAL	CS1	CS2	CS3	CS4
215	Reinforced Concrete Abutment	LF	49	0	0	49	0
1080	Delamination/Spall/Patched Area	LF	49	0	0	49	0
800	Reinforced Concrete Wing/Retaining Wall	EA	3	0	1	2	0
1080	Delamination/Spall/Patched Area	EA	1	0	1	0	0
1130	Cracking (RC and Other)	EA	2	0	0	2	0

60 - Substructure (5 - FAIR CONDITION - all primary structural elements are sound but may have minor section loss, cracking, spalling or scour.)

Areas of minor abrasion throughout the abutment walls and some minor spalling along the base of abutment 2. Deep voided spalling throughout the bridge seats with scaling, exposed rebar, and heavy debris build up that extends up to the bearings causing some minor undermining of the upstream pedestal bearings.

A71 - Abutment End Walls Condition (Satisfactory)

Map cracking throughout with light staining and minor saturation. The abutment 1 wall has small voided spalls in the ends with exposed reinforcing.

A77 - Retaining/Wingwall Condition (Satisfactory)

Full height vertical sustained settlement cracks with scattered small spalls and minor separation in the upstream abutment 2 wing and downstream abutment 1 wing. The downstream abutment 2 wing has areas of minor spalling and abrasion along its base. The upstream wall of abutment 1 failed during Irene and has had large ledge rip rap put in its place.

CHANNEL

61 - Channel Condition (8 - Banks are protected or well vegetated. River control devices such as spur dikes and embankment protection are not required or are in a stable condition.)

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

B.C.11 Scour Condition Rating (Insignificant scour.)

GENERAL OBSERVATION

This structure should be considered for replacement as deterioration continues develop throughout. Significant deterioration of the abutment 2 stringers was found with crushing of beam 2 and failed flange connection of beam 5 due to section loss. General remaining section along the lower flanges and adjoining areas of the webs of the abutment 2 stringers was found to be 18"- 1/16". These failures and section loss has contributed to the now visible lateral movement in the supported deck end when loaded. It is recommended that this structure be closed until repairs or replacement can occur.

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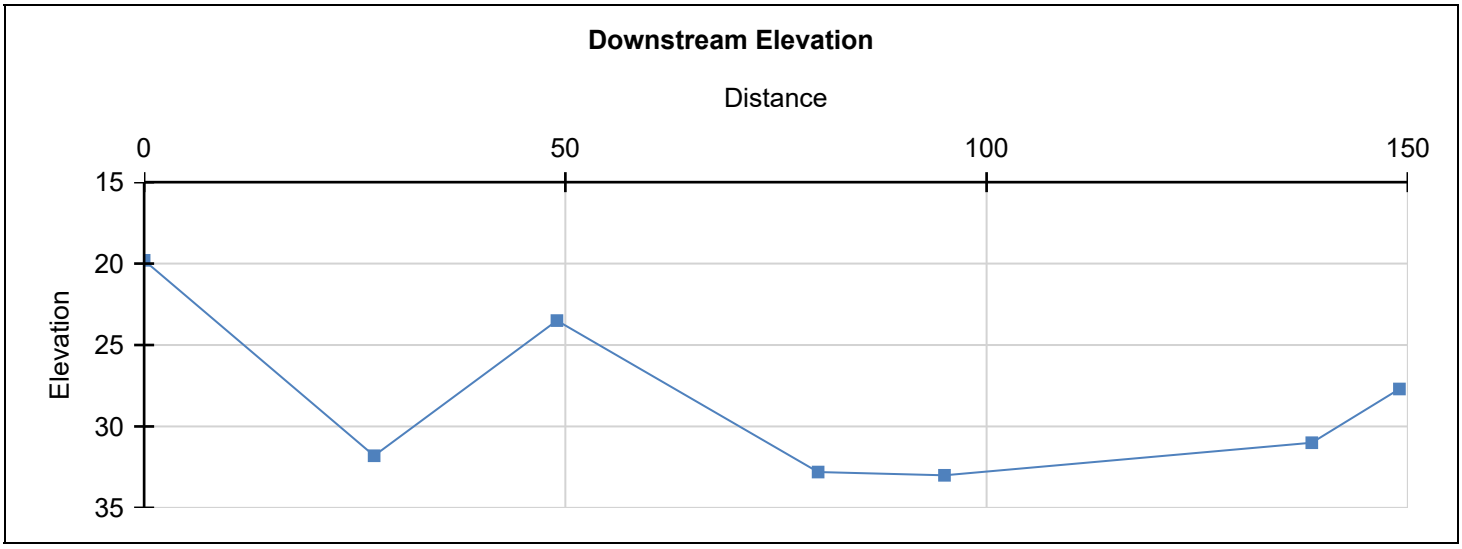
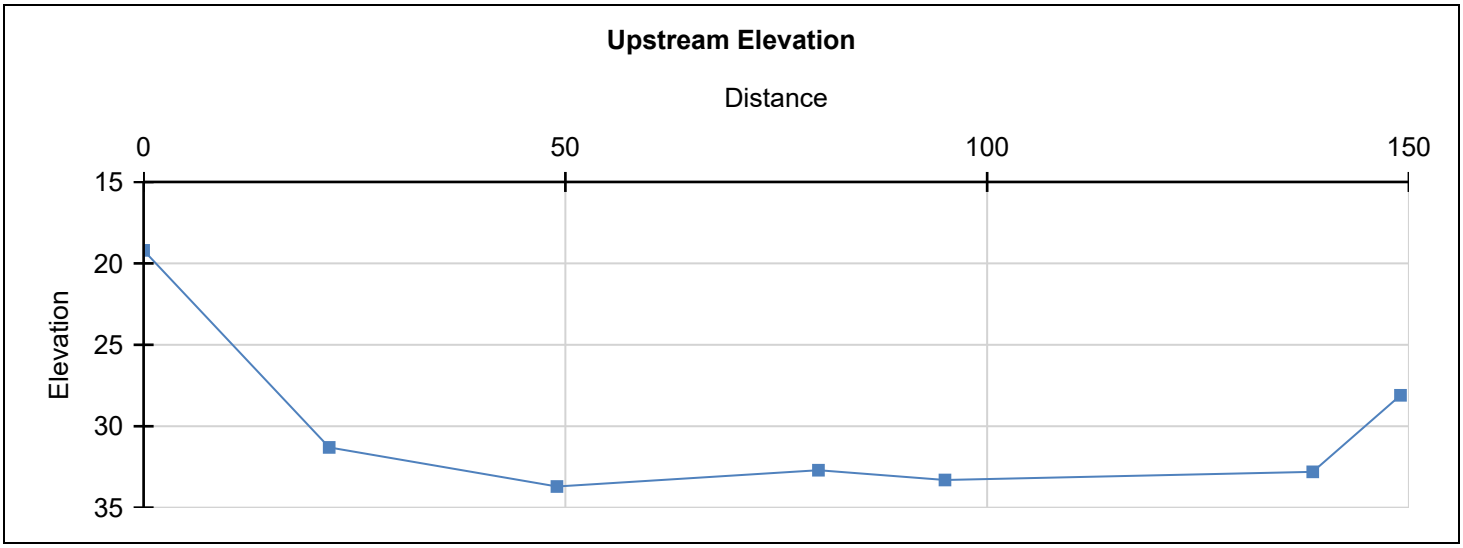
Channel Profile

Waterway Flow:	Left to right	Top of Water:	
Origin:	Stringer facsia	Bottom of Beam:	

Station	Distance	Downstream	Upstream
Abutment 1	0	19.8	19.2
EOW	22		31.3
EOW	27.3	31.8	
	49	23.5	33.7
	80	32.8	32.7
	95	33	33.3
EOW	138.6	31	32.8
Abutment 2	149	27.7	28.1





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Abutment 2 approach

Abutment 1 approach

Wearing surface

Wearing surface

Abutment 1 joint

Abutment 2 joint

Drain opening

Drain opening

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Drain opening

Upstream elevation

Downstream elevation

Superstructure deck

Deck

Downstream fascia stringer node 3 end

Deck

Stringer 2 abutment 2

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Stringer 2 abutment

Stringer 2 abutment 2

Stringer 2 abutment 2

Stringer 3 abutment 2

Stringer 3 abutment 2

Stringer 4 abutment 2

Stringer 5 (downstream fascia) abutment 2

Stringer 5 (downstream fascia) abutment 2

Abutment 1 upstream bearing

Abutment 2

Abutment 1

Downstream

Upstream

Wingwall 3