

BRIDGE DATA:

Bridge No./Name:	N2-130: White Swan FSR / White River (32.4km)
Inspection Date:	July 31, 2015
Inspected By:	S. Stanley, J. Pheh
Year Built:	1973 / 2013
Number of Spans:	2
Location:	50° 9' 35" N 115° 25' 42" W



Span Lengths:	Span 1: 30.975 m (c/c) Span 2: 22.00 m (c/c)
Superstructure:	Span 1: 2 steel plate girders (1250 mm deep, flanges: 400 mm wide x 25 mm thick) spaced @ approx. 3048 mm c/c, with creosote treated timber diaphragms at 1/3 span. Span 2: 2 creosote treated shaped glulam girders (2100 mm deep x 311 mm thick web, 515 mm wide x 381 mm deep flanges) spaced @ 3048 mm c/c.
Deck:	Approx 4000 mm wide. Span 1: Untreated longitudinal timber running planks (250 mm wide x 100 mm thick) Treated longitudinal timber subdeck (100 mm thick) Treated transverse timber deck ties (200 mm x 250 mm @ 400 mm c/c) Span 2: Untreated longitudinal timber running planks (250mm wide x 100 mm thick) Creosote treated diagonal timber subdeck (300 mm wide x 90mm thick) Creosote treated transverse timber deck ties (200 mm x 300 mm @ 420 mm c/c)
Curb:	Span 1: Timber curb rail and risers (350 mm x 250 mm) approx 50% of segments are treated. Span 2: Untreated timber curb rail and risers (350 mm x 250 mm) with additional timber handrail.
Substructure:	Abutment 1: 2 x 400 mm diameter steel pipe piles, with a steel pile cap (approx HP 310 x 110) (310 mm deep x 310 mm wide flange x 16 mm thick flange). Pier: A2 side – 5 steel bearing H-piles, with a continuous creosote treated timber cap (490 mm x 290 mm). A1 side – 2 x 400 mm diameter steel bearing pipe piles, with a steel pile cap (approx HP310 x 79) (305 mm deep x 305 mm wide flange x 11 mm thick flange). One steel dolphin H-pile each end of pier. Steel angle braces welded from pipe piles (A1 side) to H-piles. Steel plate sheathing between piles. Abutment 2: 5 x steel bearing H-piles (approx W310 x 79), with a creosote treated timber pile cap. First extended wing pile (steel H-pile), remaining 3 wingwall piles (creosote treated timber piles). Creosote treated timber back / ballast wall and wingwalls.

GENERAL BRIDGE CONDITION

Superstructure Condition:	Fair
Substructure Condition:	Fair

Deck Condition:	Good
Approaches	Good
Load Posting:	80t
Date for the Next Close Proximity Inspection:	2019
Projected Replacement Date:	2023

INSPECTION NOTES

Approaches:

- Bridge load posting sign maximum – 80t.
- Minor rutting of approaches through wheel paths.
- All four delineators / hazard markers present, visible and in good condition. Additional delineators still in place from original span facing Abutment 1 are also in good condition.
- Precast concrete approach barriers present at all four corners and are in good condition. Barriers are placed tightly between segments but are offset from the beginning of the curb rail at all four corners by approx. 400mm. The barriers are not placed with an adequate plateau width on the backside to accommodate impact and may slide down the slope in that event.

Deck:

- Running planks generally appear to be in good condition with light wear.
- The deck ties and subdeck also appears to be in good condition with consistent creosote coverage remaining.

Handrail (present only for Span 2)

- Regularly sounded and appears to be in fair condition with no indications of rot or other notable deficiencies.

Curbs:

- Curb rail is in good to fair condition with isolated areas of rub damage throughout.

Span 1:

- Approximately 50 % curb rail is new treated timber, with the other approx. 50% untreated timber (350 x 250 mm).
- Many of the downstream side curb rail segments are misaligned from one another by $\geq 30\%$ mm.

Span 2:

- Rot noted in isolated areas of curb rail segments.
- Abutment 2 D.S side corner first section curb rail is damaged.

Girders:

The superstructure consists of two girder lines with the original Span 1 creosote treated shaped glulam girders, and new Span 2 steel plate girders. The timber girders of Span 1 appear to be in fair condition with moderate to significant weathering on the exterior faces resulting in minimal creosote coverage remaining. The steel girders of Span 2 appear to be in good condition, however a minor, yet frequent rippling of the bottom flanges was noted. The girders of the new steel span have a date July 2000 painted on the web, indicating they may have been previously salvaged for the install of this new span in 2013. The new steel girders are bearing on neoprene pads however the timber girders are bearing directly on the timber caps.

Timber glulam check / split reference terminology is as follows:

Width

- Narrow - ≤ 2 mm wide
- Medium - 2 - 5 mm wide
- Wide - ≥ 5 mm wide

Depth

- Shallow - ≤ 80 mm deep
- Medium - 80 - 120 mm deep
- Deep - ≥ 120 mm deep

Length

- Short - ≤ 2 m long
- Medium - 2 - 4 m long
- Long - ≥ 4 m long

Span 1 (Steel):

- Girder 1:
 - Minor variations / rippling noted along the bottom flange profile, beginning approx. 3 m from the pier end.

Span 2 (Glulam):

- Girder 1:
 - Creosote coverage of approx. 30 – 40% remaining on interior face.
 - Creosote coverage of approx. 25 – 50% remaining on exterior face.
 - Wide (7mm), shallow (40mm) long (approx. 30m) split in the underside of bottom flange (bottom lamination), beginning at the pier.

Notable:

- Previously tagged AEI17 – Narrow, shallow, medium length check, 1300 mm down from top of girder, originating at pier end.

- Girder 2:
 - Creosote coverage of approx. 25% remaining on exterior face.
 - Creosote coverage of approx. 30-40% remaining on interior face.
 - Regular, narrow, shallow, short splits throughout.

Abutments/Piers:

Abutment 1 (New):

- Well armored with adequately sized rip rap.
- Some sloughing of approach fill noted from under concrete ballast wall.
- Neoprene bearing pads are present and in good condition.
- Light surficial corrosion of steel caps, bracing and tops of piles.
- Damage / deformation noted on Diaphragm 1 steel angle that appears to have since been reinforced.

Abutment 2:

- Well armored with adequately sized riprap.
- Some sloughing of approach fill noted from under / through ballast wall.
- D.S end of timber pile cap has a full depth split.
- Isolated gaps noted between ballast wall planks.
- 2nd D.S wingwall, top of pile capping / flashing is damaged.
- 1st D.S wingwall pile is rotating inwards, towards the river approx 8°, remaining D.S wingwall piles are rotating outwards.

Pier 1:

- Generally appears to be in good to fair condition.
- Timber pile cap sounded throughout with no indications of rot noted.
- Light surficial corrosion on steel elements.
- Span 2 side of pier currently is not armored with riprap.
- Neoprene pads under Span 1 steel girders are present and in good condition.

BRIDGE INSPECTION SUMMARY/RECOMMENDATIONS:

This bridge was inspected under ideal weather conditions with the use of a "snooper truck" to gain access to the girders, underside of deck, pier, and portions of Abutment 2. It appears an additional span was added to this bridge in 2013 to accommodate a washout of the previous (Camp end) Abutment 1. Minor rutting was noted within the wheel path of both approaches but otherwise appeared to be well graded with reasonably clear sightlines. The original glulam girders appeared to be in fair condition, and the new steel girders appeared to be in good condition with the interesting exception of the minor, yet frequent rippling of the bottom flanges. The rippling noted does not appear to be of structural concern, and likely a result of fabrication. The newly installed running planks are still in good condition, but approximately 30% of the curb rails of Span 1 are misaligned.

The substructure of the bridge appears to be in good to fair condition, with all bearing piles appearing to be in good to fair condition. Neoprene pads (present only under steel girders) are in good condition. The abutments have some deficiencies including some sloughing of the approach fill from under the concrete ballast wall of the new Abutment 1. The D.S wingwall piles of Abutment 2 have rotated significantly and should continue to be monitored.

The following maintenance works are recommended:

ITEM	DESCRIPTION	PRIORITY
1	Adjust placement of approach barriers.	High
2	Replace isolated damaged curb rail elements of Span 2.	Medium
3	Consider repairing / replacing Abutment 2 D.S wingwall.	Medium

Prepared by:

A handwritten signature in black ink, appearing to read "S. Stanley".

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Reviewed by

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Photo #1
Upstream elevation



Photo #2
Downstream elevation



Photo #3
 Abutment 1 approach



Photo #4
 Abutment 2 approach



Photo #5
Abutment 1 U.S side

-Sloughing of approach fill noted from under concrete ballast wall.



Photo #6
Abutment 1



Photo #7
Abutment 1 U.S bearing



Photo #8
Abutment 1 steel diaphragm

-Note deformation of steel angle leg that has since been stiffened.



Photo #9
Abutment 1 D.S. side



Photo #10
Pier 1 looking U.S.



Photo #11
Pier 1 U.S side



Photo #12
Pier 1 bearing

-Note fixed bearings over this pier.

			<p>Photo #13 Pier 1 D.S side</p>
			<p>Photo #14 End of Girder 2 over Pier 1</p> <p>-Note no neoprene bearing pads under glulam girders.</p>



Photo #15
Pier 1 looking to Abutment 2



Photo #16
Abutment 2



Photo #17
Abutment 2 U.S side



Photo #18
Abutment 2 U.S end of cap



Photo #19
Abutment 2 interior face of
Girder 2



Photo #20
Abutment 2 D.S. end of Girder 2 /
ballast wall

-Note gap between timber
ballast wall planks.



Photo #21
Abutment 2 D.S wingwall

-Significant wingwall pile rotation noted.



Photo #22
U.S / Girder 1 elevation looking
to Abutment 2



Photo #23
Span 1, Girder 2 looking to
Abutment 1

-Minor profile variations
(rippling) in bottom flanges
noted.



Photo #24
Span 2, Girder 1 looking to
Abutment 1

		<p>Photo #25 Span 2, Girder 1 underside looking to Abutment 1</p>
		<p>Photo #26 D.S / Girder 2 elevation looking to Abutment 1</p>



Photo #27
Span 2, Girder 2

-Regular, narrow, shallow, short discontinuous splits throughout girder face.



Photo #28
End of curb rail at Abutment 1

-Note damaged curb rail



Photo #29
Span 1 (new) deck structure
looking between transverse ties



Photo #30
Span 2 (old) deck structure

-Note diagonal sub-deck



Photo #31
Load posting sign ahead of
Abutment 1