

BRIDGE INSPECTION

BRIDGE NO. N3-044: Sullivan FSR
(68.20 km)

Inspection Date: September 22, 2012

Inspected By: R. Veitch, M. Hanson

Year Built: 1985

Number of Spans: 1



Span Lengths: 25,900 mm

Superstructure Type: Riveted steel through plate girders with transverse steel floor beams and 4 rows of longitudinal steel stringers. Girders may be from an old rail bridge.

Deck: Deck planks, untreated timber planks, 250 mm x 75 mm thick.
Deck running width 3800 mm.

Deck Structural: Deck ties untreated timber, 200 mm x 250 mm.

Curb: Steel girders.

Substructure: Steel H-piles with steel cap beams and precast concrete panels.

BRIDGE INSPECTION

GENERAL BRIDGE CONDITION:

Superstructure Condition:	Fair
Substructure Condition:	Fair
Deck Condition:	Good
Load Posting:	No sign noted.
Date for the Next Close Proximity Inspection:	2017
Projection for Replacement:	2022

BRIDGE INSPECTION SUMMARY/ RECOMMENDATIONS:

The bridge is generally in fair condition. The woods end wing walls appear to have rotated resulting in gaps between panels and minor loss of embankment fill. We also observed spalling and delamination on the camp end breast wall and wing walls panels; this deterioration does not appear to affect the performance of the walls.

Erosion is occurring at the ends of the wing walls and along the camp end approach. We recommend riprap is installed to stabilize the bank and prevent further erosion. Due to the unknown age of the structure (steel members likely older than the construction date), we recommend the Ministry consider scheduling the bridge for replacement within 10 years.

INSPECTION NOTES:

Approaches:

- The approaches are generally in fair condition.
- Bank eroding due to road runoff, 100 m away from camp end abutment.

Deck:

- The deck is generally in good condition.
- Deck planks and ties have been replaced since 2011 inspection.
- Deck is panelized in 10' sections except section at camp end is 5'.

Abutments:

- The abutments are in fair condition.
- Timber ballast planks behind girders are rotten.
- Camp end upstream wing wall has minor spall where Dywidag passes through.
- Concrete breast wall panels below the girders on the camp end have significant spalling on the downstream side with exposed rebar; do not appear to have occurred recently. Delamination on lower panel near water line.
- 75-100 mm gap between woods end ballast wall and wing walls.
- Dywidag rod failed on woods end upstream wing wall.
- Dywidag rod needs to be tightened on woods end downstream wing wall.
- Woods end upstream wing wall leaning out (12 mm over 600 mm).
- Woods end downstream wing wall leaning out (6 mm over 600 mm).

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Girders:

- The girders are generally in fair condition.
- Girders are composed of riveted steel (likely from an old rail bridge) and have localized failure of the paint coating and light surface corrosion.
- Some rivets have been replaced with bolts.
- Minor damage to stiffeners at deck level from impact by grader.
- Construction date is noted as 1985, but we suspect the girders are older than the construction date.

LIST OF MAINTENANCE ITEMS TO BE COMPLETED:

Items	Description	Priority
1.	Repair concrete spalls on the camp end breast wall panel.	Medium
2.	Repair and tighten woods end wing walls Dywidag rods as required.	Medium
3.	Replace rotten ballast wall planks on upper section of walls.	Medium
4.	Repair bank erosion on camp end approach. Replace lost fill material and add riprap to stabilize the bank.	Medium

MONITOR DURING FUTURE INSPECTIONS:

1. Monitor woods end wing walls for further movement.
2. Monitor condition of concrete panels for further spalling and deterioration.

Prepared by:



Ryan Veitch, ASCT
Engineering Technologist

Reviewed by:



David Chen, P.Eng.
Project Engineer

APR 24 2013

Attached:

1. CBR Report
2. Annotated Photo Sheets

BRIDGE INSPECTION

NOTES:

Directional & Numbering Conventions Used:

Girders and piles are numbered from upstream to downstream. Left end or right end is determined facing downstream (except for delineators). Spans and piers are numbered from the left end when facing downstream.

Projected Replacement Date:

The projected date for the bridge replacement is based on the remaining service life of the bridge. We estimate the remaining service life as the greater of:

For Glulam Girder Bridges:

1. Original design life, typically 50 years.
2. If a bridge is nearing the end of its estimated service life but is still in fair condition, we recommend that the Ministry assume a remaining service life of five years.

For Steel and Concrete Bridges:

1. Original design life, typically 60 years.
2. If a bridge is nearing the end of its estimated service life but is still in fair condition, we recommend that the Ministry assume a remaining service life of ten years.

Condition Ratings:

Excellent:	New or almost new condition and properly installed
Good:	Structurally sound, in good repair with minimal wear
Fair:	Structurally functional, shows moderate wear or preliminary indications of deterioration
Poor:	Structurally unsound, items typically in need of repair or replacement

Maintenance Priority (Typical Usage):

High:	Critical items that need to be addressed to protect safety of users (curbs, structural decks, delineators, major structural repairs, etc.); schedule work immediately.
Medium:	Items that maintain the service life of the bridge (wearing planks, deck joints, etc.)
Low:	Items that will extend the service life of the structure or general maintenance.

Cost Estimate:

The cost estimate for individual maintenance items, shown in the CBR report, reflects the cost of materials and labour for completing a task; it does not include any costs associated with mobilization, demobilization, engineering or contract administration.



BC Ministry of Forests and Range

Permanent Bridge Inspection Report

Page 1 of 3
Date Printed: 2013/03/28
User Id: BCEID\WRILEY1
Database: PROD
Report Id: CBR001A

Structure #:	N3-044	Site #:	N3-044	Road Name:	SULLIVAN	Inspection Date:	2012/09/22
KM:	51.65	User km:	68.20	Crossing Name:	PRATTLE Cr	Next Inspection Date:	2015/11/01
Project File ID #:	7521	Br.	05	Forest District:	Columbia Forest District		
Deck Type:	Timber - Untreated			Running Surface:	Timber Planks		
Superstructure	Steel I-beam			Abutments (Left/Right):	Pile -Permanent Materials		
Total Length (metres):	25.9	# Spans:	1	Span Length(s) (metres):	25.9		
UTM Zone:	11	UTM Easting:	470373	UTM Northing:	5737953		
Inspector Name:	R. Veitch, M. Hanson			Year Built:	1985		
Access:	Would be nice to inspect at low water.						

ABUTMENTS

Bearings	Not Applicable	
Bracing	Not Applicable	
Ballast Wall	Fair	Camp end breast wall spalling heavily along downstream end with exposed reinforcement; delamination noted near bottom; Ballast walls are still structurally sound. Upper timber ballast wall planks at both abutments are rotten and have fallen apart allowing fill to be pushed out.
Corrosion Protection	Not Applicable	
Caps or Sills	Fair	Girders sit directly on top of cap beam.
Fill	Fair	Fill material being lost from gaps in ballast wall planks. Minor fill erosion at camp end downstream embankment adjacent to wing wall.
Hardware	Fair	
Piles or Posts	Good	Normal weathering on steel.
Riprap	Not Applicable	
Wing Wall	Fair	Dywidag rod failed on woods end upstream wall. Rod needs to be tightened on woods end upstream side. Woods end wing walls are leaning outwards creating a 75-100mm gap between the ballast wall. Woods end downstream wing wall piles are not vertical (5 mm over 600 mm). Woods end upstream wing wall piles are not vertical (12 mm over 600 mm.)

APPROACHES

Alignment	Good	
Bridge Ahead Signs Missing	0	
Brushing Required	No	
Delineator Missing Left	0	
Delineator Missing Right	0	
Fender Condition	None	
Road Surface	Fair	Section of road/ bank sloughing on camp end downstream, appx 1 cubic meter.



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DECK

Span 1

Curb Rail/Blocks/Posts	Unrated	Girder acting as guardrail.
Deck to Girder Bolts	Good	
Hardware	Good	Deck clips only at the ends of the bridge. Long spikes driven through the deck ties prevents lateral movement at other locations.
Hand Rails/Walkouts	Not Applicable	
Nails	Good	
Overall Deck Condition	Good	Deck is panelized in 10' sections except one 5' section on camp end.
Running Planks	Good	Wearing planks sit directly on ties. Replaced since 2011 inspection.
Sub Deck	Unrated	No subdeck.
Ties	Good	Replaced since 2011 inspection.

SUPERSTRUCTURE

Span 1

Bracing	Fair	
Diaphragms	Fair	Transverse floor beams with four rows of longitudinal stringers (two sit on top of floor beams and two are connected to web of floor beams)
Girders	Fair	Debris accumulating along bottom flanges. Several damaged stiffeners above deck and at abutment ends. Numerous localized paint peeling and light surface corrosion noted.
Hardware	Fair	Some rivots have been replaced by bolts, likely during construction.
Under Trussing	Not Applicable	

CHANNEL

Estimated Present Water Level Depth:		Estimated Present Water Level Width:	
Estimated High Water Level Clearance:			

HAZARDS

High Water:	No	Scour:	No	Ice:	No	Debris:	No	Aggradation:	No
Comment:									

REPAIRS

#	Status	Priority	Estimate	Description
1	Recommended	Medium	\$3,000.00	Repair concrete spalls on the camp end breast wall panel.
2	Recommended	Medium	\$3,000.00	Repair and tighten woods end wing walls Dywidag rods as required.
3	Recommended	Medium	\$5,000.00	Replace rotten ballast wall planks on upper section of walls.
4	Recommended	Medium	\$5,000.00	Repair bank erosion on camp end approach. Replace lost fill material and add riprap to stabilize the bank.



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MONITORS	#	Description
	1	Monitor woods end wing walls for further movement.
	2	Monitor condition of concrete panels for further spalling and deterioration.
	3	N/A

GENERAL	Professional Inspection Required?	No	Regional Review Date:		P. Eng Reviewer Name:	
	Replacement Date for full log haul traffic (year):	2022	Replacement Date for light vehicle traffic (year):	2022		
	Current Load Rating GVW (tonnes):	82	Design Load GVW (tonnes):	82	Design Vehicle Config.:	L90
	Inspector's Estimated Full Log Haul Replacement (year):	2022				
	Inspector's Comment:	The bridge is generally in fair condition. The woods end wing walls appear to have rotated resulting in gaps between panels and minor loss of embankment fill. We also observed spalling and delamination on the camp end breast wall and wing walls panels; this deterioration does not appear to affect the performance of the walls. Erosion is occurring at the ends of the wing walls and along the camp end approach. We recommend riprap is installed to stabilize the bank and prevent further erosion. Due to the unknown age of the structure (steel members likely older than the construction date), we recommend the Ministry consider scheduling the bridge for replacement within 10 years.				
	P.Eng Reviewer's Comment:					
District Staff Comment:						

Structure #	Crossing Name	Forest Service Road	User km	CBR km		
N3-044	Prattle Cr	Sullivan	68.20	51.7		



Figure 1-1: Upstream elevation.



Figure 1-2: Looking towards camp end.



Figure 1-3: Looking towards woods end.



Figure 1-4: Looking downstream.



Figure 1-5: Looking upstream.



Figure 1-6: Bank erosion on camp end approach.

Structure #	Crossing Name	Forest Service Road	User km	CBR km		
N3-044	Prattle Cr	Sullivan	68.20	51.7		



Figure 1-7: Wearing surface.



Figure 1-8: Underside of deck.



Figure 1-9: End beam splice connection.

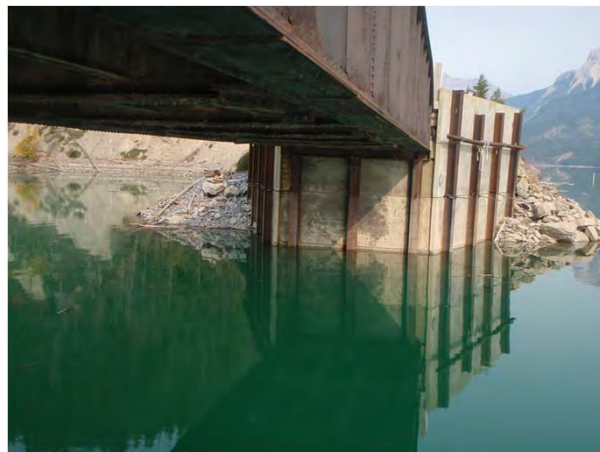


Figure 1-10: Camp end abutment.



Figure 1-11: Camp end upstream wing wall.



Figure 1-12: Camp end downstream embankment.

Structure #	Crossing Name	Forest Service Road	User km	CBR km		
N3-044	Prattle Cr	Sullivan	68.20	51.7		



Figure 1-13: Camp end ballast wall downstream.



Figure 1-14: Camp end upstream ballast wall.

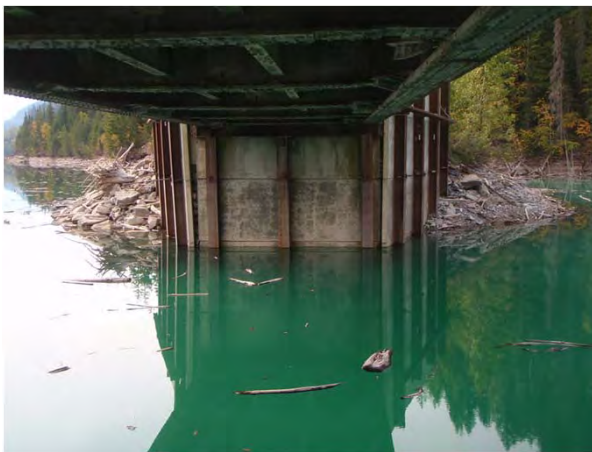


Figure 1-15: Woods end abutment.



Figure 1-16: Woods end downstream wing wall.

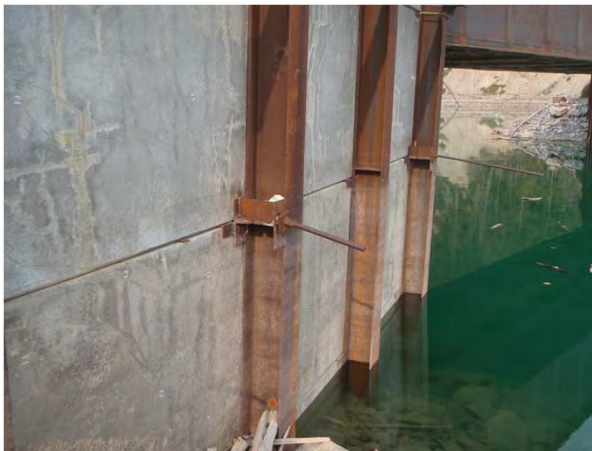


Figure 1-17: Woods end upstream wing wall, note missing anchor.



Figure 1-18: Woods end upstream wing wall gap.

Structure #	Crossing Name	Forest Service Road	User km	CBR km		
N3-044	Prattle Cr	Sullivan	68.20	51.7		



Figure 1-19: Woods end upstream planks missing.