CITY OF MERRITT

2015 MERRITT BRIDGE INSPECTION REPORT

Issued: December 15, 2015

Prepared by:

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2015-12-15 1597/4A

City of Merritt
2185 Voght Street
Merritt, BC V1K 1B8

Attention: Shawn Boven
Public Works Manager

RE: CITY OF MERRITT
BRIDGE INSPECTION REPORTS

Please find attached our Bridge Inspection Reports for the six bridges in the City of Merritt Bridge Inventory.

Note that these Bridge Inspections are based entirely on Visual Inspection and – as such – can only identify visible defects and deficiencies. Given this Scope of Inspection, these Bridge Inspection Reports cannot be considered completely comprehensive; however, they are intended to provide a representative assessment of the condition of each structure.

Yours truly,
WATSON ENGINEERING LTD.

PROFESSIONAL ENGINEER
PROVINCE OF BRITISH COLUMBIA
A.D. WATSON

Andrew D. Watson, P.Eng.
President

2015/12/15

/jgb

Encl.

2015 MERRITT BRIDGE INSPECTION REPORT
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Municipality:	City of Merritt
Structure:	Voght Street Bridge
Number:	1
Inspector(s):	Stephan Anderson CTech
Inspection Date:	2015 Dec 1
Temperature:	-8 Degrees Celsius

GENERAL DESCRIPTION

Location:	Voght Street At Nicola River
Crossing Type:	River Crossing
Structure Type:	Prestressed Box Beam Girders
Estimated Traffic:	Residential And Commercial Traffic
Load Rating:	No Restrictions Posted
Clearances:	No Restrictions Posted
Replacement Cost:	$2,200,000.00

BRIDGE CONFIGURATION

Overall Length:	32.0m
Overall Width:	15.5m
Skew:	20°
No. Of Spans:	Two
Length Of Spans:	16.0m
No. Of Piers:	One
No. Of Abutments:	Two

BRIDGE CROSS SECTION

Sidewalk/Bicycle Path	
Number:	Two
Width:	2m Sidewalk / 2m Bicycle Path Both Sides.
Vehicle Lanes	
Number:	Two.
Width:	3.6m
Roadway Width:	11.2m

STRUCTURAL HISTORY

Original Construction

Engineer:	Watson Engineering Ltd.
Contractor:	Wildstone Construction Ltd.
Design Code:	CSA S6 - 06
Design Vehicle:	CL 625
Year:	2007

Regular Load Analysis

Rating:	Not Reviewed
Engineer:	
Year:	

Clause 14 Load Analysis

Rating:	Not Reviewed
Engineer:	
Year:	

ROADWAY INSPECTION

	Observations	Recommendations
Bridge Rail		
Type:	CIP Concrete Pillasters With River Rock Covering And Yellow Cedar Glulam Posts Banded by Powder Coated Black Steel And Copper Sheeting With MoT Steel Rail Powder Coated Black. Steel Posts Support Rail Between Pilasters.	
Condition:	Good	
Bridge Parapet		
Type:	None.	
Condition:		
Pedestrian Rail		
Type:	As Bridge Rail	
Height:		
Condition:		
Sidewalk/Bicycle Path		
Location:	Both Sides	
Type:	2.3m CIP Reinforced Concrete Sidewalk and 2m Asphalt Bicycle Path.	
Condition:	Good. Sidewalk Concrete Is Coloured, Stamped And Sealed. Some Surface Spalling On Upstream Sidewalk. Settling of Bridge Approaches Has Caused A 25mm Difference In Elevation Between Approach Sidewalk And Bridge Sidewalk at the NE Corner And A 10mm Difference In Elevation At The NW Corner Which Has Been Previously Ground To Match Sides. The SE and SW Sidewalk / Bridge Joints Are Also Settling Up To 15mm.	Grind Down Bridge SideWalk Concrete To Match Elevation Of Approach Sidewalk Concrete.

Curb		
Location:	Between Sidewalk And Bicycle Path	
Type:	CIP Concrete	
Condition:	Good.	
Wearing Surface		
Type:	102mm Thick Asphalt On Membrane	
Condition:	Fair. Surface Is Showing Signs Of Wear With Wheel Path Groves Appearing Since Last Inspection.	
End Joints		
Type:	None.	
Condition:	Settlement Of Bridge Approaches Has Caused Elevation Change At North End With Corresponding Cracking In Asphalt Road Surface And Slight Bump In Travelled Surface. Cracks are Sealed.	Continue Crack Sealing Program.
Intermediate Fixed Joints		
Location:	None.	
Type:		
Condition:		
Intermediate Expansion Joints		
Location:	None.	
Type:		
Condition:		
Deck Drains/Scuppers		
Type:	None.	
Condition:		

SUPERSTRUCTURE INSPECTION

	Observations	Recommendations
Deck		
Type:	Concrete Box Beam Surface	
Condition:	New in 2008. Not Accessible For Inspection.	
Girders		
Type:	Prestressed Concrete Box Beams	
Number:	Twenty-Six	
Depth:	700mm	
Condition:	Good.	
Diaphragms	None.	
Location:		
Type:		
Condition:		
Bearings		
Location:	Abutments (Expansion) And Pier (Fixed).	
Type:	20mm Rubber Bearing Pads And Galvanized Steel Pins.	
Condition:	Good.	

ABUTMENT AND PIER INSPECTION

	Observations	Recommendations
Bearing Pedestal		
Type:	CIP Concrete Beam Seat At Top Of Ballast Wall.	
Condition:	Good.	
Ballast Wall		
Type:	CIP Concrete.	
Condition:	Good.	
Base		
Type:	None.	
Condition:		
Foundation		
Type:	Steel Piling	
Number:	11	
Condition:	Not Accessible For Inspection.	
Wing Walls		
Type:	CIP Concrete.	
Condition:	Good.	
Guardrail:	Modified MoT Steel Guardrail, Powder Coated Black	

Pier		
Type:	CIP Concrete Pile Cap.	
Condition:	Good.	
Foundation:	Steel Piling With Black Epoxy Coating On Exposed Lengths. Epoxy Coating Has Peeled Off In Various Sections On Exposed Areas.	Recoat With Black Epoxy During Low Water Level.
Slope Protection		
Location:	Upstream, Downstream And At Abutments.	
Type:	Rip Rap.	
Condition:	Good	
Waterway Channel		
Alignment:	Good.	
Flow:	Moderately High Water With Ice At The Time Of Inspection. No Issues Found.	
Stability:	Good.	

APPROACH INSPECTION

	Observations	Recommendations
Alignment		
Horizontal:	Slight Horizontal Curve.	
Vertical:	Crest Of Vertical Curve With 1.1m Rise To Bridge Deck From South At Merritt Ave. And From North At Second Avenue.	
Guardrail		
Location:	None.	
Type:		
Condition:		
Barrier		
Location:	None.	
Type:		
Condition:		
Sidewalk/Bicycle Path		
Location:	Both Sides From Merritt Avenue To Bridge And From Bridge To Second Avenue.	
Type:	CIP Concrete Sidewalk and 2m Asphalt Bicycle Path.	
Condition:	Good. Sidewalk Concrete Is Coloured, Stamped And Sealed.	
Curbs		
Location:	Both Sides From Merritt Avenue To Bridge And From Bridge To Second Avenue.	
Type:	CIP Concrete.	
Condition:	Good.	

Roadway		
Type:	Asphalt.	
Condition:	Fair. Surface Is Showing Signs Of Wear With Wheel Path Groves Appearing Since Last Inspection.	
Roadway End Joint		
Type:	None.	
Condition:		
Approach Slabs		
Type:	None.	
Condition:		
Approach Embankment		
Type:	None.	
Condition:		
Drainage		
Type:	CB's Near Merritt Avenue Otherwise Surface Drainage Only.	
Condition:	Good.	
Abutment Fencing		
Type:	Modified MoT Steel Guardrail, Powder Coated Black.	
Condition:	Good. Steel Railing Post Base Plates Are Corroding, Possibly Due To Road Salt Accumulation During Winter Months.	Remove Corrosion And Paint Baseplates

LIGHTING, ELECTRICAL AND SIGN INSPECTION

	Observations	Recommendations
Lamp Standards		
Type:	Decorative Glulaminated Timber.	
Number:	8	
Condition:	Good. 2 Acorn Nuts Are Missing From The NW Corner Post Base	
Wiring & Junctions		
Condition:	2 Buried Conduits From Centennial Park Washroom Bldg. To Northeast Wingwall With Junction Box In Lawn Off Park. Lighting Conduit Has Junction At Northeast Pilaster Wood Post To Light East Side and Buried Conduit Continues Across Roadway To West Side Lighting. Waterline Heat Trace Follows Same Path To North West Manhole And Continues To South End Of Waterline At South Abutment.	
Signs		
Type:	None.	
Number:		
Condition:		

UTILITIES INSPECTION

	Observations	Recommendations
Utilities Over Bridge		
BC Hydro:	East Side.	
BC Tel:	West Side.	
Other:	None.	
Utilities On Bridge		
BC Hydro:	Over	
BC Tel:	None.	
BC Gas:	East Side.	
Water:	West Side.	
Sanitary:	None.	
Sewer:	None.	
Other:	None.	
Utilities Adjacent To Bridge		
BC Hydro:	None.	
BC Tel:	None.	
BC Gas:	None.	
Water:	None.	
Sanitary Sewer:	None.	
Storm Sewer:	Upstream End Of South Abutment	
Other:	Unknown.	

RECOMMENDED MAINTENANCE AND REPAIRS

Item	Approved		Completed		Description	Comments
	Initial	Date	Initial	Date		
1					Bridge Approach Settlement Has Caused Asphalt Road Surface And Concrete Sidewalk Surface Elevation Differences At The Bridge End Joints.	Grind Concrete Sidewalk To Remove Lip To Match Elevations For Smooth Pedestrian Use And Continue Sealing Cracks In Asphalt At Bridge End Joints.
2					Steel Railing Base Plates.	Require Corrosion Removal And Re- Painting.
3					Concrete Surface Spalling on Upstream Sidewalk In Approximetely 3m² Area.	Repairs Not Required, Does Not Affect Usage Of Sidewalk.
4					Steel Piling With Black Epoxy Coating On Exposed Lengths. Epoxy Coating Has Peeled Off In Various Sections On Exposed Areas.	Require Corrosion Removal And Re- Painting.

ENGINEER'S COMMENTS

This structure was constructed in 2006 and is in good structural condition with a few minor maintenance items.

Photo #01. View Of Structure From North Approach.

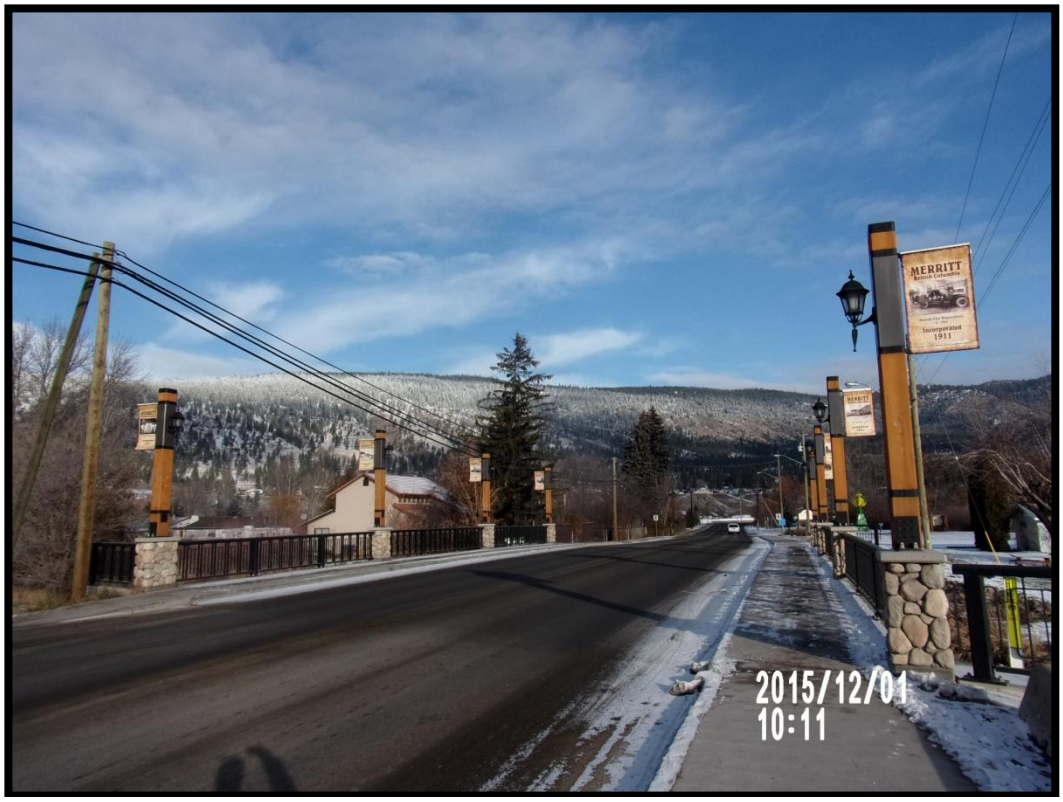

Photo #02. View Of Structure From South Approach.

Photo #03. View Of Structure From West Bank Upstream.

Photo #04. View Of Structure From West Bank Downstream.

Photo #05. View Upstream.

Photo #06. View Downstream.

Photo #7. Rip Rap On East Abutment.

Photo #8. Rip Rap On West Abutment.

Photo #9. Gasline On South Side.

Photo #10. Waterline On North Side.

Photo #11. 10 - 25mm Settlement Of Concrete Sidewalk On Bridge Approaches.

Photo #12. Asphalt Cracking And Settlement At North Abutment.

Photo #13. Surface Spalling Of Sidewalk Concrete.

Photo #14. Railing Baseplate Corrosion.

Photo #15. Pier Piles With Peeling Paint And Corrosion.

Photo #16. Asphalt Cracking And Settlement At South Abutment.

Municipality:	City Of Merritt
Structure:	Houston Truck Bridge
Number:	2
Inspector(s):	Stephan Anderson, CTech.
Inspection Date:	2015 Dec 1
Temperature:	- 8 Degrees Celsius

GENERAL DESCRIPTION

Location:	Houston Street At Coldwater River
Crossing Type:	River Crossing
Structure Type:	Steel Girder With Precast Deck Panels.
Estimated Traffic:	Residential And Commercial Truck Traffic.
Load Rating:	No Restrictions Posted
Clearances:	No Restrictions Posted
Replacement Cost:	$3,000,000.00

BRIDGE CONFIGURATION

Overall Length:	51.818m
Overall Width:	12.73m
Skew:	25 Degrees
No. Of Spans:	One
Length Of Spans:	51.818m
No. Of Piers:	None
No. Of Abutments:	Two

BRIDGE CROSS SECTION

Sidewalk/Bicycle Path	
Number:	One.
Width:	1m - 1.5m Approximately.
Vehicle Lanes	
Number:	Two
Width:	5.1m
Roadway Width:	10.2m

STRUCTURAL HISTORY

Original Construction		
Engineer:	Associated Engineering Ltd.	
Contractor:	Surespan Construction Ltd.	
Design Code:	CAN/CSA - S6 - 88	
Design Vehicle:	CS - 600	
Year:		1998
Slope Stabilization		
Engineer:	Watson Engineering Ltd.	
Contractor:	LNB Construction Ltd.	
Design Code:		
Design Vehicle:		
Year:		2013
Regular Load Analysis		
Rating:	Not Reviewed	
Engineer:		
Year:		
Clause 12 Load Analysis		
Rating:	Not Reviewed	
Engineer:		
Year:		

ROADWAY INSPECTION

	Observations	Recommendations
Bridge Rail		
Type:	Standard MoT Steel Rail	
Condition:	Good.	
Bridge Parapet		
Type:	CIP Reinforced Concrete.	
Condition:	Good	
Pedestrian Rail		
Type:	Standard MoT Pedestrian Fence.	
Height:	1.22m.	
Condition:	Good.	
Sidewalk/Bicycle Path		
Location:	Upstream Side.	
Type:	Precast Concrete Panels.	
Condition:	Good.	
Curb		
Location:	None.	
Type:		
Condition:		

Wearing Surface		
Type:	Asphalt With Membrane.	
Condition:	Fair. Some Cracking	
End Joints		
Type:	None.	
Condition:	Asphalt Is Cracked At The Abutments With Some Settling Of Bridge End Fills. South Approach Roadway Has Settled A Large Amount.	Consider Rebuilding Approaches At Abutments With Properly Compacted Base Materials And Asphalt.
Intermediate Fixed Joints		
Location:	None.	
Type:		
Condition:		
Intermediate Expansion Joints		
Location:	None.	
Type:		
Condition:		
Deck Drains/Scuppers		
Type:	None Installed But Drainage Design Required.	
Condition:	Some Runoff Drains Out Onto Downstream Retaining Walls At Ballast Wall At Bridge End Joint. Drainage Is Causing Material To Accumulate And Push Against The Chain Link Fence On Top Of The MSE Wall	Remove Accumulated Slope Material Against Chain Link Fencing At All Four Wing Walls And Provide Alternative Slope Design To Eliminate Re-Occurance.

SUPERSTRUCTURE INSPECTION

	Observations	Recommendations
Deck		
Type:	Concrete Precast Panel Surface.	
Condition:	Not Accessible For Inspection Due To Asphalt Surface Other Than Sidewalk Surface Which Is In Good Condition.	
Girders		
Type:	Steel Plate Girders.	
Number:	Two	
Depth:	2470mm	
Condition:	Good. Grafitti	
Diaphragms		
Location:	Every Five Metres	
Type:	Steel Angles	
Condition:	Good. Construction Cables Attached To Diaphragms Hang Down To Within Reachable Distance From River Bank.	Remove Unnecessary Construction Cables Attached To Diaphragms.
Bearings		
Location:	Abutments.	
Type:	Elastomeric Pot Bearing.	
Condition:	Good.	

ABUTMENT INSPECTION

	Observations	Recommendations
Bearing Pedestal		
Type:	CIP Concrete Beam Seat.	
Condition:	Good. Grafitti	
Ballast Wall		
Type:	CIP Concrete cast Onto Steel Girder Ends.	
Condition:	Good. Grafitti.	
Base		
Type:	CIP Concrete With Unknown Foundation Behind Mechanically Stabalized Earth Wall (MSE).	
Condition:	Good.	
Foundation		
Type:	Unknown.	
Footing:	Not Accessible For Inspection.	
Wing Walls		
Type:	CIP Concrete.	
Condition:	Good. Drainage And Foot Traffic Causing Material On Slope Adjacent To Wing Walls To Accumulate And Push Against Chain Link Fence.	
MSE Walls	Mechanically Stabilized Earth Wall with Precast Concrete Panels Attached To Galvanized Steel Mesh Anchor Mats Layered Under Approach Fill And Bridge End Fill.	
Condition:	Good. All Surface Areas Vertical. No Movement Or Miss-Alignment Detected. Grafitti.	

Slope Protection		
Location:	Upstream, Under And Downstream Of MSE Walls.	
Type:	Rip Rap.	
Condition:	Good	
Waterway Channel		
Alignment:	Slight Skew	
Flow:	River Covered In Ice At Time Of Inspection.	
Stability:	Good.	

APPROACH INSPECTION

	Observations	Recommendations
Alignment		
Horizontal:	On Tangent between Curves.	
Vertical:	Constant Grade.	
Guardrail		
Location:	None.	
Type:		
Condition:		
Barrier		
Location:	On Both Approaches.	
Type:	Concrete Roadside Barrier.	
Condition:	Good.	
Sidewalk/Bicycle Path		
Location:	Upstream Side.	
Type:	Road Gravels	
Condition:	Fair.	
Curbs		
Location:	None.	
Type:		
Condition:		

Roadway		
Type:	Asphalt.	
Condition:	Good.	
Roadway End Joint		
Type:	None.	
Condition:		
Approach Slabs		
Type:	None.	
Condition:		
Approach Embankment		
Type:	Earthwork	
Condition:	Good.	
Drainage		
Type:	2 Catch Basins Located South Of Downstream South Abutment and 2 North of Downstream North Abutment And At The End Of Downstream North Approach Flare.	
Condition:	Good Structurally, However, Are Poorly Draining As They Appear To Fill Rapidly With Debris And Block Flow Of Drainage Water.	Clean And Maintain Catch Basins On A Regular Basis To Provide Adequate Drainage And Prevent Slope Failure Due To Overflow.
Abutment Fencing		
Type:	Chain Link.	
Condition:	Poor. Chain Link Gates Open And Damaged Chainlink/Barbed Wire On Both Sides.	Repair Existing And/Or Enhance To Deter Access To This Area for Safety Reasons As Well As To Protect Bridge And Utilities From Vandalism.

LIGHTING, ELECTRICAL AND SIGN INSPECTION

	Observations	Recommendations
Lamp Standards		
Number:	Two. At Abutments.	
Type:	Unknown.	
Condition:	Good.	
Wiring & Junctions		
Condition:	Appear In Fair Condition, Junction Boxes And Wiring Located On The Upstream North Abutment For Heat Trace To Sanitary And Waterline. Covered In Grafitti	Remove Grafitti And Check Condition.
Signs		
Condition:	Reflective W-36 Warning Signs Are Installed At All Four Corners Of The Bridge At The Abutments. The South Abutment W-36 Signs Have Been Bent Over But Remain Servicable.	
	The No Stopping On Bridge Sign At The Upstream South Approach Is Missing	Replace No Stopping Sign At Upstream South Approach.

UTILITIES INSPECTION

	Observations	Recommendations
Utilities Over Bridge		
BC Hydro:	None.	
BC Tel:	None.	
Other:	Unknown.	
Utilities On Bridge		
BC Hydro:	None.	
BC Tel:	None.	
BC Gas:	None.	
Water:	Insulated Waterline Attached On East Side.	Taped Joints Deteriorating
Sanitary:	Insulated Sanitary Line Attached On East Side.	Taped Joints Deteriorating
Sewer:	None.	
Other:	None.	
Utilities Adjacent To Bridge		
BC Hydro:	Unknown.	
BC Tel:	Unknown.	
BC Gas:	Unknown.	
Water:	Unknown.	
Sanitary Sewer:	Unknown.	
Storm Sewer:	Unknown.	
Other:	Unknown.	

RECOMMENDED MAINTENANCE AND REPAIRS

Item	Approved		Completed		Description	Comments
	Initial	Date	Initial	Date		
1					The No Stopping On Bridge Sign At The Upstream South Approach Is Faded.	Replace No Stopping Sign At Upstream South Approach.
2					Drainage At All Four Wing Walls Is Causing Slope Material To Build Up Against Chain Link Fencing Which Is Bent And Compromised Out And Over The Top Of The MSE Wall.	Remove Accumulated Slope Material Against Chain Link Fencing At All Four Wing Walls And Provide Alternative Slope Design To Eliminate Re-Occurance.
3					Construction Cables Hanging From Bridge Girders To A Reachable Height From River Bank.	Remove Cables.
4					Chainlink Fencing At Abutment Is Damaged / Vandalized.	Repair / Enhance Existing Fence To Deter Access To Abutment for Safety Reasons As Well As To Protect Utilities From Vandalism.

ENGINEER'S COMMENTS

The overall structure is in good condition. The South Approach downstream slope was repaired in 2013 and remains in good condition. There is a tendency for road debris to accumulate on the roadway side of all barriers causing drainage problems as the catch basins fill. The roadway should be cleaned periodically. The slopes adjacent to the wing walls are eroding and accumulating and pushing against the chain link fence on top of the MSE wall. There is vandalism damage to the chain link fencing at the abutments and bearings allowing access to the bearing seats and top of MSE wall. This poses a potential liability as there is a long drop from the bearings to the rip rap below with risk of injury. The amount and location of grafitti has increased dramatically since the 2008 inspection. Some grafitti is located on the steel girders in mid bridge span.

Photo #01. View Of Structure From North Approach.

Photo #02. View Of Structure From South Approach.

Photo #03. View Of Structure From West Bank Upstream.

Photo #04. View Of Structure From West Bank Downstream.

Photo #05. View Upstream.

Photo #06. View Downstream.

Photo #07. South Abutment Joint.

Photo #08. North Abutment Joint.

Photo #09. North Abutment And MSE Wall.

Photo #10. South Abutment And MSE Wall. Note Steel Diaphragms And Graffiti.

Photo #11. South Abutment Bearing Seat.

Photo #12. North Abutment Bearing Seat. Note Graffiti.

Photo #13. Steel Girders And Precast Concrete Deck Panels.

Photo #14. Detail Of Steel Girder, Steel Diaphragm And Underside Of Precast Concrete Deck Panels. Note: Cable.

Photo #15 Downstream Parapet And Railing From South Abutment.

Photo #16. Upstream Parapet And Pedestrian Railing From South Abutment.

Photo #17. Utilities At Upstream North Abutment. Note Fencing Damaged.

Photo #18. Upstream North Abutment. Note Gate Open.

Photo #19. South Bank. Note: Cables Within Reach From Ground.

Photo #20. Upstream South Abutment. Note: Gate Open.

Photo #21. Fencing At Downstream South Abutment. Note: Runoff Debris Accumulating Against Fence.

Photo #22. W-36 Signs At South Abutment. Note: Damage To Sign Mounts.

Photo #23. Downstream North Approach. Note: Accumulated Road Debris And Choked Catch Basin.

Photo #24. Downstream South Approach Drain Pipe.

Photo #25. Downstream South Approach Catch Basin. Note: Found Filled With Debris.

Photo #26 Downstream South Approach Drainage.

Photo #27 Culverts Under Downstream North Approach Fill.

Photo #28 Culverts Under Upstream North Approach Fill.

Municipality:	City of Merritt
Structure:	Middlesboro Bridge
Number:	3
Inspector(s):	Stephan Anderson CTech.
Inspection Date:	2015 Dec 1
Temperature:	- 6 Degrees Celsius

GENERAL DESCRIPTION

Location:	Voght Street At Coldwater River.
Crossing Type:	River Crossing
Structure Type:	Multiple Concrete Stringers With Concrete Deck
Estimated Traffic:	Local Residential, Commercial And Industrial Traffic
Load Rating:	No Restrictions Posted
Clearances:	No Restrictions Posted
Replacement Cost:	$2,500,000.00

BRIDGE CONFIGURATION

Overall Length:	58.52m
Overall Width:	9.6m
Skew:	None.
No. Of Spans:	Two
Length Of Spans:	29.26m
No. Of Piers:	One
No. Of Abutments:	Two

BRIDGE CROSS SECTION

Sidewalk/Bicycle Path	
Number:	One
Width:	1.62m
Vehicle Lanes	
Number:	Two
Width:	3.65m
Roadway Width:	7.32m

STRUCTURAL HISTORY

Original Construction

Engineer:	Department Of Highways Bridge Office
Contractor:	Not Available
Design Code:	AASHTO (1969)
Design Vehicle:	H25 520
Year:	1970

Regular Load Analysis

Rating:	Not Reviewed
Engineer:	
Year:	

Clause 12 Load Analysis

Rating:	Not Reviewed
Engineer:	
Year:	

ROADWAY INSPECTION

	Observations	Recommendations
Bridge Rail		
Type:	Steel Post Anchored To CIP Bridge Deck With Three Tubular HSS Rails.	
Condition:	Fair, Three Posts Bent From Vehicle Collision Still Bolted To Deck, Four Missing Post To Rail Clamps, Galvanizing Worn Off On Two Rails North East Corner.	Straighten Posts And Repair As Necessary. Replace Missing Clamp, Prepare Surface And Paint With Zinc Rich Paint To Avoid Further Corrosion Of Railing.
Bridge Parapet		
Type:	None.	
Condition:		
Pedestrian Rail		
Type:	As Bridge Railing.	
Height:		
Condition:		
Sidewalk/Bicycle Path		
Location:	Upstream Side.	
Type:	CIP Concrete.	
Condition:	Good.	
Curb		
Location:	Both Sides.	
Type:	CIP Concrete.	
Condition:	Good.	

Wearing Surface		
Type:	Concrete.	
Condition:	Fair.	
End Joints		
Type:	Fixed.	
Condition:		
Intermediate Fixed Joints		
Location:	None.	
Type:		
Condition:		
Intermediate Expansion Joints		
Location:	None.	
Type:		
Condition:		
Deck Drains/Scuppers		
Type:	None.	
Condition:		

SUPERSTRUCTURE INSPECTION

	Observations	Recommendations
Deck		
Type:	CIP Reinforced Concrete.	
Condition:	Good.	
Girders		
Type:	Precast Prestressed Concrete I-Girders.	
Number:	Eight	
Depth:	1.472m Deep x 0.609m Wide Flanges.	
Condition:	Good. Some Graffiti Near Abutments.	
Diaphragms		
Location:	Quarter Points.	
Type:	Steel L-Shapes.	
Condition:	Good.	
Bearings		
Location:	Abutments.	
Type:	Neoprene Rubber Pads	
Condition:	Good.	

ABUTMENT INSPECTION

	Observations	Recommendations
Bearing Pedestal		
Type:	CIP Concrete Beam Seat.	
Condition:	Good. Note Graffiti On Abutment Walls.	
Ballast Wall		
Type:	CIP Concrete.	
Condition:	Good. Ballast Walls Are Cast Into The Ends Of The Bridge Concrete Girders And Are Under The Influence Of The Expansion And Contraction Forces Associated With The Girders. This Has Been Found To Cause The Ballast Walls To Move Slightly In Relation To The Bridge End Fill In Other Bridges With The Same Feature. This May Be The Cause For The Asphalt Roadway Surface Failures Adjacent To The Bridge Deck. Note Graffiti On Abutment Walls.	
Base		
Type:	CIP Concrete Beam Seat.	
Condition:	Good.	
Foundation		
Type:	CIP Concrete Footing	
Footing:	Not Accessible For Inspection.	

Wing Walls		
Type:	CIP Concrete.	
Condition:	Good. Grafitti Covered.	
Slope Protection		
Location:	Upstream And Downstream Of Abutments.	
Type:	Riverbed Materials With Natural Vegetation. Rip Rap Was Initially Placed To High Water Elevation But Is Now Buried.	
Condition:	Fair To Good.	
Waterway Channel		
Alignment:	30 Degree Skew To Bridge From Upstream. Perpendicular Downstream.	
Flow:	Moderately High With Ice At The Time Of Inspection.	
Stability:	Unknown. Pier Should Be Inspected For Scour	Inspect Riverbed Surrounding The Pier For Scour.

PIER INSPECTION

	Observations	Recommendations
Bearings		
Location:	Pier At Mid Span.	
Type:	Neoprene Rubber Pads	
Condition:	Not Accessible For Hands-On Inspection, However, Appears To Be In Good Condition.	
Base		
Type:	CIP Concrete	
Condition:	Good	
Foundation		
Type:	Steel H Piles	
Footing:	Not Accessible For Inspection.	
Waterway Channel		
Alignment:	30 Degree Skew To Bridge From Upstream. Perpendicular Downstream.	
Flow:	Moderate High With Ice At The Time Of Inspection.	
Stability:	Unknown. Pier Should Be Inspected For Scour	Inspect Riverbed Surrounding The Pier For Scour.

APPROACH INSPECTION

	Observations	Recommendations
Alignment		
Horizontal:	Relatively Straight With Good Visibility.	
Vertical:	Relatively Flat With Good Visibility.	
Guardrail		
Location:	None.	
Type:		
Condition:		
Barrier		
Location:	Both Sides Of Both Approaches.	
Type:	Concrete Roadside Barrier.	
Condition:	Fair To Poor. One Bullnose Is Missing And One Is Out Of Place. The South West CRB At The Abutment Wall Is Sagging Due To Loss Of Supporting Gravel Materials Underneath.	Replace Bullnose, Reposition Bullnose, Repair South West CRB By Replacing Supporting Materials And Repositioning.
Sidewalk/Bicycle Path		
Location:	East Side	
Type:	Gravel Shoulder	
Condition:	Poor. Sidewalk Slopes Sideways And Steps Up To Bridge Deck Which Presents A Trip Hazard And Makes It Difficult For Wheel Chair Access. This Presents A Considerable Liability Issue And Should Be Addressed.	Consider Upgrading Approach Sidewalk To Prevent Liability Issue.

Curbs		
Location:	None.	
Type:		
Condition:		
Roadway		
Type:	Asphalt.	
Condition:	Fair . Asphalt Is Cracked And Potholes Have Formed With Some Potholes Being Patched At Abutments.	
Roadway End Joint		
Type:	None.	
Condition:		
Approach Slabs		
Type:	None.	
Condition:		
Approach Embankment		
Type:	Fill	
Condition:	Fair To Poor. Replace Materials On South West Abutment.	Repair South West CRB By Replacing Supporting Materials And Repositioning.
Drainage		
Type:	Natural.	
Condition:	Fair To Poor. Water Drainage Appears To Be The Cause Of The Loss Of Materials On The South West Abutment.	Repair South West CRB By Replacing Supporting Materials And Repositioning. Consider Adding Asphalt Curb To Move Drainage Further From Abutment.
Abutment Fencing		
Type:	None.	
Condition:		

LIGHTING, ELECTRICAL AND SIGN INSPECTION

	Observations	Recommendations
Lamp Standards		
Number:	None.	
Type:	None.	
Condition:	None.	
Wiring & Junctions		
Condition:	None.	
Signs		
Condition:	Warning Markers At Abutments.	

UTILITIES INSPECTION

	Observations	Recommendations
Utilities Over Bridge		
BC Hydro:	None.	
BC Tel:	None.	
Other:	Unknown.	
Utilities On Bridge		
BC Hydro:	None.	
BC Tel:	None.	
BC Gas:	6" Gasline Attached To Inside Of Downstream Stringer.	
Water:	None.	
Sanitary:	None.	
Sewer:	None.	
Other:	None.	
Utilities Adjacent To Bridge		
BC Hydro:	Approximately 10m East Of Bridge.	
BC Tel:	Unknown.	
BC Gas:	Unknown.	
Water:	Unknown.	
Sanitary Sewer:	Unknown.	
Storm Sewer:	Unknown.	
Other:	Unknown.	

RECOMMENDED MAINTENANCE AND REPAIRS

Item	Approved		Completed		Description	Comments
	Initial	Date	Initial	Date		
1					Repair / Reposition Bent Railing Posts.	Repair / Reposition Bent Railing Posts.
2					Corrosion Of Guard Rail.	Clean And Coat Corroded Railing With Zinc Rich Paint.
3					CRB Displaced And Out Of Alignment Due To Settlement Of Supporting Materials.	Repair South West CRB By Replacing Supporting Materials And Repositioning. Consider Adding Asphalt Curb To Move Drainage Away From Abutment.
4					Approach Sidewalk In Poor Condition And Present Liability Issues.	Rebuild Approach Sidewalks.
5					South Bullnose Barriers Displaced.	Replace Concrete Bullnose Barriers.
6					Four Missing Railing To Post Bolts	Replace Railing To Post Bolts.
7					Unknown River Bed Condition At Centre Pier	Consider Scour Inspection Of Centre Pier.

ENGINEER'S COMMENTS

This structure is in good condition with some minor repairs required. The Approach Sidewalk Requires Attention.

Photo #01. View Of Structure From East Approach.

Photo #02. View Of Structure From West Approach.

Photo #03. View Of Structure From East Bank Downstream.

Photo #04. View Of Structure From West Bank Downstream.

Photo #05. View Upstream.

Photo #06. View Downstream.

Photo #07. West Abutment Joint.

Photo #08. West Abutment Joint.

Photo #09. Downstream Girders And East Abutment With Gasline.

Photo #10. Girders And West Abutment.

Photo #11. Centre Pier From East Abutment.

Photo #12. Centre Pier And Girders From West Abutment.

Photo #13. Steel Diaphragms.

Photo #14 Sidewalk On Bridge.

Photo #15. Barriers At West Abutment. Note Erosion Of Slope Materials.

Photo #16 Displaced Concrete Barrier Bullnose On Upstream West Approach.

Photo #17. Miss-Aligned Concrete Barrier Bullnose On Downstream West Approach.

Photo #18. Railing At Upstream West Abutment. Note: Bent Post

Photo #19. Railing At Downstream East Abutment. Note: Corroded Rails.

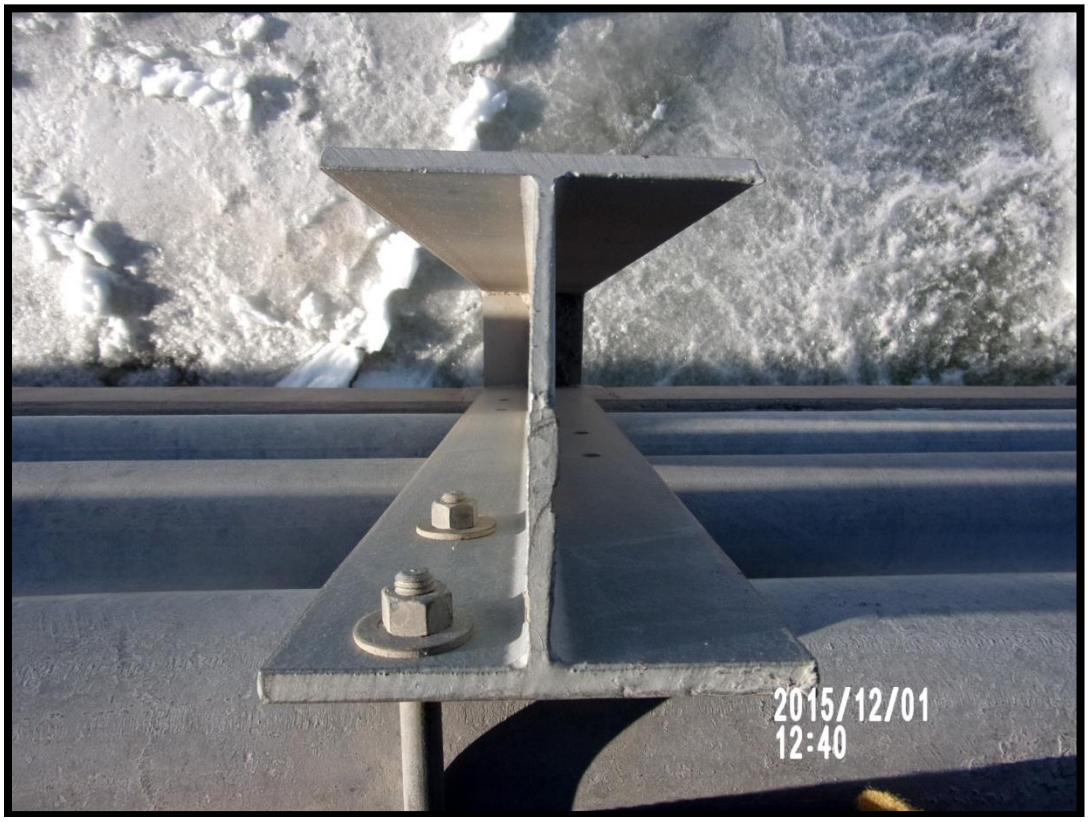

Photo #20 Railing Post Clamps Missing Upstream And Downstream Side.

Photo #21 East Abutment. Note: Material Accumulating Close To Girder.

Photo #22 Centre Pier Joint. Note: Leakage And Corrosion At Joint.

Municipality:	City of Merritt
Structure:	Collettville Bridge
Number:	4
Inspector(s):	Stephan Anderson CTech.
Inspection Date:	2015 Dec 1
Temperature:	- 8 Degrees Celsius

GENERAL DESCRIPTION

Location:	Main Street At Coldwater River
Crossing Type:	River Crossing
Structure Type:	500mm Prestressed Concrete Box Girders On Either End Of 1300mm Prestressed Concrete Box Girders With Cross-Sectional Post Tension Strands.
Estimated Traffic:	Local Residential, Commercial And Industrial Traffic
Load Rating:	No Restrictions Posted
Clearances:	No Restrictions Posted
Replacement Cost:	$2,500,000.00

BRIDGE CONFIGURATION

Overall Length:	46.748m
Overall Width:	12.189m
Skew:	10 Degrees
No. Of Spans:	Three
Length Of Spans:	Two @ 8.365m, One @ 30.018m
No. Of Piers:	Two
No. Of Abutments:	Two

BRIDGE CROSS SECTION

Sidewalk/Bicycle Path	
Number:	One
Width:	1.5m
Vehicle Lanes	
Number:	Two
Width:	4.880m, 4.865m
Roadway Width:	9.745m

STRUCTURAL HISTORY

Original Construction

Engineer:	MoT Bridge Engineering
Contractor:	Not Available
Design Code:	CAN/CSA-S6-88
Design Vehicle:	CS-600
Year:	1995

Regular Load Analysis

Rating:	Not Reviewed
Engineer:	
Year:	

Clause 12 Load Analysis

Rating:	Not Reviewed
Engineer:	
Year:	

ROADWAY INSPECTION

	Observations	Recommendations
Bridge Rail		
Type:	MoT Standard Steel Parapet Railing.	
Condition:	Good.	
Bridge Parapet		
Type:	CIP Concrete MoT Spec.	
Condition:	Good. Original Sealed Expansion Joints Deteriorating.	Re-Seal Expansion Joints.
Pedestrian Rail		
Type:	MoT Standard Steel Sidewalk Fence.	
Height:	1.2m	
Condition:	Good. Railing Base Broken Off At SW Wing Wall. Repaired.	
Sidewalk/Bicycle Path		
Location:	Upstream Side	
Type:	Asphalt.	
Condition:	Good. Settlement At Both Ends Creating Elevation Difference Between Approach And Bridge Deck.	
Curb		
Location:	None.	
Type:		
Condition:		

Wearing Surface		
Type:	Asphalt.	
Condition:	Fair. Cracked At Abutments And Piers. Missing Asphalt Has Been Patched.	Monitor Joints And Replace Asphalt As Required.
End Joints		
Type:	None.	
Condition:	Fair. Cracked At Abutments And Piers. Missing Asphalt Has Been Patched.	Monitor Joints And Replace Asphalt As Required.
Intermediate Fixed Joints		
Location:	At Piers.	
Type:	None.	
Condition:	Cracked, Missing Asphalt Has Been Replaced.	Monitor Joints And Replace Asphalt As Required.
Intermediate Expansion Joints		
Location:	None.	
Type:		
Condition:		
Deck Drains/Scuppers		
Type:	Galvanized Steel Drain Through 550 Box Girder Near Upstream Piers.	
Condition:	Good.	

SUPERSTRUCTURE INSPECTION

	Observations	Recommendations
Deck		
Type:	Concrete.	
Condition:	Not Accessible For Inspection.	
Approach Span Girders		
Type:	Prestressed Concrete Box Girders.	
Number:	Twenty	
Depth:	550mm	
Condition:	Good. Concrete On Upper Corner Of West Pier Downstream Approach Girder Has Broken Off With Pieces Lying On Top Of Pier Cap. Reinforcing Steel Not Exposed. Reason Unknown.	Monitor For Corrosion Of Box Girder Reinforcing Steel.
Mid Span Girders		
Type:	Prestressed Concrete Box Girders With Cross-Sectional Post Tension Strands.	
Number:	Ten	
Depth:	1300mm	
Condition:	Good.	
Diaphragms		
Location:	None.	
Type:		
Condition:		
Bearings		
Location:	Abutments And Piers.	
Type:	20-25mm Natural Rubber Bearing Pads With 25-30mmØ Galvanized Steel Dowels.	
Condition:	Good.	

ABUTMENT INSPECTION

	Observations	Recommendations
Bearing Pedestal		
Type:	CIP Concrete Beam Seat.	
Condition:	Good.	
Ballast Wall		
Type:	CIP Concrete.	
Condition:	Good.	
Base		
Type:	CIP Concrete Beam Seat.	
Condition:	Good.	
Foundation		
Type:	Steel Piled Foundation.	
Footing:	Not Accessible For Inspection.	
Wing Walls		
Type:	CIP Concrete.	
Condition:	Good. Damage To SW Wing Wall Due To Railing Anchor Bolt. Concrete Broken Out.	
Slope Protection		
Location:	Upstream And Downstream Of Abutments.	
Type:	Rip Rap.	
Condition:	Fair To Good.	
Waterway Channel		
Alignment:	Straight.	
Flow:	Approaching High Water At Time Of Inspection.	
Stability:	Good.	

APPROACH INSPECTION

	Observations	Recommendations
Alignment		
Horizontal:	Relatively Straight With Good Visibility.	
Vertical:	Relatively Flat With Good Visibility From West End. Up Grade To Match Bridge Deck From East End.	
Guardrail		
Location:	None.	
Type:		
Condition:		
Barrier		
Location:	Both Approaches.	
Type:	Concrete Roadside Barrier.	
Condition:	Good Condition	
Sidewalk/Bicycle Path		
Location:	Upstream/South Side.	
Type:	Asphalt.	
Condition:	Fair. SW End Appears To Have Been Filled In Since 2008 Inspection, However Material Continues To Be Removed By Pedestrian Traffic.	Build Up This Area Further To Eliminate Slope Which Starts At Edge Of Asphalt Sidewalk.

Curbs		
Location:	Both Approaches	
Type:	Short Concrete Curb And Platform On Which The Concrete Barriers Are Placed.	
Condition:	Good.	
Roadway		
Type:	Asphalt.	
Condition:	Fair.	
Roadway End Joint		
Type:	None.	
Condition:	Asphalt Is Cracked, Missing Asphalt Has Been Replaced And Cracks Sealed.	Monitor Joints And Replace Asphalt And Seal Joints As Required.
Approach Slabs		
Type:	None.	
Condition:		
Approach Embankment		
Type:	None.	
Condition:		
Drainage		
Type:	Drains On Road Side Of Barriers On Upstream Abutment Side Of Piers.	
Condition:	Good. Appear To Function.	
Abutment Fencing		
Type:	None.	
Condition:		

LIGHTING, ELECTRICAL AND SIGN INSPECTION

	Observations	Recommendations
Lamp Standards Number: Type: Condition:	None.	
Wiring & Junctions Condition:	Good. In Ground Junction Box Is On North East Abutment Slope.	
Signs Condition:	Good.	

UTILITIES INSPECTION

	Observations	Recommendations
Utilities Over Bridge		
BC Hydro:	Overhead On South Side.	
BC Tel:	Overhead On South Side.	
Other:	Unknown.	
Utilities On Bridge		
BC Hydro:	None.	
BC Tel:	None.	
BC Gas:	None.	
Water:	Insulated Waterline On North Side. Insulation Steel Covering Requires Joint Repair At Exposed Pipe Joint Near Centreline.	Re-Seal Insulation Joint And Repair Exposed Insulation At One Pipe Joint.
Sanitary:	Insulated Forcemain On North Side.	
Sewer:	None.	
Other:	Junction Box For Unknown Utility Service.	
Utilities Adjacent To Bridge		
BC Hydro:	Unknown.	
BC Tel:	Unknown.	
BC Gas:	Gas Line Underground 5m Downstream Of Bridge	
Water:	Unknown.	
Sanitary Sewer:	Unknown.	
Storm Sewer:	Unknown.	
Other:	Junction Box For Heat Trace On North East Approach Embankment.	
	Junction Box For Unknown Utility Attached To North West Side Of Concrete Box Girder has Open Conduit.	Repair Open Conduit.

RECOMMENDED MAINTENANCE AND REPAIRS

Item	Approved		Completed		Description	Comments
	Initial	Date	Initial	Date		
1					Asphalt Wearing Surface Is Cracked At Joints. Missing Asphalt Has Been Replaced/Patched.	Continue Monitoring And Replace Asphalt As Required.
2					Upstream West Side Requires Repair To Undermined Asphalt Sidewalk At Abutment.	Eroded Material Had Been Replaced With WGB Gravel Since 2008 Inspection, However, Pedestrian Traffic Continues To Increase Erosion In This Spot. Consider Placing A Larger Quantity Of WGB To Reduce Slope Adjacent To Asphalt.
3					Pipe Joint Near Centreline Remains Open.	Repair / Reseal Utility Pipe Insulation Joint.
4					Sidewalk Has Settlement At Both Ends Creating Elevation Difference Between Approaches And Bridge Deck.	Consider Rebuilding Sidewalk Approaches.

ENGINEER'S COMMENTS

This structure is in good condition with minor maintenance items required and repairs / resealing work required to attached utilities.

Photo #01. View Of Structure From East Approach.

Photo #02. View Of Structure From West Approach.

Photo #03. View Of Structure From Downstream East Bank.

Photo #04. View Of Structure From Upstream East Bank.

Photo #05. View Upstream.

Photo #06. View Downstream.

Photo #07. East Abutment Joint.

Photo #08. West Pier Joint.

Photo #09. West Abutment Joint.

Photo #10. Underside Of Box Girders And West Abutment.

Photo #11. Rip Rap On East Abutment.

Photo #12. East Pier.

Photo #13. Sanitary Force Main And Waterline From East Bank.

Photo #14. Waterline Near Mid-Span. Note: Missing Pipe Insulation Joint And Deterioration Of Insulation.

Photo #15. Utility Box At Downstream West Abutment. Note: Loose And Open Conduit.

Photo #16. Sidewalk From East Pathway Approach..

Photo #17 Sidewalk At West Wing Wall. Note: Damage To Wing Wall And Repositioned Rail Base.

Photo #18. West Pier.

Municipality:	City of Merritt
Structure:	Nicola River Pedestrian Bridge
Number:	5
Inspector(s):	Stephan Anderson CTech.
Inspection Date:	2015 Dec 1
Temperature:	- 8 Degrees Celsius

GENERAL DESCRIPTION

Location:	West End Of Quilchena Avenue At The Nicola River
Crossing Type:	River Crossing
Structure Type:	Vintage Railroad Plate Girder
Estimated Traffic:	Pedestrian Traffic
Load Rating:	No Restrictions Posted
Clearances:	No Restrictions Posted
Replacement Cost:	$300,000.00

BRIDGE CONFIGURATION

Overall Length:	18m
Overall Width:	3.7m
Skew:	None
No. Of Spans:	One
Length Of Spans:	18m
No. Of Piers:	None
No. Of Abutments:	Two

BRIDGE CROSS SECTION

Sidewalk/Bicycle Path	
Number:	One
Width:	1.85m
Vehicle Lanes	
Number:	None
Width:	

STRUCTURAL HISTORY

Original Construction

Engineer:	Not Available
Contractor:	Not Available
Design Code:	Not Available
Design Vehicle:	Not Available
Year:	Not Available

Regular Load Analysis

Rating:	Not Reviewed
Engineer:	
Year:	

Clause 12 Load Analysis

Rating:	Not Reviewed
Engineer:	
Year:	

ROADWAY INSPECTION

	Observations	Recommendations
Bridge Rail		
Type:	None	
Condition:		
Bridge Parapet		
Type:	None.	
Condition:		
Pedestrian Rail		
Type:	Timber Posts And Railing With Supplemantary Chain Link Inbetween Topped With Galvanized Steel Pipe Handrail.	
Height:	1.5m (Approximately).	
Condition:	Good. Two Lengths Of Pipe Handrail Are Missing At South End Both Sides.	Replace Pipe Handrail.
Sidewalk/Bicycle Path		
Location:	Centreline.	
Type:	Timber Plank Decking.	
Condition:	Good. Debris Collecting In Between Deck Planks At Centreline Due To Underlying Stringer Top Surface. Bebris Will Hold In Moisture And Shorten The Lifespan Of The Timber Decking.	Remove Accumulated Debris To Facilitate Air Movement Around Timber Decking.
Curb		
Location:	None.	
Type:		
Condition:		
Wearing Surface	None.	
Type:		
Condition:		

End Joints Type: Condition:	None.	
Intermediate Fixed Joints Location: Type: Condition:	None.	
Intermediate Expansion Joints Location: Type: Condition:	None.	
Deck Drains/Scuppers Type: Condition:	None.	

SUPERSTRUCTURE INSPECTION

	Observations	Recommendations
Floor Beams		
Type:	Creosoted Timber Floor Beams.	
Condition:	Good.	
Girders		
Type:	Plate Girder.	
Number:	Two.	
Depth:	1700 Deep.	
Condition:	Fair, Peeling Paint With Some Graffiti.	Repaint As Needed To Prevent Corrosion.
Diaphragms		
Location:	At Plate Deck Beams.	
Type:	Steel Plate.	
Condition:	Fair, Peeling Paint	Repaint As Needed To Prevent Corrosion.
Bearings		
Location:	Abutments.	
Type:	Sliding And Fixed	
Condition:	Not Accessible For Inspection.	

ABUTMENT INSPECTION

	Observations	Recommendations
Bearing Pedestal		
Type:	CIP Concrete Beam Seat.	
Condition:	Fair. Fair Condition Considering Age With Some Cracking.	
Ballast Wall		
Type:	CIP Concrete.	
Condition:	Fair. Fair Condition Considering Age With Some Cracking And Spauling Of Surface.	
Base		
Type:	CIP Concrete.	
Condition:	Not Observed, Under Water and Ice	
Foundation		
Type:	Timber Piles.	
Footing:	Not Observed. Under Water and Ice.	
Wing Walls		
Type:	None.	
Condition:		

Slope Protection		
Location:	Upstream And Downstream Of Abutments.	
Type:	Rip Rap With Vegetation.	
Condition:	Poor. Slopes Under Snow And Ice At Time Of Inspection.	
Waterway Channel		
Alignment:	Fair. Alignment Is Skewed Approximetaly 30 Degrees.	
Flow:	Moderate To Low At The Time Of Inspection.	
Stability:	Fair. Channel Under Snow And Ice At Time Of Inspection.	

APPROACH INSPECTION

	Observations	Recommendations
Alignment		
Horizontal:	Curved With Good Sight Lines.	
Vertical:	Slight Slope.	
Guardrail		
Location:	None.	
Type:		
Condition:		
Barrier		
Location:	None.	
Type:		
Condition:		
Sidewalk/Bicycle Path		
Location:	Centreline.	
Type:	Timber Plank Decking.	
Condition:	Good.	
Curbs		
Location:	None.	
Type:		
Condition:		
Roadway		
Type:	None.	
Condition:		
Roadway End Joint		
Type:	None.	
Condition:		

Approach Slabs		
Type:	Asphalt On East Approach. Gravel On West Approach.	
Condition:	East Approach Good. West Approach Fair With Some Settling Of Existing Gravel Trail At Timber Deck Planks.	Replace Material To Level Gravel Trail With Timber Deck Elevation.
Approach Embankment		
Type:	Existing Rail Grade.	
Condition:	Good	
Drainage		
Type:	None. Surface Only.	
Condition:		
Abutment Fencing		
Type:	Flared Timber Posts And Railing With Supplemantary Chain Link Inbetween.	
Condition:	Good.	

LIGHTING, ELECTRICAL AND SIGN INSPECTION

	Observations	Recommendations
Lamp Standards Number: Type: Condition:	None.	
Wiring & Junctions Condition:	None.	
Signs Condition:	Rotary Club Plaque At East Approach In Good Condition. Timber Sign Attached To Upstream Side Of Bridge Girder Is Detached On The South End.	Repair Sign.

UTILITIES INSPECTION

	Observations	Recommendations
Utilities Over Bridge		
BC Hydro:	None.	
BC Tel:	None.	
Other:	None.	
Utilities On Bridge		
BC Hydro:	None.	
BC Tel:	None.	
BC Gas:	None.	
Water:	None.	
Sanitary:	None.	
Sewer:	None.	
Other:	None.	
Utilities Adjacent To Bridge		
BC Hydro:	Unknown.	
BC Tel:	Unknown.	
BC Gas:	Unknown.	
Water:	Unknown.	
Sanitary Sewer:	Unknown.	
Storm Sewer:	Unknown.	
Other:	Unknown.	

RECOMMENDED MAINTENANCE AND REPAIRS

Item	Approved		Completed		Description	Comments
	Initial	Date	Initial	Date		
1					Erosion At East Abutment. Not Identified This Inspection Due To Water Level And Ice Coverage Although May Remain.	Replace Gravel Materials At East Abutment And Armour With Rip Rap.
2					Damage To Handrail.	Replace Missing Steel Pipe Handrail At East Abutment.
3					Erosion At West Abutment. Not Identified This Inspection Due To Water Level And Ice Coverage Although May Remain.	Add Additional Rip Rap To Slope At West Abutment.
4					Debris Collecting In Between Deck Planks At Centreline Due To Underlying Stringer Top Surface. Debris Will Hold In Moisture And Shorten The Lifespan Of The Timber Decking.	Remove Accumulated Debris To Facilitate Air Movement Around Timber Decking.
5					Existing Coating Failed With Corrosion Of Steel Girders.	Consider Cleaning And Painting Steel Surfaces To Extend Service Life Of Structure.
6					Timber Sign Attached To Upstream Side Of Bridge Damaged.	Repair Sign

ENGINEER'S COMMENTS

This structure is a vintage steel plate railroad bridge in relatively good condition for its current intended use as a pedestrian bridge. With some additional corrosion protection and slope protection at the east abutment this structure will likely last well into the future. Sign on upstream side of bridge is damaged.

Photo #01. View Of Structure From South Approach.

Photo #02. View Of Structure From North Approach.

Photo #03. View Of Structure From North Bank Upstream.

Photo #04. View Of Structure From South Bank Downstream.

Photo #05. North Abutment.

Photo #06. South Abutment.

Photo #07. South Abutment. Note Undermined Concrete Footing 2008 Inspection.

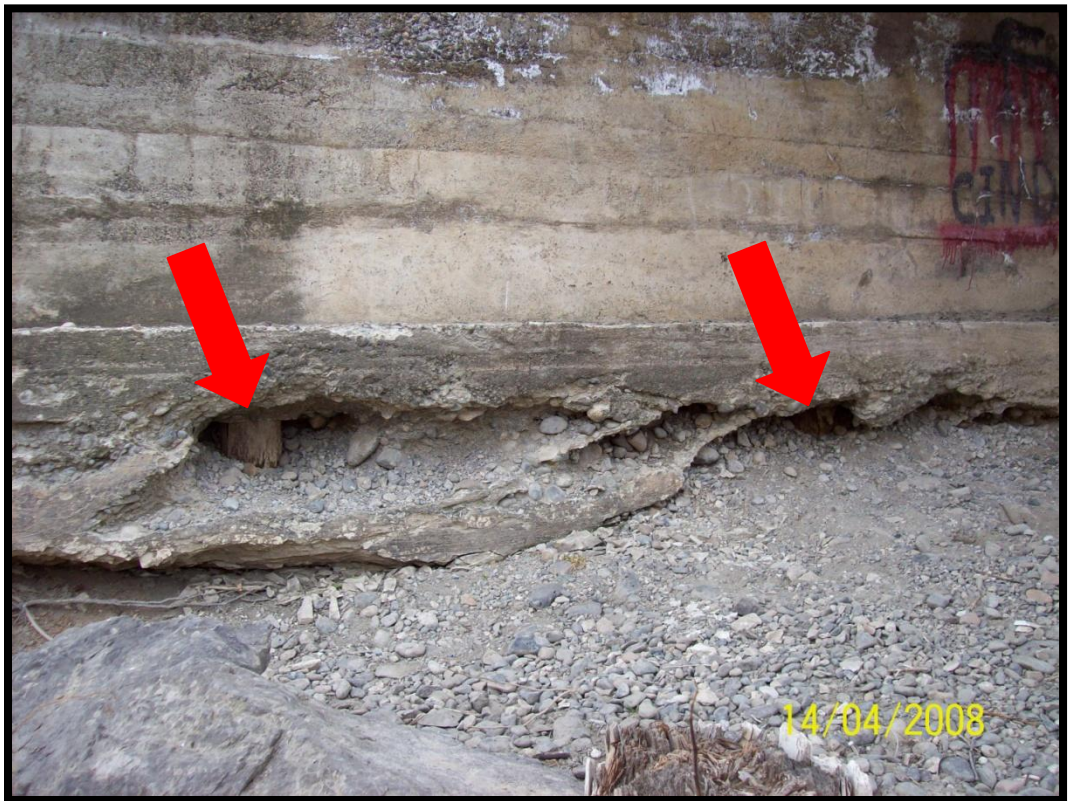

Photo #10. Detail Of South Abutment Undermining. Note Exposed Original Timber Piling 2008 Inspection.

Photo #11. Underside Of Bridge.

Photo #12. Upstream Plate Girder. Note: Peeling Paint.

Photo #13. View Upstream.

Photo #14. View Downstream.

Photo #15. Upstream Railing. Note: Missing Pipe Rail End Section.

Photo #16. Downstream Railing. Note: Missing Pipe Rail End Section.

Photo #17. Upstream Rail. Note: Railing Nuts And Washers Found Missing At South End.

Photo #18. Downstream Rail. Note: Nuts And Washers Missing.

Municipality:	City of Merritt
Structure:	Centennial Park Pedestrian Bridge
Number:	6
Inspector(s):	Stephan Anderson CTech.
Inspection Date:	2015 Dec 1
Temperature:	- 8 Degrees Celsius

GENERAL DESCRIPTION

Location:	At Centennial Park Across The Nicola River.
Crossing Type:	River Crossing
Structure Type:	Twin Steel Girder
Estimated Traffic:	Pedestrian Traffic
Load Rating:	No Restrictions Posted
Clearances:	No Restrictions Posted
Replacement Cost:	$130,000.00

BRIDGE CONFIGURATION

Overall Length:	12m
Overall Width:	2.3m
Skew:	None
No. Of Spans:	One
Length Of Spans:	12m
No. Of Piers:	None
No. Of Abutments:	Two

BRIDGE CROSS SECTION

Sidewalk/Bicycle Path	
Number:	One
Width:	1.85m
Vehicle Lanes	
Number:	None
Width:	

STRUCTURAL HISTORY

Original Construction

Engineer:	Not Available
Contractor:	Not Available
Design Code:	Not Available
Design Vehicle:	Not Available
Year:	Not Available

Regular Load Analysis

Rating:	Not Reviewed
Engineer:	
Year:	

Clause 12 Load Analysis

Rating:	Not Reviewed
Engineer:	
Year:	

ROADWAY INSPECTION

	Observations	Recommendations
Bridge Rail		
Type:	None. Though Girder Acts As Bridge Rail.	
Condition:		
Bridge Parapet		
Type:	None. Though Girder Acts As Bridge Parapet.	
Condition:		
Pedestrian Rail		
Type:	Upper Portion Of Steel Girders With Steel Pipe Handrail.	
Height:	1.2m (Approximately).	
Condition:	Good. Paint Peeling With Small Areas Of Corrosion	Paint Handrail
Sidewalk/Bicycle Path		
Location:	Centreline.	
Type:	Timber Plank Decking.	
Condition:	Fair Overall. Poor At North End Loose Plank At NW Corner. Wood Deck Screws Showing Signs Of Deterioration.	Replace Loose Decking. Consider Replacing Entire Deck With New 2 X 6 Decking.
Curb		
Location:	None.	
Type:		
Condition:		
Wearing Surface	None.	
Type:		
Condition:		

End Joints Type: Condition:	None.	
Intermediate Fixed Joints Location: Type: Condition:	None.	
Intermediate Expansion Joints Location: Type: Condition:	None.	
Deck Drains/Scuppers Type: Condition:	None.	

SUPERSTRUCTURE INSPECTION

	Observations	Recommendations
Deck		
Type:	Timber Plank Decking.	
Condition:	As Above.	
Girders		
Type:	Steel Girders	
Number:	two.	
Depth:	1000 Deep	
Condition:	Good. Ends of Girders Burried.	Remove Material From Ends And Repaint As Required To Prevent Corrosion.
Floorbeams		
Location:	Evenly Spaced Between Bridge Girders	
Type:	Steel Angle With Timber 4x4 Timber Insert For Deck Plank Attachment.	
Condition:	Fair. Steel Angles Are Corroding.	Repaint As Required To Prevent Corrosion.
Bearings		
Location:	Abutments.	
Type:	Loc Blocs	
Condition:	Not Accessible For Inspection.	

ABUTMENT INSPECTION

	Observations	Recommendations
Bearing Pedestal		
Type:	Loc Blocs	
Condition:	Not Accessible For Inspection.	
Ballast Wall		
Type:	None.	
Condition:		
Base		
Type:	None.	
Condition:		
Foundation		
Type:	Unknown	
Footing:	Not Accessible For Inspection.	
Wing Walls		
Type:	None.	
Condition:		

Slope Protection		
Location:	Upstream And Downstream Of Abutments.	
Type:	Rip Rap With Vegetation.	
Condition:	Fair. Some Rip Rap Present At Both Abutments With Soils And Grasses Mixed In, However Slopes Appear Sound. Material At West Abutment Should Be Armoured To Prevent Erosion.	Armour West Abutment With Smaller Rip Rap.
Waterway Channel		
Alignment:	Good.	
Flow:	Moderately High Water With Ice At Time Of Inspection.	
Stability:	Fair. Vegetation Is Stabalizing The Channel Slopes Other Than At The West Abutment As Mentioned Above.	Armour West Abutment With Smaller Rip Rap.

APPROACH INSPECTION

	Observations	Recommendations
Alignment		
Horizontal:	Straight With Good Sight Lines.	
Vertical:	Level.	
Guardrail		
Location:	None.	
Type:		
Condition:		
Barrier		
Location:	None.	
Type:		
Condition:		
Sidewalk/Bicycle Path		
Location:	Approaches	
Type:	Well Graded Base Gravels.	
Condition:	Good.	
Curbs		
Location:	None.	
Type:		
Condition:		

Roadway Type: Condition:	None.	
Roadway End Joint Type: Condition:	None.	
Approach Slabs Type: Condition:	None.	
Approach Embankment Type: Condition:	None.	
Drainage Type: Condition:	None. Surface Only.	
Abutment Fencing Type: Condition:	None.	

LIGHTING, ELECTRICAL AND SIGN INSPECTION

	Observations	Recommendations
Lamp Standards Number: Type: Condition:	None.	
Wiring & Junctions Condition:	None.	
Signs Condition:	None.	

UTILITIES INSPECTION

	Observations	Recommendations
Utilities Over Bridge		
BC Hydro:	None.	
BC Tel:	None.	
Other:	None.	
Utilities On Bridge		
BC Hydro:	None.	
BC Tel:	None.	
BC Gas:	None.	
Water:	Two Inch Diameter PVC Sprinkler Line	
Sanitary:	None.	
Sewer:	None.	
Other:	None.	
Utilities Adjacent To Bridge		
BC Hydro:	Unknown.	
BC Tel:	Unknown.	
BC Gas:	Unknown.	
Water:	Unknown.	
Sanitary Sewer:	Unknown.	
Storm Sewer:	Unknown.	
Other:	Unknown.	

RECOMMENDED MAINTENANCE AND REPAIRS

Item	Approved		Completed		Description	Comments
	Initial	Date	Initial	Date		
1					Failed Coating On Steel Girders And Handrails.	Clean And Paint Steel Surfaces To Maintain Corrosion Resistance When Required.
2					Steel Floor Beam Angles Are Corroding	Clean And Paint Steel Surfaces To Maintain Corrosion Resistance When Required.
2					Erosion At Abutments.	Replace Gravel Materials At West Abutment And Armour With Rip Rap.
3					One Deck Plank Found Loose And Most Deck Screws Deteriorated.	Repair Loose Plank And/Or Consider Replacing 2 X 6 Plank Decking.
4					Ends Of Bridge Girders Buried In Soil Material.	Remove Soil Materials To Prevent Corrosion Of Bridge Girder Ends.

ENGINEER'S COMMENTS

This structure is in good condition, however will soon require a new 2 x 6 timber plank deck due to loose planks and deteriorating deck screws and will require minor maintenance to prevent corrosion and have smaller rip rap placed at the west abutment to prevent erosion of existing materials.

Photo #01. View Of Structure From North Approach.

Photo #02. View Of Structure From South Approach.

Photo #03. View Of Structure From North Bank Downstream.

Photo #04. View Of Structure From South Bank Upstream.

Photo #05. View Upstream.

Photo #06. View Downstream.

Photo #07. Bridge And Hand Railing.

Photo #08 Underside Of Deck And South Abutment.

Photo #09 South Abutment. Note Minimal Slope Protection.

Photo #10 North Abutment. Note Material Leaking Through Deck Plank Gaps.

Photo #11 North Deck. Note Gaps In Deck Planks.

Photo #12 North Abutment. Note End Of Deck Planks Buried And Deteriorated.

Photo #13 South Abutment. Note: Steel Girder Buried.

Photo #14 North Abutment. Note: Steel Girder Buried.

Photo #15 Upstream Handrail. Note: Corrosion.

Photo #16 Deck Underside. Note: Corrosion Of Steel Floorbeam.