Bridge Culvert Inspection

Bridge File Number	74300 -1 Bridge Culvert	Form Type	CULM
Year Built	1954	Lot No.	2
Bridge or Town Name	WASKATENAU	Inspector Name	Kris Bosters
Located Over	WASKATENAU CREEK, 6.53, WATERCRS-ST	Inspector Class	BR CLS A
		Assistant Name	Brian Cote
Located On	28:06 C1 17.922	Assistant Class	
Water Body Cl./Year		Inspection Date	10-Apr-2012
Navigabil. Cl./Year		Data Entry By	Theresa Lacusta
Legal Land Location	SE SEC 16 TWP 59 RGE 19 W4M	Data Entry Date	08-May-2012
Longitude, Latitude	-112:46:53, 54:06:02	Reviewer Name	Eric Carcoux
Road Authority	Alberta Transportation (AIT)	Review Date	25-Apr-2012
Contract Main. Area	CMA07	Dept. Reviewer Name	Brent Herrick
Clear Roadway/Skew	12.9 /	Dept. Review Date	12-Jun-2012
AADT/Year	3,640 / 2011 (A)	Follow-Up By	
Road Classification	RAU-213.4-110		
Detour Length (km)	3		

Bridge Culvert Information

Number of Culverts		4						
Pipe #	Barrel	Span	Rise (or Dia.)	Type	Length	Corr. Profile	Pl./Slab Thickness	Shape
1	MAIN	4267		RP	59.7	160X50	4.8	ARCH
2	MAIN	2019	2226	SPE	27.6	152X51	3.5	ELLIPSE
3	MAIN	2019	2226	SPE	27.6	152X51	3.5	ELLIPSE
4	MAIN	-	1500	MP	27.6	68X13	3.5	ROUND
Special Features		VERT STEEL STRUTS, VERT TIMBER STRUTS						
Special Features Comment		Vert. Steel Struts, Timber Chute (Primary span is a tunnel liner. SP's are 5% vert. ellipsed. Corrugation profile on pipe 1 was measured 180x52. (Size not in drop down list).-04-Dec-2006						

Utilities (Located at)

Utility Attachments			
Telephone	South ditch.	Gas	
Power	2 wires OH 30m North of c/l.	Municipal	
Others		Problem (Y/N)	No
Remarks	File tag North end of primary pipe.		

Approach Road / Embankment

		Last	Now	Explanation of Condition
Horizontal Alignment		7	7	Access road to Weskatenau 300m West. Taper for turning lanes start east of all culverts. No passing zones in both directions.
Vertical Alignment		7	7	Measured over tunnel liner pipe. More cover over SPCSP's and less over CSP. Slight sag over culverts.
Roadway Width (m)	13.000			
Embankment		7	7	Over CSP.
Sideslope (__:1)	3.0			
(Height of Cover(m) : **2.5**)				
Guardrail (Y/N)	Yes			
Approach Road / Embankment General Rating		**7**	**7**	

Upstream End

Culvert Component		**Last**	**Now**	**Explanation of Condition**
(Pipe # : **1, Span Type: Primary Span**)				
Direction		N		
End Treatment (Concrete, Steel, Others, None)	CONCRETE			

Upstream End				
Culvert Component		**Last**	**Now**	**Explanation of Condition**
(Pipe # : **1, Span Type: Primary Span**)				
Headwall		X	X	
Collar		5	5	Slabs along collar have settled 350mm on both sides. Cracked collar has separated from bevel.
Wingwalls		X	X	
(Shape :)				
Cutoff Wall		N	N	
Bevel End		7	7	
Heaving (mm)	100			
Invert Above/Below Stream Bed	BELOW			
Above/Below (mm)	600			
Scour Protection		5	4	Void under West slab.
(Type : **RIP RAP**)				
(Avg. Rock Size(mm) : **200**)				
Scour/Erosion		5	4	Void under top of east collar and slab along same side.
Beavers (Y/N)	Yes			1.5m high dam 30m u/s and 2.0m high dam 45m u/s.
Upstream End General Rating		**5**	**4**	

Bridge Culvert Barrel				
Culvert Component		**Last**	**Now**	**Explanation of Condition**
(Pipe # : **1, Primary Span, Location Code: MAIN, Span (mm): 4267, Rise (mm): , Type: RP**)				
Barrel Last Accessible Date	04-Dec-2006			Water too deep to enter. Viewed from ends, shape and condition look adequate.
Special Features				
Special Feature				
(Type :)				
Special Feature				
(Type :)				
Roof		N	N	(Bulge at c/l near mid span.From top of ice 2039mm.-Viewed from U/S, shape appears in good condition - photo 2.-04-Dec-2006)
Measured Rise (mm)				
Measured At Ring No.				
Sag (mm)	0			
Percent Sag				
Sidewall		N	N	(150mm bulge at 8:00 position looking D/S, underneath c/l. 04/Dec/2006) At mid pipe. (1.8%. 04/Dec/2006)
Measured Span (mm)	4191			
Measured At Ring No.				
Deflection (mm)	76			
Percent Deflection	2			
Floor		N	N	
Bulge (mm)	0			
Measured At Ring No.				
Abrasion (Y/N)	No			
Circumferential Seams		N	N	(Midpoint has poorly matched seam. 04/Dec/2006)
Separation (mm)	350			

Bridge Culvert Barrel				
Culvert Component		**Last**	**Now**	**Explanation of Condition**
(Pipe # : **1, Primary Span, Location Code: MAIN, Span (mm): 4267, Rise (mm): , Type: RP**)				
Longitudinal Seams		N	N	
Total No. of Cracked Rings	0			
Total No. of Rings with Two Cracked Seams				
Min. Remaining Steel Between Cracks (mm)				
Proper Lap (Y/N)	Yes			
Longitudinal Stagger (Y/N)	Yes			
Coating		N	N	(Heavy seepage of white deposits from outside the horizontal seams in sidewalls. 04/Dec/2006)
Corrosion By Soil (Y/N)	Yes			
Corrosion By Water (Y/N)	Yes			
Camber POS/ZERO/NEG	NEG			
Ponding (Y/N)	No			
Fish Passage Adequacy		8	8	
Baffle		N	N	
(Type :)				
Waterway Adequacy		6	6	
Icing (Y/N)	No			
Silting (Y/N)	No			
Drift (Y/N)	No			
Barrel General Rating		**4**	**4**	G.R. carried forward from 04/Dec/2006.

Downstream End				
Culvert Component		**Last**	**Now**	**Explanation of Condition**
(Pipe # : **1, Span Type: Primary Span**)				
Direction		S		
End Treatment (Concrete, Steel, Others, None)	STEEL			
Headwall		X	X	
Collar		X	X	
Wingwalls		X	X	
(Shape :)				
Cutoff Wall		X	X	
Bevel End		6	6	
Heaving (mm)	200			
Invert Above/Below Stream Bed	BELOW			
Above/Below (mm)	900			
Scour Protection		7	7	
(Type : **RIP RAP, NATURAL**)				
(Avg. Rock Size(mm) : **300**)				
Scour/Erosion		7	7	
Beavers (Y/N)	Yes			
Downstream End General Rating		**7**	**7**	

Upstream End				
Culvert Component		**Last**	**Now**	**Explanation of Condition**
(Pipe # : **2, Span Type: Secondary Span**)				
Direction		N		Drift across inlet, 2nd from East.
End Treatment (Concrete, Steel, Others, None)	STEEL			
Headwall		X	X	
Collar		X	X	
Wingwalls		X	X	
(Shape :)				
Cutoff Wall		X	X	
Bevel End		5	5	
Heaving (mm)	300			
Invert Above/Below Stream Bed	BELOW			
Above/Below (mm)	700			
Scour Protection		5	5	
(Type : **RIP RAP**)				
(Avg. Rock Size(mm) : **200**)				
Scour/Erosion		7	7	
Beavers (Y/N)	Yes			Dam u/s.
Upstream End General Rating		**5**	**5**	

Bridge Culvert Barrel				
Culvert Component		**Last**	**Now**	**Explanation of Condition**
(Pipe # : **2, Secondary Span, Location Code: MAIN, Span (mm): 2019, Rise (mm): 2226, Type: SPE**)				
Barrel Last Accessible Date	22-Jun-2007			Viewed from ends, looks adequate, thin ice and deep water.
Special Features				
Special Feature		N	N	
(Type : **VERT STEEL STRUTS**)				
Special Feature				
(Type :)				
Roof		N	N	
Measured Rise (mm)				
Measured At Ring No.				
Sag (mm)	346			
Percent Sag				
Sidewall		N	N	
Measured Span (mm)				
Measured At Ring No.				
Deflection (mm)	231			
Percent Deflection				
Floor		N	N	Under water.
Bulge (mm)				
Measured At Ring No.				
Abrasion (Y/N)	No			
Circumferential Seams		N	N	(6 cracks on circ. seam at 12:00 on WSP/2 on ESP. 2001/09/17) (Infiltration on first 2 circumferential seams at D/S end of MP. 08/Apr/2005)
Separation (mm)	160			

Bridge Culvert Barrel				
Culvert Component		**Last**	**Now**	**Explanation of Condition**
(Pipe # : **2, Secondary Span, Location Code: MAIN, Span (mm): 2019, Rise (mm): 2226, Type: SPE**)				
Longitudinal Seams		N	N	(Rings 5 & 7 on west wall of WSP are cracked with 75 mm of steel between cracks. 2001/09/17) Previous inspector must have meant SPE. No WSP visible in culverts. 1N stagger
Total No. of Cracked Rings	2			
Total No. of Rings with Two Cracked Seams				
Min. Remaining Steel Between Cracks (mm)				
Proper Lap (Y/N)	No			
Longitudinal Stagger (Y/N)	Yes			
Coating		N	N	(Scaling rust on 300 mm strip on floor of MP. (Most of galvanizing in lower third of both barrels sacrificed. 92). 04/Dec/2006)
Corrosion By Soil (Y/N)	Yes			
Corrosion By Water (Y/N)	Yes			
Camber POS/ZERO/NEG	NEG			
Ponding (Y/N)	No			
Fish Passage Adequacy		5	5	
Baffle		N	N	
(Type :)				
Waterway Adequacy		5	5	
Icing (Y/N)	No			
Silting (Y/N)	No			
Drift (Y/N)	No			
Barrel General Rating		**4**	**4**	GR carried forward.-22-June-2007

Downstream End				
Culvert Component		**Last**	**Now**	**Explanation of Condition**
(Pipe # : **2, Span Type: Secondary Span**)				
Direction		S		
End Treatment (Concrete, Steel, Others, None)	STEEL			
Headwall		X	X	
Collar		X	X	
Wingwalls		X	X	
(Shape :)				
Cutoff Wall		X	X	
Bevel End		5	5	
Heaving (mm)	100			
Invert Above/Below Stream Bed	BELOW			
Above/Below (mm)	700			
Scour Protection		5	5	
(Type : **RIP RAP, NATURAL**)				
(Avg. Rock Size(mm) : **300**)				
Scour/Erosion		7	7	
Beavers (Y/N)	Yes			
Downstream End General Rating		**5**	**5**	

Upstream End				
Culvert Component		**Last**	**Now**	**Explanation of Condition**
(Pipe # : **3, Span Type: Secondary Span**)				
Direction		N		3rd from East, drift across inlet.
End Treatment (Concrete, Steel, Others, None)	STEEL			
Headwall		X	X	
Collar		X	X	
Wingwalls		X	X	
(Shape :)				
Cutoff Wall		X	X	
Bevel End		5	5	
Heaving (mm)	100			
Invert Above/Below Stream Bed	BELOW			
Above/Below (mm)	700			
Scour Protection		5	4	Erosio9n along bevel 0.5x0.2x0.1 wide.
(Type : **RIP RAP**)				
(Avg. Rock Size(mm) : **200**)				
Scour/Erosion		7	4	
Beavers (Y/N)	Yes			2 dams u/s.
Upstream End General Rating		**7**	**4**	

Bridge Culvert Barrel				
Culvert Component		**Last**	**Now**	**Explanation of Condition**
(Pipe # : **3, Secondary Span, Location Code: MAIN, Span (mm): 2019, Rise (mm): 2226, Type: SPE**)				
Barrel Last Accessible Date	22-Jun-2007			Not accessible. Viewed from ends, looks adequate.
Special Features				
Special Feature		N	N	
(Type : **VERT STEEL STRUTS**)				
Special Feature				
(Type :)				
Roof		N	N	
Measured Rise (mm)				
Measured At Ring No.				
Sag (mm)				
Percent Sag				
Sidewall		N	N	
Measured Span (mm)				
Measured At Ring No.				
Deflection (mm)				
Percent Deflection				
Floor		N	N	
Bulge (mm)				
Measured At Ring No.				
Abrasion (Y/N)	No			
Circumferential Seams		N	N	
Separation (mm)				

Bridge Culvert Barrel				
Culvert Component		**Last**	**Now**	**Explanation of Condition**
(Pipe # : **3, Secondary Span, Location Code: MAIN, Span (mm): 2019, Rise (mm): 2226, Type: SPE**)				
Longitudinal Seams		N	N	
Total No. of Cracked Rings				
Total No. of Rings with Two Cracked Seams				
Min. Remaining Steel Between Cracks (mm)				
Proper Lap (Y/N)				
Longitudinal Stagger (Y/N)				
Coating		N	4	Pitting and scaling lower 1/2.
Corrosion By Soil (Y/N)	Yes			
Corrosion By Water (Y/N)	Yes			
Camber POS/ZERO/NEG	NEG			
Ponding (Y/N)	No			
Fish Passage Adequacy		4	4	Debris at inlet.
Baffle		N	N	
(Type :)				
Waterway Adequacy		4	4	Debris at inlet.
Icing (Y/N)	No			
Silting (Y/N)	No			Lots of drift at U/S end & caught in struts.-photo
Drift (Y/N)	Yes			
Barrel General Rating		**4**	**4**	GR carried fwd.-22-June-2007

Downstream End				
Culvert Component		**Last**	**Now**	**Explanation of Condition**
(Pipe # : **3, Span Type: Secondary Span**)				
Direction		S		
End Treatment (Concrete, Steel, Others, None)	STEEL			
Headwall		X	X	
Collar		X	X	
Wingwalls		X	X	
(Shape :)				
Cutoff Wall		X	X	
Bevel End		5	5	
Heaving (mm)	200			
Invert Above/Below Stream Bed	BELOW			
Above/Below (mm)	700			
Scour Protection		5	5	
(Type : **RIP RAP, NATURAL**)				
(Avg. Rock Size(mm) : **300**)				
Scour/Erosion		7	7	
Beavers (Y/N)	Yes			
Downstream End General Rating		**5**	**5**	

Upstream End				
Culvert Component		**Last**	**Now**	**Explanation of Condition**
(Pipe # : **4, Span Type: Secondary Span**)				
Direction		N		4th from East.
End Treatment (Concrete, Steel, Others, None)	STEEL			
Headwall		X	X	
Collar		X	X	
Wingwalls		X	X	
(Shape :)				
Cutoff Wall		X	X	
Bevel End		8	8	
Heaving (mm)	100			
Invert Above/Below Stream Bed	ABOVE			
Above/Below (mm)	3000			
Scour Protection		7	7	
(Type : **RIP RAP**)				
(Avg. Rock Size(mm) : **200**)				
Scour/Erosion		7	7	
Beavers (Y/N)	Yes			Upstream dams.
Upstream End General Rating		**7**	**7**	

Bridge Culvert Barrel				
Culvert Component		**Last**	**Now**	**Explanation of Condition**
(Pipe # : **4, Secondary Span, Location Code: MAIN, Span (mm): , Rise (mm): 1500, Type: MP**)				
Barrel Last Accessible Date	10-Apr-2012			
Special Features				
Special Feature		4	4	Rot in timber chute-photo
(Type : **VERT TIMBER STRUTS**)				
Special Feature				
(Type :)				
Roof		6	5	3.5%
Measured Rise (mm)	1420			
Measured At Ring No.	2			
Sag (mm)	80			
Percent Sag	5			
Sidewall		6	5	
Measured Span (mm)	1600			
Measured At Ring No.	2			
Deflection (mm)	100			
Percent Deflection	7			
Floor		4	4	Separation at D/S coupler. Infiltration - photo.
Bulge (mm)				
Measured At Ring No.				
Abrasion (Y/N)	No			
Circumferential Seams		4	4	Separation at couplers. Infiltration and weed - photo .
Separation (mm)	160			

Bridge Culvert Barrel				
Culvert Component		**Last**	**Now**	**Explanation of Condition**
(Pipe # : **4, Secondary Span, Location Code: MAIN, Span (mm): , Rise (mm): 1500, Type: MP**)				
Longitudinal Seams		7	7	Rivetted.
Total No. of Cracked Rings				
Total No. of Rings with Two Cracked Seams				
Min. Remaining Steel Between Cracks (mm)				
Proper Lap (Y/N)				
Longitudinal Stagger (Y/N)				
Coating		6	6	Minor on floor.
Corrosion By Soil (Y/N)	Yes			
Corrosion By Water (Y/N)	Yes			
Camber POS/ZERO/NEG	NEG			
Ponding (Y/N)	No			
Fish Passage Adequacy		3	3	200mm drop D/S bevel on timber spillway and 3m above s/b.
Baffle		X	X	
(Type :)				
Waterway Adequacy		7	7	
Icing (Y/N)	No			
Silting (Y/N)	No			
Drift (Y/N)	No			
Barrel General Rating		**6**	**5**	

Downstream End				
Culvert Component		**Last**	**Now**	**Explanation of Condition**
(Pipe # : **4, Span Type: Secondary Span**)				
Direction		S		
End Treatment (Concrete, Steel, Others, None)	STEEL			
Headwall		X	X	
Collar		X	X	
Wingwalls		X	X	
(Shape :)				
Cutoff Wall		X	X	
Bevel End		4	4	Bevel section separating from barrel due to sag of bevel.-photo Bevel end inside timber chute.
Heaving (mm)				
Invert Above/Below Stream Bed	ABOVE			
Above/Below (mm)	3000			
Scour Protection		5	5	timber
(Type : **RIP RAP, NATURAL**)				
(Avg. Rock Size(mm) : **300**)				
Scour/Erosion		5	5	
Beavers (Y/N)	Yes			dam 10m d/s.
Downstream End General Rating		**5**	**5**	

Structure Usage				
		Last	**Now**	**Explanation of Condition**
Channel (U/S and D/S)				
Alignment		6	6	
Bank Stability		6	6	
HWM (m below Top of Culvert)				HWM not visible.
Drift (Y/N)	Yes			
Channel Bottom Degrading/Aggrading	AGGRADING			Large beaver dam 50m U/S of site.
Beavers (Y/N)	Yes			
(Fish Compensation Measure 1 : **NONE**)				
(Fish Compensation Measure 2 : **NONE**)				
Channel General Rating		**6**	**6**	

Maintenance Recommendations

Inspector Recommendations	Year	Inspector Comments	Department Comments	Target Year	Est. Cost	Cat #
SHOTCRETE REPAIRS						
PLACE ADDITIONAL RIP RAP						
REMOVE DRIFT ACCUMULATION						
INSTALL CONCRETE/STEEL LINING						
INSTALL STRUTS						
INSTALL CONCRETE COLLAR/CUTOFF						
REPAIR SEAMS						
OTHER ACTION	2012	Remove debris U/S pipe 2 & 3.				
OTHER ACTION						
OTHER ACTION						
OTHER ACTION						
OTHER ACTION						
OTHER ACTION						
OTHER ACTION						
OTHER ACTION						
OTHER ACTION						
OTHER ACTION						

Structural Condition Rating (Last/Now) (%)	**44.4/44.4**	**Sufficiency Rating (Last/Now) (%)**	**37.6/36.6**	Est. Repl. Yr	2020	Maint. Reqd. (Y/N)	Yes

Special Comments for Next Inspection	Monitor rot in timber chute, settlement/voids under collar, circumferential seam pipe 4.	Department Comments	

Maintenance Reviewed By		Date		Estimated Total	0
Proposed Long-Term Strategy					
On 3-Year Program (Y/N)					
Proposed Action					
Previous Inspector's Name	Arnold Assenheimer	Previous Assistant's Name			
Next Inspection Date	10-Jan-2014	Previous Inspection Date	22-Jun-2010		
Inspection Cycle (Default) (months)	21				
Comment					