Bridge Culvert Inspection

Bridge File Number	74277 -1 Bridge Culvert	Form Type	CULM
Year Built	1957	Lot No.	1
Bridge or Town Name	WILLINGDON	Inspector Name	Owen Salava
Located Over	2ND ORDER TRIBUTARY TO VERMILION RIVER, 6.5.32.1, WATERCRS-ST	Inspector Class	BR CLS A
		Assistant Name	
Located On	29:04 C1 7.092	Assistant Class	
Water Body Cl./Year		Inspection Date	09-Nov-2012
Navigabil. Cl./Year		Data Entry By	Marcia Chavez
Legal Land Location	SW SEC 30 TWP 55 RGE 15 W4M	Data Entry Date	20-Nov-2012
Longitude, Latitude	-112:13:27, 53:46:24	Reviewer Name	John O'Brien
Road Authority	Alberta Transportation (AIT)	Review Date	15-Nov-2012
Contract Main. Area	CMA14	Dept. Reviewer Name	Andrew Smikles
Clear Roadway/Skew	12.3 /	Dept. Review Date	26-Nov-2012
AADT/Year	960 / 2011 (A)	Follow-Up By	
Road Classification	RCU-210-110		
Detour Length (km)	5		

Bridge Culvert Information

Number of Culverts	2

Pipe #	Barrel	Span	Rise (or Dia.)	Type	Length	Corr. Profile	Pl./Slab Thickness	Shape
1	MAIN	2134	1549	RPP	26.2	152X51	3.0,3.0,2.8	PIPE ARCH
2	MAIN	1829	1118	FP	26.6	68X13	3.5	ARCH

Special Features	VERT TIMBER STRUTS
Special Features Comment	

Utilities (Located at)

Utility Attachments			
Telephone		Gas	
Power	3 wire o/h, S r/w.	Municipal	
Others		Problem (Y/N)	No
Remarks			

Approach Road / Embankment

		Last	Now	Explanation of Condition
Horizontal Alignment		9	9	
Vertical Alignment		9	9	
Roadway Width (m)	12.300			
Embankment		8	8	1.3m cover over West pipe. 1.65m cover over East pipe.
Sideslope (__:1)	3.0			
(Height of Cover(m) : **1.3**)				
Guardrail (Y/N)	No			
Approach Road / Embankment General Rating		**9**	**9**	

Upstream End

Culvert Component		Last	Now	Explanation of Condition
(Pipe # : **1, Span Type: Primary Span**)				
Direction		S		West pipe.
End Treatment (Concrete, Steel, Others, None)	STEEL			
Headwall		X	X	
Collar		X	X	
Wingwalls		X	X	
(Shape :)				

Upstream End				
Culvert Component		**Last**	**Now**	**Explanation of Condition**
(Pipe # : **1, Span Type: Primary Span**)				
Cutoff Wall		X	X	
Bevel End		4	4	Small perforations. Rock/dirt washed into bevel floor.
Heaving (mm)	0			
Invert Above/Below Stream Bed	BELOW			
Above/Below (mm)	200			
Scour Protection		7	N	Snow covered.
(Type : **RIP RAP**)				
(Avg. Rock Size(mm) : **350**)				
Scour/Erosion		7	N	
Beavers (Y/N)	No			
Upstream End General Rating		**4**	**4**	

Bridge Culvert Barrel				
Culvert Component		**Last**	**Now**	**Explanation of Condition**
(Pipe # : **1, Primary Span, Location Code: MAIN, Span (mm): 2134, Rise (mm): 1549, Type: RPP**)				
Barrel Last Accessible Date	09-Nov-2012			West pipe.
Special Features				
Special Feature				
(Type :)				
Special Feature				
(Type :)				
Roof		4	3	Roof has numerous small perforations @ R1,2,8,9 - photo. Rise @ R8, 1455 with 30mm floor bulge. Roof @ R2 is flattening - photo. Perforations not extensive under roadway. Not measured due to ice.
Measured Rise (mm)	1470			
Measured At Ring No.	2			
Sag (mm)	79			
Percent Sag	5			
Sidewall		4	3	Ext perforations R1 and R2 in sidewall - photos. Numerous holes and dents from poor installation throughout.
Measured Span (mm)	2180			
Measured At Ring No.	2			
Deflection (mm)	46			
Percent Deflection	2			
Floor		5	N	Ice
Bulge (mm)	30			
Measured At Ring No.	8			
Abrasion (Y/N)	No			
Circumferential Seams		7	7	
Separation (mm)	0			
Longitudinal Seams		4	4	R3 bolts tipping.
Total No. of Cracked Rings	0			
Total No. of Rings with Two Cracked Seams				
Min. Remaining Steel Between Cracks (mm)				
Proper Lap (Y/N)	No			
Longitudinal Stagger (Y/N)	No			Roof seam is staggered.
Coating		4	3	Galvanized coating peeling off at dent locations. Active corrosion. Numerous perforations @ roof and sidewall R1, 2, 8 & 9 small spots - photo.
Corrosion By Soil (Y/N)	Yes			
Corrosion By Water (Y/N)	Yes			

Bridge Culvert Barrel				
Culvert Component		**Last**	**Now**	**Explanation of Condition**
(Pipe # : **1, Primary Span, Location Code: MAIN, Span (mm): 2134, Rise (mm): 1549, Type: RPP**)				
Camber POS/ZERO/NEG	NEG			
Ponding (Y/N)	No			
Fish Passage Adequacy		X	X	
Baffle		X	X	
(Type :)				
Waterway Adequacy		8	8	
Icing (Y/N)	No			
Silting (Y/N)	No			
Drift (Y/N)	No			
Barrel General Rating		**4**	**3**	

Downstream End				
Culvert Component		**Last**	**Now**	**Explanation of Condition**
(Pipe # : **1, Span Type: Primary Span**)				
Direction		N		W pipe.
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	Small perforations. Rocks/dirt washed into bevel floor.
Heaving (mm)	0			
Invert Above/Below Stream Bed	BELOW			
Above/Below (mm)	150			
Scour Protection		8	N	Snow covered.
(Type : **RIP RAP**)				
(Avg. Rock Size(mm) : **350**)				
Scour/Erosion		8	N	
Beavers (Y/N)	No			
Downstream End General Rating		**4**	**4**	

Upstream End				
Culvert Component		**Last**	**Now**	**Explanation of Condition**
(Pipe # : **2, Span Type: Secondary Span**)				
Direction		S		East pipe.
End Treatment (Concrete, Steel, Others, None)	STEEL			
Headwall		X	X	
Collar		X	X	
Wingwalls		X	X	
(Shape :)				
Cutoff Wall		X	X	

Upstream End				
Culvert Component		**Last**	**Now**	**Explanation of Condition**
(Pipe # : **2, Span Type: Secondary Span**)				
Bevel End		N	N	(Numerous dents and small perforations. Rocks/dirt washed into bevel floor. 14Aug2009).
Heaving (mm)	0			
Invert Above/Below Stream Bed	BELOW			
Above/Below (mm)	200			
Scour Protection		7	N	Snow covered.
(Type : **RIP RAP**)				
(Avg. Rock Size(mm) : **350**)				
Scour/Erosion		7	N	
Beavers (Y/N)	No			
Upstream End General Rating		**4**	**4**	GR carried forward from 14Aug2009.

Bridge Culvert Barrel				
Culvert Component		**Last**	**Now**	**Explanation of Condition**
(Pipe # : **2, Secondary Span, Location Code: MAIN, Span (mm): 1829, Rise (mm): 1118, Type: FP**)				
Barrel Last Accessible Date	09-Nov-2012			East pipe.
Special Features				
Special Feature			7	Only in centre 4m portion of pipe.
(Type : **VERT TIMBER STRUTS**)				
Special Feature				
(Type :)				
Roof		3	3	Large perforation @ R4, numerous small perforations @ S end.
Measured Rise (mm)	870			
Measured At Ring No.	4			
Sag (mm)	128			
Percent Sag	11			
Sidewall		4	3	Small perforations in sidewall, 40mm diameter - photo.
Measured Span (mm)	1942			
Measured At Ring No.	4			
Deflection (mm)	113			
Percent Deflection	6			
Floor		4	4	At both end sections.
Bulge (mm)	100			
Measured At Ring No.	4			At 1/4.
Abrasion (Y/N)	No			
Circumferential Seams		6	6	
Separation (mm)	50			
Longitudinal Seams		X	6	Older section is rivetted pipe.
Total No. of Cracked Rings	0			
Total No. of Rings with Two Cracked Seams	0			
Min. Remaining Steel Between Cracks (mm)	0			
Proper Lap (Y/N)				
Longitudinal Stagger (Y/N)				
Coating		4	3	Galvanized coating peeling off at dent locations. Active corrosion in large perforation, R4 - photo. Small spots - photo. Floor scaling.
Corrosion By Soil (Y/N)	Yes			
Corrosion By Water (Y/N)	Yes			
Camber POS/ZERO/NEG	ZERO			

Bridge Culvert Barrel				
Culvert Component		**Last**	**Now**	**Explanation of Condition**
(Pipe # : **2, Secondary Span, Location Code: MAIN, Span (mm): 1829, Rise (mm): 1118, Type: FP**)				
Ponding (Y/N)	No			
Fish Passage Adequacy		X	X	
Baffle		X	X	
(Type :)				
Waterway Adequacy		8	8	
Icing (Y/N)	No			
Silting (Y/N)	No			
Drift (Y/N)	No			
Barrel General Rating		**4**	**3**	

Downstream End				
Culvert Component		**Last**	**Now**	**Explanation of Condition**
(Pipe # : **2, Span Type: Secondary Span**)				
Direction		N		East pipe.
End Treatment (Concrete, Steel, Others, None)	STEEL			
Headwall		X	X	
Collar		X	X	
Wingwalls		X	X	
(Shape :)				
Cutoff Wall		X	X	
Bevel End		N	N	Rock/dirt washed into bevel floor.
Heaving (mm)	0			
Invert Above/Below Stream Bed	BELOW			
Above/Below (mm)	150			
Scour Protection		8	N	Snow covered.
(Type : **RIP RAP**)				
(Avg. Rock Size(mm) : **350**)				
Scour/Erosion		8	N	
Beavers (Y/N)	No			
Downstream End General Rating		**5**	**N**	GR was 5 from 14Aug2009.

Structure Usage				
		Last	**Now**	**Explanation of Condition**
Channel (U/S and D/S)				
Alignment		7	7	
Bank Stability		7	7	
HWM (m below Top of Culvert)				HWM not visible.
Drift (Y/N)	No			
Channel Bottom Degrading/Aggrading	NONE			
Beavers (Y/N)	No			
(Fish Compensation Measure 1 : **NONE**)				
(Fish Compensation Measure 2 : **NONE**)				
Channel General Rating		**7**	**7**	

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	2016	Replacement.				
OTHER ACTION						
OTHER ACTION						
OTHER ACTION						

Structural Condition Rating (Last/Now) (%)	**44.4/33.3**	**Sufficiency Rating (Last/Now) (%)**	**58.6/53.5**	Est. Repl. Yr	2016	Maint. Reqd. (Y/N)	Yes

Special Comments for Next Inspection		Department Comments	

Maintenance Reviewed By		Date		Estimated Total	0
Proposed Long-Term Strategy	2003.08.19 Replace culvert in 2020.				
On 3-Year Program (Y/N)					
Proposed Action					
Previous Inspector's Name	Dave Lam	Previous Assistant's Name			
Next Inspection Date	09-Aug-2014	Previous Inspection Date	07-Dec-2010		
Inspection Cycle (Default) (months)	21				
Comment					

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	2016	Replacement.	Programmed	2022		
OTHER ACTION						
OTHER ACTION						
OTHER ACTION						

Structural Condition Rating (Last/Now) (%)	**44.4/33.3**	**Sufficiency Rating (Last/Now) (%)**	**58.6/53.5**	Est. Repl. Yr	2016	Maint. Reqd. (Y/N)	Yes

Special Comments for Next Inspection		Department Comments	Programmed for replacement in 2022

Maintenance Reviewed By	Andrew Smikles	Date	17-Dec-2012	Estimated Total	0
Proposed Long-Term Strategy	2003.08.19 Replace culvert in 2020.				
On 3-Year Program (Y/N)					
Proposed Action					
Previous Inspector's Name	Dave Lam	Previous Assistant's Name			
Next Inspection Date	09-Aug-2014	Previous Inspection Date	07-Dec-2010		
Inspection Cycle (Default) (months)	21				
Comment					