

Bridge Culvert Inspection				
Bridge File Number	72356 -1 Bridge Culvert		Form Type	CULM
Year Built	1953		Lot No.	1
Bridge or Town Name	BENALTO		Inspector Name	Owen Salava
Located Over	GILPATRICK CK, 3.88.9, WATERCRS-ST		Inspector Class	BR CLS A
Located On	11:12 C1 3.311		Assistant Name	Chris Black
Water Body Cl./Year			Assistant Class	BR CLS B
Navigabil. Cl./Year			Inspection Date	30-Mar-2010
Legal Land Location	SW SEC 1 TWP 39 RGE 3 W5M		Data Entry By	Jill Potts
Longitude, Latitude	-114:18:46, 52:19:09		Data Entry Date	20-Apr-2010
Road Authority	Alberta Transportation (AIT)		Reviewer Name	John O'Brien
Contract Main. Area	CMA19		Review Date	12-Apr-2010
Clear Roadway/Skew	10.9 / -30 deg. (LHF)		Dept. Reviewer Name	Chris Black
AADT/Year	5,600 / 2009 (A)		Dept. Review Date	26-Apr-2010
Road Classification	RCU-211-110		Follow-Up By	
Detour Length (km)	6			

Bridge Culvert Information								
Number of Culverts		3						
Pipe #	Barrel	Span	Rise (or Dia.)	Type	Length	Corr. Profile	PI./Slab Thickness	Shape
1	MAIN	-	1200	MP	28	68X13	2.8	ROUND
2	MAIN	-	1200	MP	28	68X13	2.8	ROUND
3	MAIN	-	1200	MP	28	68X13	2.8	ROUND
Special Features								
Special Features Comment								

Utilities (Located at)			
Utility Attachments			
Telephone	South r/w.	Gas	
Power		Municipal	
Others	Fibre optic North r/w.	Problem (Y/N)	No
Remarks			

Approach Road / Embankment				
		Last	Now	Explanation of Condition
Horizontal Alignment		7	7	Intersection of local road 10m NW & 30m SE.
Vertical Alignment		8	8	
Roadway Width (m)	10.900			
Embankment		5	5	Steep 2:1 slope over pipe, North side.
Sideslope (__:1)	3.0			
(Height of Cover(m) : 2.1)				
Guardrail (Y/N)	No			
Approach Road / Embankment General Rating		5	7	

Upstream End				
Culvert Component		Last	Now	Explanation of Condition
(Pipe # : 1, Span Type: Primary Span)				
Direction		N		West pipe.
End Treatment (Concrete, Steel, Others, None)	NONE			
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		X	X	No bevel.
Heaving (mm)	50			
Invert Above/Below Stream Bed	BELOW			
Above/Below (mm)	300			
Scour Protection		5	5	
(Type : NATURAL)				
(Avg. Rock Size(mm) :)				
Scour/Erosion		5	5	
Beavers (Y/N)	Yes			Beaver grates @ end, dam U/S.
Upstream End General Rating		5	5	
Bridge Culvert Barrel				
Culvert Component		Last	Now	Explanation of Condition
(Pipe # : 1, Primary Span, Location Code: MAIN, Span (mm): , Rise (mm): 1200, Type: MP)				
Barrel Last Accessible Date	03-Jul-2007			West pipe. 1/2 full of ice, viewed from ends, looks ok.
Special Features				
Special Feature				
(Type :)				
Special Feature				
(Type :)				
Roof		6	N	
Measured Rise (mm)	1150			(4.2%. 03/July/2007)
Measured At Ring No.	3			
Sag (mm)	50			
Percent Sag	4			
Sidewall		4	N	
Measured Span (mm)	1285			(03/July/2007)
Measured At Ring No.	3			
Deflection (mm)	85			
Percent Deflection	7			
Floor		N	N	Under water.
Bulge (mm)				
Measured At Ring No.				
Abrasion (Y/N)				
Circumferential Seams		5	N	(At R1. 03/July/2007)
Separation (mm)	110			
Longitudinal Seams		X	N	Riveted seams.
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		5	N	(Superficial rust along floor. 03/July/2007)
Corrosion By Soil (Y/N)	No			
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): , Rise (mm): 1200, Type: MP)					
Camber POS/ZERO/NEG	NEG				
Ponding (Y/N)	No				
Fish Passage Adequacy		7	7		
Baffle		X	X		
(Type :)					
Waterway Adequacy		5	4	Appears to accumulate ice over winter.	
Icing (Y/N)	Yes				
Silting (Y/N)	No				
Drift (Y/N)	No				
Barrel General Rating		4	4	Sidewall deflection govered. G.R. carried forward from 03/July/2007.	
Downstream End					
Culvert Component		Last	Now	Explanation of Condition	
(Pipe # : 1, Span Type: Primary Span)					
Direction		S		West barrel.	
End Treatment (Concrete, Steel, Others, None)	NONE				
Headwall		X	X		
Collar		X	X		
Wingwalls		X	X		
(Shape :)					
Cutoff Wall		X	X		
Bevel End		X	X	No bevel.	
Heaving (mm)	200				
Invert Above/Below Stream Bed				At S.B.	
Above/Below (mm)	0				
Scour Protection		5	5		
(Type : NATURAL)					
(Avg. Rock Size(mm) :)					
Scour/Erosion		5	5		
Beavers (Y/N)	Yes			Upstream.	
Downstream End General Rating		5	5		
Upstream End					
Culvert Component		Last	Now	Explanation of Condition	
(Pipe # : 2, Span Type: Secondary Span)					
Direction		N		Middle span.	
End Treatment (Concrete, Steel, Others, None)	NONE				
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		5	X	
Heaving (mm)	300			
Invert Above/Below Stream Bed	ABOVE			
Above/Below (mm)	300			
Scour Protection		5	5	
(Type : NATURAL)				
(Avg. Rock Size(mm) :)				
Scour/Erosion		5	5	
Beavers (Y/N)	Yes			Dam U/S, beaver grate.
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): , Rise (mm): 1200, Type: MP)				
Barrel Last Accessible Date	03-Jul-2007			Middle pipe. 1/2 to 2/3 full of ice. Viewed from ends, no problem seen.
Special Features				
Special Feature				
(Type :)				
Special Feature				
(Type :)				
Roof		3	N	
Measured Rise (mm)	1070			
Measured At Ring No.	4			
Sag (mm)	130			
Percent Sag	10			
Sidewall		3	N	
Measured Span (mm)	1320			
Measured At Ring No.	4			
Deflection (mm)	120			
Percent Deflection	10			
Floor		5	N	
Bulge (mm)	100			
Measured At Ring No.	2			
Abrasion (Y/N)	No			
Circumferential Seams		5	N	
Separation (mm)	150			
Longitudinal Seams		N	N	Riveted seams.
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		5	N	(Superficial rust along floor. 03/July/2007)
Corrosion By Soil (Y/N)				
Corrosion By Water (Y/N)	Yes			
Camber POS/ZERO/NEG	NEG			

Bridge Culvert Barrel				
Culvert Component		Last	Now	Explanation of Condition
(Pipe # : 2, Secondary Span, Location Code: MAIN, Span (mm): , Rise (mm): 1200, Type: MP)				
Ponding (Y/N)	No			
Fish Passage Adequacy		7	7	
Baffle		X	X	
(Type :)				
Waterway Adequacy		5	4	Ice to 2/3 full.
Icing (Y/N)	Yes			
Silting (Y/N)	No			
Drift (Y/N)	No			
Barrel General Rating		3	3	Roof & sidewall deflections govern. G.R. carried over from 03/July/2007.

Downstream End				
Culvert Component		Last	Now	Explanation of Condition
(Pipe # : 2, Span Type: Secondary Span)				
Direction		S		Center 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	Bent bevel @ West.
Heaving (mm)	0			
Invert Above/Below Stream Bed	ABOVE			
Above/Below (mm)	200			
Scour Protection		5	5	
(Type : NATURAL)				
(Avg. Rock Size(mm) :)				
Scour/Erosion		5	5	Scour around bevel is minor.
Beavers (Y/N)	Yes			
Downstream End General Rating		4	4	

Upstream End				
Culvert Component		Last	Now	Explanation of Condition
(Pipe # : 3, 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		5	5	
Heaving (mm)	0			

Upstream End				
Culvert Component		Last	Now	Explanation of Condition
(Pipe # : 3, Span Type: Secondary Span)				
Invert Above/Below Stream Bed	BELOW			
Above/Below (mm)	250			
Scour Protection		4	N	(Some undermining under bevel end. 03/July/2007)
(Type : NATURAL)				
(Avg. Rock Size(mm) :)				
Scour/Erosion		4	N	(Minor erosion. 03/July/2007)
Beavers (Y/N)	Yes			Dam U/S, beaver grate.
Upstream End General Rating		5	5	
Bridge Culvert Barrel				
Culvert Component		Last	Now	Explanation of Condition
(Pipe # : 3, Secondary Span, Location Code: MAIN, Span (mm): , Rise (mm): 1200, Type: MP)				
Barrel Last Accessible Date	03-Jul-2007			East pipe. Ice to 0.1m of roof. Roof has round shape.
Special Features				
Special Feature				
(Type :)				
Special Feature				
(Type :)				
Roof		3	N	
Measured Rise (mm)	1020			
Measured At Ring No.	2			
Sag (mm)	170			
Percent Sag	14			
Sidewall		3	N	
Measured Span (mm)	1325			
Measured At Ring No.	2			
Deflection (mm)	125			
Percent Deflection	10			
Floor		5	N	
Bulge (mm)	0			
Measured At Ring No.				
Abrasion (Y/N)	No			
Circumferential Seams		3	N	(150mm deep void @ R3 due to infiltration - photo. 03/July/2007)
Separation (mm)	50			
Longitudinal Seams		X	N	Riveted seams.
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		5	N	
Corrosion By Soil (Y/N)	No			
Corrosion By Water (Y/N)	No			
Camber POS/ZERO/NEG	ZERO			
Ponding (Y/N)	No			

Bridge Culvert Barrel				
Culvert Component		Last	Now	Explanation of Condition
(Pipe # : 3, Secondary Span, Location Code: MAIN, Span (mm): , Rise (mm): 1200, Type: MP)				
Fish Passage Adequacy		7	7	
Baffle		X	X	
(Type :)				
Waterway Adequacy		5	4	(100mm gravel on floor. 03/July/2007) Ice within 0.1m of roof.
Icing (Y/N)	Yes			
Silting (Y/N)	No			
Drift (Y/N)	No			
Barrel General Rating		3	3	Roof & sidewall deflections governed. G.R. carried over from 03/July/2007.
Downstream End				
Culvert Component		Last	Now	Explanation of Condition
(Pipe # : 3, 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	
Bevel End		4	4	Damaged by mower, top dented.
Heaving (mm)	100			
Invert Above/Below Stream Bed				
Above/Below (mm)	0			
Scour Protection		4	N	(Some undermining around bevel. 03/July/2007)
(Type : NATURAL)				
(Avg. Rock Size(mm) :)				
Scour/Erosion		4	N	(Minor erosion. 03/July/2007)
Beavers (Y/N)		Yes		
Downstream End General Rating		4	4	
Structure Usage				
		Last	Now	Explanation of Condition
Channel (U/S and D/S)				
Alignment		4	4	Turns East U/S, East D/S.
Bank Stability		5	5	
HWM (m below Top of Culvert)				HWM not visible.
Drift (Y/N)		No		
Channel Bottom Degrading/Aggrading		AGGRADING		
Beavers (Y/N)		No		
(Fish Compensation Measure 1 : NONE)				
(Fish Compensation Measure 2 : NONE)				
Channel General Rating		4	4	

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	2010	Pipe #3. Install reverse coupler @ separated circumferential seam & expandable foam.		2015						Yes
OTHER ACTION	2010	Consider removal from active inspection list.								
OTHER ACTION										
OTHER ACTION										
Structural Condition Rating (Last/Now) (%)	33.3/33.3	Sufficiency Rating (Last/Now) (%)	37.3/34.2							
Special Comments for Next Inspection	No action on pipe #2 and pipe #3 ratings of "3" for roof and sidewalls. 10% sag and deflection at low end for rating of "3" so measure next time.		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	Jason Rusu	Previous Assistant's Name								
Next Inspection Date	30-Dec-2011	Previous Inspection Date	03-Jul-2007							
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	2010	Pipe #3. Install reverse coupler @ separated circumferential seam & expandable foam.	Defer			
OTHER ACTION	2010	Consider removal from active inspection list.	Replace in 10 years or less (twin cell concrete box?)			
OTHER ACTION						
OTHER ACTION						
Structural Condition Rating (Last/Now) (%)	33.3/33.3	Sufficiency Rating (Last/Now) (%)	37.3/34.2	Est. Repl. Yr	2015	Maint. Req. (Y/N) Yes
Special Comments for Next Inspection	No action on pipe #2 and pipe #3 ratings of "3" for roof and sidewalls. 10% sag and deflection at low end for rating of "3" so measure next time.		Department Comments	Excellent candidate for twin cell concrete culvert		
Maintenance Reviewed By	Paul Carrier		Date	23-Feb-2011	Estimated Total	0
Proposed Long-Term Strategy						
On 3-Year Program (Y/N)						
Proposed Action						
Previous Inspector's Name	Jason Rusu		Previous Assistant's Name			
Next Inspection Date	30-Dec-2011		Previous Inspection Date	03-Jul-2007		
Inspection Cycle (Default) (months)	21					
Comment						