

| Bridge Culvert Inspection | | | |
|---------------------------|----------------------------------------|---------------------|-----------------|
| Bridge File Number | 76754 -1 Bridge Culvert | Form Type | CULM |
| Year Built | 1975 | Lot No. | 1 |
| Bridge or Town Name | ENTRANCE | Inspector Name | Shane Hall |
| Located Over | FRED CK, 8.11.118.3.1.4.1, WATERCRS-ST | Inspector Class | BR CLS A |
| Located On | 40:30 C1 48.626 | Assistant Name | |
| Water Body Cl./Year | | Assistant Class | |
| Navigabil. Cl./Year | | Inspection Date | 18-Oct-2012 |
| Legal Land Location | SE SEC 28 TWP 53 RGE 1 W6M | Data Entry By | Theresa Lacusta |
| Longitude, Latitude | -118:04:48, 53:36:17 | Data Entry Date | 26-Nov-2012 |
| Road Authority | Alberta Transportation (AIT) | Reviewer Name | Eric Carcoux |
| Contract Main. Area | CMA13 | Review Date | 19-Nov-2012 |
| Clear Roadway/Skew | 8.8 / -49 deg. (LHF) | Dept. Reviewer Name | Brent Herrick |
| AADT/Year | 2,040 / 2011 (A) | Dept. Review Date | 06-Dec-2012 |
| Road Classification | RAU-209-110 | Follow-Up By | |
| Detour Length (km) | 420 | | |

| Bridge Culvert Information | | | | | | | | |
|----------------------------|--------|------|----------------|------|--------|---------------|--------------------|-------|
| Number of Culverts | | 2 | | | | | | |
| Pipe # | Barrel | Span | Rise (or Dia.) | Type | Length | Corr. Profile | Pl./Slab Thickness | Shape |
| 1 | MAIN | - | 1800 | MP | 34.1 | 68X13 | 3.5 | ROUND |
| 2 | MAIN | - | 1500 | MP | 34.1 | 68X13 | 3.5 | ROUND |
| Special Features | | | | | | | | |
| Special Features Comment | | | | | | | | |

| Utilities (Located at) | | | |
|------------------------|---------------------------------------------------|---------------|------------------------------------|
| Utility Attachments | | | |
| Telephone | East r/w. | Gas | Pipeline crosses both pipes SW-NE. |
| Power | | Municipal | |
| Others | | Problem (Y/N) | No |
| Remarks | File tag installed @ top of West end, South pipe. | | |

| Approach Road / Embankment | | | | |
|--------------------------------------------------|-------|----------|----------|--------------------------------------------------------------------------------------------------------|
| | | Last | Now | Explanation of Condition |
| Horizontal Alignment | | 6 | 6 | Bottom of long sag, limited sight distance. Curve to the south limiting sight distance. No passing SB. |
| Vertical Alignment | | 6 | 6 | |
| Roadway Width (m) | 8.800 | | | |
| Embankment | | N | 3 | Pipe is short and has affected width of road. 1:1 on West side is too steep. |
| Sideslope (__:1) | 2.0 | | | |
| (Height of Cover(m) : 3.8) | | | | |
| Guardrail (Y/N) | No | | | Guardrail should be installed. |
| Approach Road / Embankment General Rating | | 2 | 3 | |

| Upstream End | | | | |
|-----------------------------------------------|-------|------|-----|--------------------------|
| Culvert Component | | Last | Now | Explanation of Condition |
| (Pipe # : 1, Span Type: Primary Span) | | | | |
| Direction | | W | | South 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 | | 8 | 5 | Bottom of pipe is pitting. |
| Heaving (mm) | 150 | | | |
| Invert Above/Below Stream Bed | | | | |
| Above/Below (mm) | 0 | | | |
| Scour Protection | | N | 5 | |
| (Type : RIP RAP) | | | | |
| (Avg. Rock Size(mm) : 200) | | | | |
| Scour/Erosion | | N | 5 | |
| Beavers (Y/N) | No | | | |
| 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): 1800, Type: MP) | | | | |
| Barrel Last Accessible Date | 18-Oct-2012 | | | |
| Special Features | | | | |
| Special Feature | | | | |
| (Type :) | | | | |
| Special Feature | | | | |
| (Type :) | | | | |
| Roof | | 2 | 2 | Rise not measureable due to rock/gravel. Roof flattening in last d/s barrel section from 12:00-3:00 position.- photo Previous measurement appears adequate. |
| Measured Rise (mm) | 1468 | | | |
| Measured At Ring No. | | | | |
| Sag (mm) | 332 | | | |
| Percent Sag | 18 | | | |
| Sidewall | | 3 | 2 | Measured in 5th section. |
| Measured Span (mm) | 2109 | | | |
| Measured At Ring No. | 5 | | | |
| Deflection (mm) | 309 | | | |
| Percent Deflection | 17 | | | |
| Floor | | N | N | Covered with rock/gravel. |
| Bulge (mm) | | | | |
| Measured At Ring No. | | | | |
| Abrasion (Y/N) | | | | |
| Circumferential Seams | | 3 | 3 | D/S seam has come apart and coupler is rusted allowing infiltration.- photo Perforations in 1st, 2nd, 3rd, 4th coupler also.-photo |
| Separation (mm) | 270 | | | |
| Longitudinal Seams | | X | X | |
| 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 | 2 | (Bottom half of pipe has some scaling. 28/June/2007) Under ice. 2 small perforations in first coupler, 100mm perforation in 2nd-photo, 3rd 50mm, 4th coupler failed and fill spilling through.-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): , Rise (mm): 1800, Type: MP) | | | | | |
| Camber POS/ZERO/NEG | NEG | | | | |
| Ponding (Y/N) | Yes | | | | |
| Fish Passage Adequacy | | 4 | 4 | Outlet above streambed. | |
| Baffle | | X | X | | |
| (Type :) | | | | | |
| Waterway Adequacy | | 4 | 4 | (350 mm ice to crown at c/l. 95/02/01). (400mm ice to crown @ d/s end. (28/June/2007) | |
| Icing (Y/N) | Yes | | | | |
| Silting (Y/N) | Yes | | | | |
| Drift (Y/N) | No | | | | |
| Barrel General Rating | | 2 | 2 | | |
| Downstream End | | | | | |
| Culvert Component | | Last | Now | Explanation of Condition | |
| (Pipe # : 1, Span Type: Primary Span) | | | | | |
| Direction | | E | | South 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 | Pitting along lower 3/4. Bevel end heaving causing seam separation at coupler. | |
| Heaving (mm) | 300 | | | | |
| Invert Above/Below Stream Bed | ABOVE | | | | |
| Above/Below (mm) | 400 | | | | |
| Scour Protection | | 4 | 4 | Bevel protruding from fill. | |
| (Type : RIP RAP) | | | | | |
| (Avg. Rock Size(mm) : 200) | | | | | |
| Scour/Erosion | | 4 | 4 | Embankment fill settled. Scour/erosion around sides of bevel. | |
| 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 | | W | | North pipe. Overflow 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 | | 7 | 7 | Partial snow cover. |
| Heaving (mm) | 300 | | | |
| Invert Above/Below Stream Bed | ABOVE | | | |
| Above/Below (mm) | 2000 | | | |
| Scour Protection | | N | 7 | |
| (Type : RIP RAP) | | | | |
| (Avg. Rock Size(mm) : 200) | | | | |
| Scour/Erosion | | N | 7 | |
| Beavers (Y/N) | No | | | |
| Upstream End General Rating | | 7 | 7 | |
| Bridge Culvert Barrel | | | | |
| Culvert Component | | Last | Now | Explanation of Condition |
| (Pipe # : 2, Secondary Span, Location Code: MAIN, Span (mm): , Rise (mm): 1500, Type: MP) | | | | |
| Barrel Last Accessible Date | 18-Oct-2012 | | | Pipe curves to South. |
| Special Features | | | | |
| Special Feature | | | | |
| (Type :) | | | | |
| Special Feature | | | | |
| (Type :) | | | | |
| Roof | | 6 | 6 | |
| Measured Rise (mm) | 1460 | | | |
| Measured At Ring No. | | | | At c/l. |
| Sag (mm) | 40 | | | 2.3% |
| Percent Sag | 2 | | | |
| Sidewall | | 5 | 5 | At c/l. |
| Measured Span (mm) | 1604 | | | |
| Measured At Ring No. | | | | |
| Deflection (mm) | 104 | | | |
| Percent Deflection | 7 | | | |
| Floor | | N | 6 | |
| Bulge (mm) | 0 | | | |
| Measured At Ring No. | | | | |
| Abrasion (Y/N) | No | | | |
| Circumferential Seams | | 5 | 5 | |
| Separation (mm) | 400 | | | |
| Longitudinal Seams | | X | X | |
| 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 | 5 | |
| Corrosion By Soil (Y/N) | Yes | | | |
| 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): 1500, Type: MP) | | | | | |
| Ponding (Y/N) | Yes | | | Due to uplift on d/s bevel. | |
| Fish Passage Adequacy | | 4 | 4 | Outlet above streambed. | |
| Baffle | | X | X | | |
| (Type :) | | | | | |
| Waterway Adequacy | | 5 | 5 | (350 mm ice to crown at c/l. 95/02/01). Used as overflow pipe. | |
| Icing (Y/N) | No | | | | |
| Silting (Y/N) | Yes | | | | |
| Drift (Y/N) | No | | | | |
| Barrel General Rating | | 5 | 5 | | |
| Downstream End | | | | | |
| Culvert Component | | Last | Now | Explanation of Condition | |
| (Pipe # : 2, Span Type: Secondary Span) | | | | | |
| Direction | | E | | North 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) | 200 | | | | |
| Invert Above/Below Stream Bed | ABOVE | | | | |
| Above/Below (mm) | 2000 | | | | |
| Scour Protection | | 4 | 4 | Bevel protruding from fill. | |
| (Type : RIP RAP) | | | | | |
| (Avg. Rock Size(mm) : 200) | | | | | |
| Scour/Erosion | | 4 | 4 | | |
| Beavers (Y/N) | No | | | | |
| Downstream End General Rating | | 4 | 4 | | |
| Structure Usage | | | | | |
| | | Last | Now | Explanation of Condition | |
| Channel (U/S and D/S) | | | | | |
| Alignment | | 5 | 5 | Stream makes a sharp bend D/S from culverts. | |
| Bank Stability | | 4 | 4 | Channel banks sloughing. | |
| HWM (m below Top of Culvert) | | | | HWM not visible. | |
| Drift (Y/N) | No | | | | |
| Channel Bottom Degrading/Aggrading | DEGRADING | | | D/S only | |
| 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 | 2013 | Install struts in 1800 dia pipe as per 2002 assessment until pipe is replaced. | | | | | |
| INSTALL CONCRETE COLLAR/CUTOFF | | | | | | | |
| REPAIR SEAMS | 2013 | Repair all seams in South culvert. | | | | | |
| OTHER ACTION | 2013 | Re-Assess | | | | | |
| OTHER ACTION | | | | | | | |
| OTHER ACTION | | | | | | | |
| OTHER ACTION | | | | | | | |
| Structural Condition Rating (Last/Now) (%) | 22.2/22.2 | Sufficiency Rating (Last/Now) (%) | 10.9/12.7 | Est. Repl. Yr | 2013 | Maint. Req. (Y/N) | Yes |
| Special Comments for Next Inspection | Monitor deflections in both spans. Low rating advisory sent 18-Aug-2005, reissued 25-Jun-2007. Monitor embankment, scour, circ. seam. Inspect annually until replaced during Hwy improvement. (Assessment in 2000 indicates strutting best option.-20-04-2007 No struts installed in 1800 dia. pipe yet. Reissue LRA for 1800 dia. pipe 07-Feb-2009. Complete repairs only if reassessing not viable. LRA - Reissued 21-Nov-2012 | | 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 | Shane Hall | | Previous Assistant's Name | | | | |
| Next Inspection Date | 18-Jul-2014 | | Previous Inspection Date | 24-Nov-2010 | | | |
| Inspection Cycle (Default) (months) | 21 | | | | | | |
| Comment | | | | | | | |