

| Bridge Culvert Inspection | | | | |
|---------------------------|---------------------------------------|--|---------------------|----------------|
| Bridge File Number | 07331 -1 Bridge Culvert | | Form Type | CULM |
| Year Built | 1967 | | Lot No. | 1 |
| Bridge or Town Name | VERMILION | | Inspector Name | Jason Saly |
| Located Over | GRIZZLY BEAR CREEK, 5.11, WATERCRS-ST | | Inspector Class | BR CLS A |
| Located On | 41:18 C1 48.062 | | Assistant Name | |
| Water Body Cl./Year | | | Assistant Class | |
| Navigabil. Cl./Year | | | Inspection Date | 28-Nov-2012 |
| Legal Land Location | NW SEC 30 TWP 49 RGE 6 W4M | | Data Entry By | Marcia Chavez |
| Longitude, Latitude | -110:52:18, 53:15:37 | | Data Entry Date | 15-Jan-2013 |
| Road Authority | Alberta Transportation (AIT) | | Reviewer Name | John O'Brien |
| Contract Main. Area | CMA15 | | Review Date | 15-Dec-2012 |
| Clear Roadway/Skew | 10.5 / 20 deg. (RHF) | | Dept. Reviewer Name | Andrew Smikles |
| AADT/Year | 1,630 / 2011 (A) | | Dept. Review Date | 17-Jan-2013 |
| Road Classification | RAU-210-110 | | Follow-Up By | |
| Detour Length (km) | 38 | | | |

| Bridge Culvert Information | | | | | | | | |
|----------------------------|-------------------|------|----------------|------|--------|---------------|--------------------|-----------|
| Number of Culverts | 2 | | | | | | | |
| Pipe # | Barrel | Span | Rise (or Dia.) | Type | Length | Corr. Profile | Pl./Slab Thickness | Shape |
| 1 | MAIN | 2489 | 1753 | RPP | 38.4 | 152X51 | 3.5 | PIPE ARCH |
| 2 | MAIN | 2489 | 1753 | RPP | 38.4 | 152X51 | 3.5 | PIPE ARCH |
| Special Features | VERT STEEL STRUTS | | | | | | | |
| Special Features Comment | | | | | | | | |

| Utilities (Located at) | | | |
|------------------------|-----------|---------------|----|
| Utility Attachments | | | |
| Telephone | West r/w. | Gas | |
| Power | | Municipal | |
| Others | | Problem (Y/N) | No |
| Remarks | | | |

| Approach Road / Embankment | | | | |
|--|--------|----------|----------|---|
| | | Last | Now | Explanation of Condition |
| Horizontal Alignment | | 7 | 7 | Land access 10m NW; approach entrance @ NW. +5% grades in both directions to crest curves. Long sweeping horiz. curve through river valley passing over culverts. Roadway is superelevated over culverts. Good sight distance in both directions. |
| Vertical Alignment | | 7 | 7 | |
| Roadway Width (m) | 10.500 | | | |
| Embankment | | N | N | Snow covered. |
| Sideslope (__:1) | 3.0 | | | |
| (Height of Cover(m) : 3) | | | | |
| Guardrail (Y/N) | No | | | |
| Approach Road / Embankment General Rating | | 7 | 7 | |

| Upstream End | | | | |
|---|-------|------|-----|--------------------------|
| Culvert Component | | Last | Now | Explanation of Condition |
| (Pipe # : 1, Span Type: Primary Span) | | | | |
| Direction | | W | | South culvert. |
| End Treatment (Concrete, Steel, Others, None) | STEEL | | | |
| Headwall | | X | X | |
| Collar | | X | X | |

| Upstream End | | | | |
|---|-------------|----------|----------|---|
| Culvert Component | | Last | Now | Explanation of Condition |
| (Pipe # : 1, Span Type: Primary Span) | | | | |
| Wingwalls | | X | X | |
| (Shape :) | | | | |
| Cutoff Wall | | X | X | |
| Bevel End | | N | 5 | (Minor superficial rust on base. 16Aug2009). Bevel projects 300mm. |
| Heaving (mm) | 100 | | | |
| Invert Above/Below Stream Bed | BELOW | | | |
| Above/Below (mm) | 200 | | | |
| Scour Protection | | N | N | (Minor erosion SW corner caused by poor entrance angle. 16Aug2009) - Snow covered. |
| (Type : RIP RAP) | | | | |
| (Avg. Rock Size(mm) : 300) | | | | |
| Scour/Erosion | | N | N | Snow covered. |
| Beavers (Y/N) | No | | | |
| Upstream End General Rating | | N | 5 | |
| Bridge Culvert Barrel | | | | |
| Culvert Component | | Last | Now | Explanation of Condition |
| (Pipe # : 1, Primary Span, Location Code: MAIN, Span (mm): 2489, Rise (mm): 1753, Type: RPP) | | | | |
| Barrel Last Accessible Date | 28-Nov-2012 | | | |
| Special Features | | | | |
| Special Feature | | N | 7 | |
| (Type : VERT STEEL STRUTS) | | | | |
| Special Feature | | | | |
| (Type :) | | | | |
| Roof | | N | 4 | Could not take measurements due to ice. |
| Measured Rise (mm) | 1603 | | | |
| Measured At Ring No. | 8 | | | |
| Sag (mm) | 150 | | | (8.6%. 16Aug2009). |
| Percent Sag | 8 | | | |
| Sidewall | | 2 | 2 | (Crack longitudinal seam S side. 16Aug2009). Rating retained but seam not viewed since 16Aug2009. Covered by ice. (3.5%. 16Aug2009). |
| Measured Span (mm) | 2575 | | | |
| Measured At Ring No. | 8 | | | |
| Deflection (mm) | 86 | | | |
| Percent Deflection | 4 | | | |
| Floor | | N | N | (Rocks throughout barrel. 16Aug2009) - Ice. |
| Bulge (mm) | 0 | | | |
| Measured At Ring No. | | | | |
| Abrasion (Y/N) | No | | | |
| Circumferential Seams | | N | N | (Circumferential seams are staggered at lower sidewall seams. Not visible, under water. 16Aug2009). |
| Separation (mm) | 0 | | | |
| Longitudinal Seams | | 2 | 2 | (Total of 16 rings. 16Aug2009). Rating retained but not viewed since 16Aug2009. |
| Total No. of Cracked Rings | 11 | | | |
| Total No. of Rings with Two Cracked Seams | 0 | | | R7/R8. |
| Min. Remaining Steel Between Cracks (mm) | 30 | | | |
| Proper Lap (Y/N) | No | | | |
| Longitudinal Stagger (Y/N) | Yes | | | Continuous at change in radius. |

| Bridge Culvert Barrel | | | | |
|---|-----|----------|----------|---|
| Culvert Component | | Last | Now | Explanation of Condition |
| (Pipe # : 1, Primary Span, Location Code: MAIN, Span (mm): 2489, Rise (mm): 1753, Type: RPP) | | | | |
| Coating | | N | 5 | Superficial rust from bolt holes and lower 1/3; worst corrosion at sidewall to corner plate seam. Scaling under normal waterline. |
| Corrosion By Soil (Y/N) | Yes | | | |
| Corrosion By Water (Y/N) | Yes | | | |
| Camber POS/ZERO/NEG | NEG | | | |
| Ponding (Y/N) | No | | | |
| Fish Passage Adequacy | | 6 | 6 | |
| Baffle | | X | X | |
| (Type :) | | | | |
| Waterway Adequacy | | N | 5 | (Some rocks throughout barrel. 16Aug2009). |
| Icing (Y/N) | No | | | |
| Silting (Y/N) | No | | | |
| 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 culvert. |
| End Treatment (Concrete, Steel, Others, None) | STEEL | | | |
| Headwall | | X | X | |
| Collar | | X | X | |
| Wingwalls | | X | X | |
| (Shape :) | | | | |
| Cutoff Wall | | X | X | |
| Bevel End | | N | 6 | |
| Heaving (mm) | 100 | | | |
| Invert Above/Below Stream Bed | BELOW | | | |
| Above/Below (mm) | 200 | | | |
| Scour Protection | | N | N | Snow covered. |
| (Type : RIP RAP) | | | | |
| (Avg. Rock Size(mm) : 300) | | | | |
| Scour/Erosion | | N | N | Snow/ice covered. |
| Beavers (Y/N) | No | | | |
| Downstream End General Rating | | N | 6 | |

| Upstream End | | | | |
|--|-------|------|-----|--------------------------|
| Culvert Component | | Last | Now | Explanation of Condition |
| (Pipe # : 2, Span Type: Secondary Span) | | | | |
| Direction | | W | | North culvert. |
| End Treatment (Concrete, Steel, Others, None) | STEEL | | | |
| Headwall | | X | X | |
| Collar | | X | X | |

| Upstream End | | | | |
|---|-------------|----------|----------|--|
| Culvert Component | | Last | Now | Explanation of Condition |
| (Pipe # : 2, Span Type: Secondary Span) | | | | |
| Wingwalls | | X | X | |
| (Shape :) | | | | |
| Cutoff Wall | | X | X | |
| Bevel End | | N | 5 | |
| Heaving (mm) | 100 | | | |
| Invert Above/Below Stream Bed | BELOW | | | |
| Above/Below (mm) | 200 | | | |
| Scour Protection | | N | N | Snow covered. |
| (Type : RIP RAP) | | | | |
| (Avg. Rock Size(mm) : 300) | | | | |
| Scour/Erosion | | N | N | Snow covered. |
| Beavers (Y/N) | No | | | |
| Upstream End General Rating | | N | 5 | |
| Bridge Culvert Barrel | | | | |
| Culvert Component | | Last | Now | Explanation of Condition |
| (Pipe # : 2, Secondary Span, Location Code: MAIN, Span (mm): 2489, Rise (mm): 1753, Type: RPP) | | | | |
| Barrel Last Accessible Date | 28-Nov-2012 | | | |
| Special Features | | | | |
| Special Feature | | N | 7 | |
| (Type : VERT STEEL STRUTS) | | | | |
| Special Feature | | | | |
| (Type :) | | | | |
| Roof | | N | 4 | Could not take measurements due to ice. |
| Measured Rise (mm) | 1600 | | | |
| Measured At Ring No. | 8 | | | |
| Sag (mm) | 153 | | | (8.7%. 16Aug2009). |
| Percent Sag | 9 | | | |
| Sidewall | | 2 | 2 | (Crack in long. seam in S side. 16Aug2009). Rating retained but not viewed since 16Aug2009. Could not get accurate measurements due to ice levels. (2.8%. 16Aug2009). |
| Measured Span (mm) | 2560 | | | |
| Measured At Ring No. | 8 | | | |
| Deflection (mm) | 71 | | | |
| Percent Deflection | 3 | | | |
| Floor | | N | N | (Rocks in barrel floor. 16Aug2009) - Ice. |
| Bulge (mm) | 0 | | | |
| Measured At Ring No. | | | | |
| Abrasion (Y/N) | No | | | |
| Circumferential Seams | | N | N | (Circumferential seams are staggered at lower sidewall seams. Not visible, under water. 16Aug2009). |
| Separation (mm) | 0 | | | |
| Longitudinal Seams | | 2 | 2 | (Total of 16 rings. 16Aug2009). Rating retained but not viewed; seam below ice level. |
| Total No. of Cracked Rings | 11 | | | |
| Total No. of Rings with Two Cracked Seams | 0 | | | |
| Min. Remaining Steel Between Cracks (mm) | 40 | | | |
| Proper Lap (Y/N) | No | | | |
| Longitudinal Stagger (Y/N) | Yes | | | Continuous at change in radius. |

| Bridge Culvert Barrel | | | | |
|---|-------|----------|----------|---|
| Culvert Component | | Last | Now | Explanation of Condition |
| (Pipe # : 2, Secondary Span, Location Code: MAIN, Span (mm): 2489, Rise (mm): 1753, Type: RPP) | | | | |
| Coating | | N | 5 | Superficial rust from bolt holes and lower 1/3; worst visible corrosion at sidewall to corner plate seam. (Scaling below springline. 16Aug2009). |
| Corrosion By Soil (Y/N) | Yes | | | |
| Corrosion By Water (Y/N) | Yes | | | |
| Camber POS/ZERO/NEG | NEG | | | |
| Ponding (Y/N) | No | | | |
| Fish Passage Adequacy | | 6 | 6 | |
| Baffle | | X | X | |
| (Type :) | | | | |
| Waterway Adequacy | | N | 6 | |
| Icing (Y/N) | No | | | |
| Silting (Y/N) | No | | | |
| Drift (Y/N) | No | | | |
| Barrel General Rating | | 2 | 2 | |
| Downstream End | | | | |
| Culvert Component | | Last | Now | Explanation of Condition |
| (Pipe # : 2, Span Type: Secondary Span) | | | | |
| Direction | | E | | North culvert. |
| End Treatment (Concrete, Steel, Others, None) | STEEL | | | |
| Headwall | | X | X | |
| Collar | | X | X | |
| Wingwalls | | X | X | |
| (Shape :) | | | | |
| Cutoff Wall | | X | X | |
| Bevel End | | N | 6 | |
| Heaving (mm) | 100 | | | |
| Invert Above/Below Stream Bed | BELOW | | | |
| Above/Below (mm) | 200 | | | |
| Scour Protection | | N | N | Snow covered. |
| (Type : RIP RAP) | | | | |
| (Avg. Rock Size(mm) : 300) | | | | |
| Scour/Erosion | | N | N | Snow covered. |
| Beavers (Y/N) | No | | | |
| Downstream End General Rating | | N | 6 | |
| Structure Usage | | | | |
| | | Last | Now | Explanation of Condition |
| Channel (U/S and D/S) | | | | |
| Alignment | | N | N | (Low water entrance to S pipe marginal causing erosion on SW corner. Low banks. Channel leading to N channel not well defined. Main channel leading to S culvert. Drains into dugout @ E. 16Aug2009). Snow covered. |
| Bank Stability | | N | N | |
| HWM (m below Top of Culvert) | | | | HWM not visible. |
| Drift (Y/N) | No | | | |

| Structure Usage | | | | |
|--|----|----------|----------|---|
| | | Last | Now | Explanation of Condition |
| Channel Bottom Degrading/Aggrading | | | | Unknown. |
| Beavers (Y/N) | No | | | |
| (Fish Compensation Measure 1 : NONE) | | | | |
| (Fish Compensation Measure 2 : NONE) | | | | |
| Channel General Rating | | 5 | 5 | GR carried forward from 16Aug2009 based on alignment. |

| 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 | 2013 | Dewater, complete Lvl 2 culvert inspection. | | | | | | | | |
| OTHER ACTION | | | | | | | | | | |
| OTHER ACTION | | | | | | | | | | |
| OTHER ACTION | | | | | | | | | | |
| OTHER ACTION | | | | | | | | | | |
| Structural Condition Rating (Last/Now) (%) | 22.2/22.2 | Sufficiency Rating (Last/Now) (%) | 48.1/36.1 | Est. Repl. Yr | 2020 | Maint. Req'd. (Y/N) | Yes | | | |
| Special Comments for Next Inspection | Inspect at 12mth cycle or after high water event. LRA issued 06Dec2012. | | Department Comments | | | | | | | |
| Maintenance Reviewed By | | | Date | | Estimated Total | 0 | | | | |
| Proposed Long-Term Strategy | 2004.05.29 South Culvert has 11 cracked ringd, north culvert has 12 cracked rings. Both culverts are strutted. Should be good until 2017. | | | | | | | | | |
| On 3-Year Program (Y/N) | | | | | | | | | | |
| Proposed Action | | | | | | | | | | |
| Previous Inspector's Name | Jason Saly | Previous Assistant's Name | | | | | | | | |
| Next Inspection Date | 28-Aug-2014 | Previous Inspection Date | 07-Mar-2011 | | | | | | | |
| 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 | 2013 | Dewater, complete Lvl 2 culvert inspection. | Defer. Struts Functioning Well. | | | |
| OTHER ACTION | | | | | | |
| OTHER ACTION | | | | | | |
| OTHER ACTION | | | | | | |
| OTHER ACTION | | | | | | |
| Structural Condition Rating (Last/Now) (%) | 22.2/22.2 | Sufficiency Rating (Last/Now) (%) | 48.1/36.1 | Est. Repl. Yr | 2020 | Maint. Req. (Y/N) Yes |
| Special Comments for Next Inspection | Inspect at 12mth cycle or after high water event. LRA issued 06Dec2012. | | Department Comments | Low Risk due to struts & high fill. Inspect on regular BIM cycle. Currently scheduled in PMA to be replaced in 2018. | | |
| Maintenance Reviewed By | Chris Black | | Date | 29-Apr-2013 | Estimated Total | 0 |
| Proposed Long-Term Strategy | 2004.05.29 South Culvert has 11 cracked ringd, north culvert has 12 cracked rings. Both culverts are strutted. Should be good until 2017. | | | | | |
| On 3-Year Program (Y/N) | | | | | | |
| Proposed Action | | | | | | |
| Previous Inspector's Name | Jason Saly | | Previous Assistant's Name | | | |
| Next Inspection Date | 28-Aug-2014 | | Previous Inspection Date | 07-Mar-2011 | | |
| Inspection Cycle (Default) (months) | 21 | | | | | |
| Comment | | | | | | |