

| Bridge Culvert Inspection |                                  |  |                     |                |
|---------------------------|----------------------------------|--|---------------------|----------------|
| Bridge File Number        | 01443 -1 Bridge Culvert          |  | Form Type           | CUL1           |
| Year Built                | 1961                             |  | Lot No.             | 2              |
| Bridge or Town Name       | BENTLEY                          |  | Inspector Name      | Owen Salava    |
| Located Over              | RAINY CREEK, 3.78.6, WATERCRS-ST |  | Inspector Class     | BR CLS A       |
| Located On                | 20:02 C1 14.423                  |  | Assistant Name      |                |
| Water Body Cl./Year       |                                  |  | Assistant Class     |                |
| Navigabil. Cl./Year       |                                  |  | Inspection Date     | 11-Jul-2012    |
| Legal Land Location       | SW SEC 3 TWP 40 RGE 1 W5M        |  | Data Entry By       | Marcia Chavez  |
| Longitude, Latitude       | -114:04:26, 52:24:41             |  | Data Entry Date     | 20-Aug-2012    |
| Road Authority            | Alberta Transportation (AIT)     |  | Reviewer Name       | John O'Brien   |
| Contract Main. Area       | CMA19                            |  | Review Date         | 30-Jul-2012    |
| Clear Roadway/Skew        | 9.6 /                            |  | Dept. Reviewer Name | Andrew Smikles |
| AADT/Year                 | 5,630 / 2011 (A)                 |  | Dept. Review Date   | 21-Aug-2012    |
| Road Classification       | RAU-210-110                      |  | Follow-Up By        |                |
| Detour Length (km)        | 3                                |  |                     |                |

| Bridge Culvert Information |        |      |                |      |        |               |                    |       |
|----------------------------|--------|------|----------------|------|--------|---------------|--------------------|-------|
| Number of Culverts         |        | 1    |                |      |        |               |                    |       |
| Pipe #                     | Barrel | Span | Rise (or Dia.) | Type | Length | Corr. Profile | Pl./Slab Thickness | Shape |
| 1                          | MAIN   | -    | 3495           | SP   | 40.2   | 152X51        | 4.2                | ROUND |
| Special Features           |        |      |                |      |        |               |                    |       |
| Special Features Comment   |        |      |                |      |        |               |                    |       |

| Utilities (Located at) |                                  |  |                  |
|------------------------|----------------------------------|--|------------------|
| Utility Attachments    |                                  |  |                  |
| Telephone              | East r/w.                        |  | Gas              |
| Power                  | 1 line 15m c/l East r/w boudary. |  | Municipal        |
| Others                 |                                  |  | Problem (Y/N) No |
| Remarks                |                                  |  |                  |

| Approach Road / Embankment                       |       |          |          |                                     |
|--|-------|----------|----------|-------------------------------------|
|  |       | Last     | Now      | Explanation of Condition            |
| Horizontal Alignment                             |       | 7        | 7        | Hill at North in sag curve.         |
| Vertical Alignment                               |       | 7        | 7        | No passing, limited sight distance. |
| Roadway Width (m)                                | 9.600 |          |          |                                     |
| Embankment                                       |       | 6        | 6        | Over pipe. 3:1 at road.             |
| Sideslope ( _ :1)                                | 4.0   |          |          |                                     |
| (Height of Cover(m) : 1.8)                       |       |          |          |                                     |
| Guardrail (Y/N)                                  | Yes   |          |          |                                     |
| <b>Approach Road / Embankment General Rating</b> |       | <b>7</b> | <b>7</b> |                                     |

| Upstream End                                  |       |      |     |                          |
|---|-------|------|-----|--------------------------|
| Culvert Component                             |       | Last | Now | Explanation of Condition |
| Direction                                     |       | W    |     |                          |
| 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   |
| Bevel End   |             | 4        | 4        | Bevel projects from fill 300mm and heaving. Minor.   |
| Heaving (mm)  | 250         |          |          |  |
| Invert Above/Below Stream Bed   | BELOW       |          |          |  |
| Above/Below (mm)  | 100         |          |          |  |
| Scour Protection  |             | N        | 4        | (Insufficient rock at toe of bevel. 07Feb2008) - Unable to confirm rock due to heavy vegetation. |
| (Type : <b>RIP RAP</b> )  |             |          |          |  |
| (Avg. Rock Size(mm) : <b>300</b> )  |             |          |          |  |
| Scour/Erosion   |             | N        | 4        | Minor scour at banks.<br>Minor scour around haunch area.   |
| Beavers (Y/N)   | No          |          |          |  |
| <b>Upstream End General Rating</b>  |             | <b>4</b> | <b>4</b> |  |
| Bridge Culvert Barrel   |             |          |          |  |
| Culvert Component   |             | Last     | Now      | Explanation of Condition   |
| (Pipe # : 1, Primary Span, Location Code: MAIN, Span (mm): , Rise (mm): 3495, Type: SP) |             |          |          |  |
| Barrel Last Accessible Date   | 11-Jul-2012 |          |          |  |
| <b>Special Features</b>   |             |          |          |  |
| Special Feature   |             |          |          |  |
| (Type : )   |             |          |          |  |
| Special Feature   |             |          |          |  |
| (Type : )   |             |          |          |  |
| Roof  |             | 6        | 6        | Avg 200 mm rock on floor.<br><br>1.7%  |
| Measured Rise (mm)  | 3436        |          |          |  |
| Measured At Ring No.  |             |          |          |  |
| Sag (mm)  | 59          |          |          |  |
| Percent Sag   | 2           |          |          |  |
| Sidewall  |             | 6        | 6        | 2.6% sidewall.   |
| Measured Span (mm)  | 3585        |          |          |  |
| Measured At Ring No.  | 7           |          |          |  |
| Deflection (mm)   | 90          |          |          |  |
| Percent Deflection  | 3           |          |          |  |
| Floor   |             | N        | 6        |  |
| Bulge (mm)  | 0           |          |          |  |
| Measured At Ring No.  |             |          |          |  |
| Abrasion (Y/N)  | No          |          |          |  |
| Circumferential Seams   |             | 5        | 5        | Barrel leaks through seams from spring line down.  |
| Separation (mm)   | 0           |          |          |  |
| Longitudinal Seams  |             | 6        | 6        |  |
| Total No. of Cracked Rings  | 0           |          |          |  |
| Total No. of Rings with Two Cracked Seams   | 0           |          |          |  |
| Min. Remaining Steel Between Cracks (mm)  |             |          |          |  |
| Proper Lap (Y/N)  | Yes         |          |          |  |
| Longitudinal Stagger (Y/N)  | Yes         |          |          |  |
| Coating   |             | 5        | 5        | Minor superficial at lower 1/3.  |
| Corrosion By Soil (Y/N)   | Yes         |          |          |  |
| Corrosion By Water (Y/N)  | Yes         |          |          |  |
| Camber POS/ZERO/NEG   | ZERO        |          |          |  |
| Ponding (Y/N)   | No          |          |          |  |

| Bridge Culvert Barrel   |       |          |          |                          |
|---|-------|----------|----------|--------------------------|
| Culvert Component   |       | Last     | Now      | Explanation of Condition |
| (Pipe # : 1, Primary Span, Location Code: MAIN, Span (mm): , Rise (mm): 3495, Type: SP) |       |          |          |                          |
| Fish Passage Adequacy   |       | 7        | 7        |                          |
| Baffle  |       | X        | X        |                          |
| (Type : )   |       |          |          |                          |
| Waterway Adequacy   |       | 7        | 7        |                          |
| Icing (Y/N)   | No    |          |          |                          |
| Siltting (Y/N)  | No    |          |          |                          |
| Drift (Y/N)   | No    |          |          |                          |
| <b>Barrel General Rating</b>  |       | <b>6</b> | <b>6</b> |                          |
| Downstream End  |       |          |          |                          |
| Culvert Component   |       | Last     | Now      | Explanation of Condition |
| Direction   |       | E        |          |                          |
| End Treatment (Concrete, Steel, Others, None)   | STEEL |          |          |                          |
| Headwall  |       | X        | X        |                          |
| Collar  |       | X        | X        |                          |
| Wingwalls   |       | X        | X        |                          |
| (Shape : )  |       |          |          |                          |
| Cutoff Wall   |       | X        | X        |                          |
| Bevel End   |       | 7        | 7        |                          |
| Heaving (mm)  | 0     |          |          |                          |
| Invert Above/Below Stream Bed   | BELOW |          |          |                          |
| Above/Below (mm)  | 300   |          |          |                          |
| Scour Protection  |       | N        | 6        | Well vegetated.          |
| (Type : <b>NATURAL</b> )  |       |          |          |                          |
| (Avg. Rock Size(mm) : )   |       |          |          |                          |
| Scour/Erosion   |       | N        | 6        |                          |
| Beavers (Y/N)   | No    |          |          |                          |
| <b>Downstream End General Rating</b>  |       | <b>4</b> | <b>6</b> |                          |
| Structure Usage   |       |          |          |                          |
|   |       | Last     | Now      | Explanation of Condition |
| <b>Channel (U/S and D/S)</b>  |       |          |          |                          |
| Alignment   |       | 7        | 7        |                          |
| Bank Stability  |       | 6        | 6        |                          |
| HWM (m below Top of Culvert)  |       |          |          | HWM not visible.         |
| Drift (Y/N)   | No    |          |          |                          |
| Channel Bottom Degrading/Aggrading  |       |          |          |                          |
| Beavers (Y/N)   | No    |          |          |                          |
| (Fish Compensation Measure 1 : <b>NONE</b> )  |       |          |          |                          |
| (Fish Compensation Measure 2 : <b>NONE</b> )  |       |          |          |                          |
| <b>Channel General Rating</b>   |       | <b>7</b> | <b>7</b> |                          |

| Maintenance Recommendations                       |   |  |                     |               |           |                   |     |
|---|---|--|---------------------|---------------|-----------|-------------------|-----|
| Inspector Recommendations                         | Year  | Inspector Comments                       | Department Comments | Target Year   | Est. Cost | Cat #             |     |
| SHOTCRETE REPAIRS                                 |   |  |                     |               |           |                   |     |
| PLACE ADDITIONAL RIP RAP                          | 2012  | S-1418 U/S & D/S. 10m3 each end.         |                     |               |           |                   |     |
| REMOVE DRIFT ACCUMULATION                         |   |  |                     |               |           |                   |     |
| INSTALL CONCRETE/STEEL LINING                     |   |  |                     |               |           |                   |     |
| INSTALL STRUTS                                    |   |  |                     |               |           |                   |     |
| INSTALL CONCRETE COLLAR/CUTOFF                    | 2015  | Collar at u/s end.                       |                     |               |           |                   |     |
| REPAIR SEAMS                                      |   |  |                     |               |           |                   |     |
| OTHER ACTION                                      |   |  |                     |               |           |                   |     |
| OTHER ACTION                                      |   |  |                     |               |           |                   |     |
| OTHER ACTION                                      |   |  |                     |               |           |                   |     |
| OTHER ACTION                                      |   |  |                     |               |           |                   |     |
| <b>Structural Condition Rating (Last/Now) (%)</b> | <b>66.7/66.7</b>  | <b>Sufficiency Rating (Last/Now) (%)</b> | <b>62.3/64.2</b>    | Est. Repl. Yr | 2035      | Maint. Req. (Y/N) | Yes |
| Special Comments for Next Inspection              | Barrel is in good condition, only concern is bevel heaving & lack of any weight on top of inlet. The pipe has another 30yrs life but heaving will get worse; therefore, recommend installing collar at this time. Riprap is not a concern but may want to bring up to std d/s & u/s at some 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                         | Owen Salava   | Previous Assistant's Name                |                     |               |           |                   |     |
| Next Inspection Date                              | 11-Apr-2014   | Previous Inspection Date                 | 08-Dec-2010         |               |           |                   |     |
| Inspection Cycle (Default) (months)               | 21  |  |                     |               |           |                   |     |
| Comment   |   |  |                     |               |           |                   |     |