

| Bridge Culvert Inspection |                                   |  |                     |                    |
|---------------------------|-----------------------------------|--|---------------------|--------------------|
| Bridge File Number        | 76108 -1 Bridge Culvert           |  | Form Type           | CULM               |
| Year Built                | 1964                              |  | Lot No.             | 1                  |
| Bridge or Town Name       | EDMONTON                          |  | Inspector Name      | Kris Bosters       |
| Located Over              | GOLD BAR CREEK, 6.80, WATERCRS-ST |  | Inspector Class     | BR CLS A           |
| Located On                | 216:04 L1 5.933;216:04 R1 5.948   |  | Assistant Name      |                    |
| Water Body Cl./Year       |                                   |  | Assistant Class     |                    |
| Navigabil. Cl./Year       |                                   |  | Inspection Date     | 05-Apr-2011        |
| Legal Land Location       | SW SEC 28 TWP 52 RGE 23 W4M       |  | Data Entry By       | Theresa Lacusta    |
| Longitude, Latitude       | -113:20:41, 53:31:06              |  | Data Entry Date     | 18-Apr-2011        |
| Road Authority            | Alberta Transportation (AIT)      |  | Reviewer Name       | Arnold Assenheimer |
| Contract Main. Area       | CMA09                             |  | Review Date         | 11-Apr-2011        |
| Clear Roadway/Skew        | 39 /                              |  | Dept. Reviewer Name | Brent Herrick      |
| AADT/Year                 | 49,080 / 2009 (A)                 |  | Dept. Review Date   | 19-Apr-2011        |
| Road Classification       | RAD-616.6-130                     |  | Follow-Up By        |                    |
| Detour Length (km)        | 3                                 |  |                     |                    |

**Bridge Culvert Information**

|                          |        |      |                |      |        |               |                    |       |
|--------------------------|--------|------|----------------|------|--------|---------------|--------------------|-------|
| Number of Culverts       | 2      |      |                |      |        |               |                    |       |
| Pipe #                   | Barrel | Span | Rise (or Dia.) | Type | Length | Corr. Profile | PI./Slab Thickness | Shape |
| 1                        | MAIN   | -    | 1829           | MP   | 105    | 68X13         | 3.0                | ROUND |
| 2                        | MAIN   | -    | 760            | MP   | 100    | 68X13         |                    | ROUND |
| Special Features         |        |      |                |      |        |               |                    |       |
| Special Features Comment |        |      |                |      |        |               |                    |       |

**Utilities (Located at)**

|                     |                               |               |                              |
|---------------------|-------------------------------|---------------|------------------------------|
| Utility Attachments |                               |               |                              |
| Telephone           | East r/w.                     | Gas           | 20m North parallel to pipes. |
| Power               | 4 wires cross over D/S bevel. | Municipal     |                              |
| Others              | Street lighting.              | Problem (Y/N) | No                           |
| Remarks             |                               |               |                              |

**Approach Road / Embankment**

|  |        | Last     | Now      | Explanation of Condition   |
|--|--------|----------|----------|--|
| Horizontal Alignment                             |        | 8        | 8        | On/off ramp to south.  |
| Vertical Alignment                               |        | 8        | 8        | 1:1 on North pipe.<br>The service roads have 1 m of cover east, 2 m of cover west, while the divided Hwy 14X has 3.5 m of cover. |
| Roadway Width (m)                                | 39.000 |          |          | Z-12.4, ESR 6.9, WSR 7.3   |
| Embankment                                       |        | 7        | 7        |  |
| Sideslope (__:1)                                 | 1.0    |          |          |  |
| (Height of Cover(m) : 1)                         |        |          |          |  |
| Guardrail (Y/N)                                  | No     |          |          |  |
| <b>Approach Road / Embankment General Rating</b> |        | <b>8</b> | <b>8</b> |  |

**Upstream 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   |                          |

| Upstream End   |             |          |          |   |
|--|-------------|----------|----------|---|
| Culvert Component  |             | Last     | Now      | Explanation of Condition  |
| <b>(Pipe # : 1, Span Type: Primary Span)</b>   |             |          |          |   |
| Wingwalls  |             | X        | X        |   |
| (Shape : )   |             |          |          |   |
| Cutoff Wall  |             | X        | X        |   |
| Bevel End  |             | 4        | N        | Isolated perforations in floor of bevel - photo .   |
| Heaving (mm)   | 150         |          |          |   |
| Invert Above/Below Stream Bed  | ABOVE       |          |          |   |
| Above/Below (mm)   | 50          |          |          |   |
| Scour Protection   |             | 4        | N        | NO ROCK AROUND BEVEL.   |
| (Type : <b>RIP RAP, NATURAL</b> )  |             |          |          |   |
| (Avg. Rock Size(mm) : <b>200</b> )   |             |          |          |   |
| Scour/Erosion  |             | 4        | N        | Scour to 0.75m on sides.<br>Eroding banks NE.   |
| Beavers (Y/N)  | No          |          |          |   |
| <b>Upstream End General Rating</b>   |             | <b>4</b> | <b>4</b> | GR carried fwd.-23-June-2009  |
| Bridge Culvert Barrel  |             |          |          |   |
| Culvert Component  |             | Last     | Now      | Explanation of Condition  |
| <b>(Pipe # : 1, Primary Span, Location Code: MAIN, Span (mm): , Rise (mm): 1829, Type: MP)</b> |             |          |          |   |
| Barrel Last Accessible Date  | 23-Jun-2009 |          |          | South barrel.   |
| <b>Special Features</b>  |             |          |          |   |
| Special Feature  |             |          |          | Too much ice/water to enter arre.<br>Viewed barrel from ends.<br>Shape looks good.  |
| (Type : )  |             |          |          |   |
| Special Feature  |             |          |          |   |
| (Type : )  |             |          |          |   |
| Roof   |             | 6        | 6        | 1916 U/S  |
| Measured Rise (mm)   | 1791        |          |          |   |
| Measured At Ring No.   |             |          |          | 37m from U/S.   |
| Sag (mm)   | 38          |          |          |   |
| Percent Sag  | 2           |          |          |   |
| Sidewall   |             | 6        | 6        | 1693 U/S  |
| Measured Span (mm)   | 1864        |          |          |   |
| Measured At Ring No.   |             |          |          | 37m from U/S.   |
| Deflection (mm)  | 35          |          |          | 2.1%  |
| Percent Deflection   | 2           |          |          |   |
| Floor  |             | 2        | N        | Numerous large perforations between 24m to 44m from U/S end - photo. Floor is 10% rusted out.<br>Numerous small perforations@ 7:00 pos. 20m from d/s end. |
| Bulge (mm)   | 0           |          |          |   |
| Measured At Ring No.   |             |          |          |   |
| Abrasion (Y/N)   | Yes         |          |          |   |
| Circumferential Seams  |             | 3        | N        | Perforation in seam @ d/s end (photo). Seam separated 200mm due to bevel uplift.  |
| Separation (mm)  | 0           |          |          |   |
| Longitudinal Seams   |             | 5        | N        | Rivettted seams.  |
| 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)   | Yes         |          |          |   |
| Longitudinal Stagger (Y/N)   | Yes         |          |          |   |

| Bridge Culvert Barrel   |       |          |          |  |  |
|---|-------|----------|----------|--|--|
| Culvert Component   |       | Last     | Now      | Explanation of Condition   |  |
| (Pipe # : 1, Primary Span, Location Code: MAIN, Span (mm): , Rise (mm): 1829, Type: MP) |       |          |          |  |  |
| Coating   |       | 2        | N        | Heavy scaling & rusting on lower 1/4, perforations in U/S & D/S bevel.<br>Approx. 40m of floor has perforations. |  |
| Corrosion By Soil (Y/N)   | Yes   |          |          |  |  |
| Corrosion By Water (Y/N)  | Yes   |          |          |  |  |
| Camber POS/ZERO/NEG   | NEG   |          |          |  |  |
| Ponding (Y/N)   | No    |          |          |  |  |
| Fish Passage Adequacy   |       | 3        | 3        | 150mm drop @ outlet inlet.   |  |
| Baffle  |       | X        | X        |  |  |
| (Type : )   |       |          |          |  |  |
| Waterway Adequacy   |       | 6        | N        |  |  |
| Icing (Y/N)   | No    |          |          |  |  |
| Silting (Y/N)   | No    |          |          |  |  |
| Drift (Y/N)   | No    |          |          |  |  |
| <b>Barrel General Rating</b>  |       | <b>2</b> | <b>2</b> | GR carried fwd from 23-Jun-2009  |  |
| Downstream 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 : )  |       |          |          |  |  |
| Cutoff Wall   |       | X        | X        |  |  |
| Bevel End   |       | 3        | N        | Numerous perforations in floor.(photo)<br>Too much ice to view.  |  |
| Heaving (mm)  | 250   |          |          |  |  |
| Invert Above/Below Stream Bed   | ABOVE |          |          |  |  |
| Above/Below (mm)  | 300   |          |          |  |  |
| Scour Protection  |       | 5        | N        | Too much ice.  |  |
| (Type : <b>NATURAL</b> )  |       |          |          |  |  |
| (Avg. Rock Size(mm) : )   |       |          |          |  |  |
| Scour/Erosion   |       | 5        | N        | Too much ice.  |  |
| Beavers (Y/N)   | No    |          |          |  |  |
| <b>Downstream End General Rating</b>  |       | <b>3</b> | <b>3</b> | GR carried fwd from 23-June-2009   |  |
| Upstream End  |       |          |          |  |  |
| Culvert Component   |       | Last     | Now      | Explanation of Condition   |  |
| (Pipe # : 2, Span Type: Secondary Span)   |       |          |          |  |  |
| Direction   |       | E        |          | North pipe. This culvert is 8 m north of the primary.<br>Pipe burried in snow. Could not locate.                 |  |
| End Treatment (Concrete, Steel, Others, None)   | NONE  |          |          |  |  |
| Headwall  |       | X        | X        |  |  |
| Collar  |       | X        | X        |  |  |

| Upstream End                                   |       |          |          |                          |
|--|-------|----------|----------|--------------------------|
| Culvert Component                              |       | Last     | Now      | Explanation of Condition |
| <b>(Pipe # : 2, Span Type: Secondary Span)</b> |       |          |          |                          |
| Wingwalls                                      |       | X        | X        |                          |
| (Shape : )                                     |       |          |          |                          |
| Cutoff Wall                                    |       | X        | X        |                          |
| Bevel End                                      |       | 6        | N        |                          |
| Heaving (mm)                                   | 0     |          |          |                          |
| Invert Above/Below Stream Bed                  | BELOW |          |          |                          |
| Above/Below (mm)                               | 200   |          |          |                          |
| Scour Protection                               |       | 6        | N        |                          |
| (Type : <b>RIP RAP, NATURAL</b> )              |       |          |          |                          |
| (Avg. Rock Size(mm) : <b>200</b> )             |       |          |          |                          |
| Scour/Erosion                                  |       | 6        | N        |                          |
| Beavers (Y/N)                                  | No    |          |          |                          |
| <b>Upstream End General Rating</b>             |       | <b>6</b> | <b>6</b> | GR carried fwd.          |

| Bridge Culvert Barrel   |             |      |     |  |
|---|-------------|------|-----|--|
| Culvert Component   |             | Last | Now | Explanation of Condition   |
| <b>(Pipe # : 2, Secondary Span, Location Code: MAIN, Span (mm): , Rise (mm): 760, Type: MP)</b> |             |      |     |  |
| Barrel Last Accessible Date   | 12-Sep-2007 |      |     | South barrel. Not accesible too small.   |
| <b>Special Features</b>   |             |      |     |  |
| Special Feature   |             |      |     |  |
| (Type : )   |             |      |     |  |
| Special Feature   |             |      |     |  |
| (Type : )   |             |      |     |  |
| Roof  |             | 7    | N   | Blocked D/S. Viewed from U/S end appears in good shape. Can only see first 10m of barre. Measured @ u/s end. |
| Measured Rise (mm)  | 760         |      |     |  |
| Measured At Ring No.  |             |      |     |  |
| Sag (mm)  | 0           |      |     |  |
| Percent Sag   |             |      |     |  |
| Sidewall  |             | 7    | N   | Sidewalls in good shape as viewed from U/S end. - photo 10.  |
| Measured Span (mm)  | 760         |      |     |  |
| Measured At Ring No.  |             |      |     |  |
| Deflection (mm)   | 0           |      |     |  |
| Percent Deflection  |             |      |     |  |
| Floor   |             | 6    | N   |  |
| Bulge (mm)  | 0           |      |     |  |
| Measured At Ring No.  |             |      |     |  |
| Abrasion (Y/N)  | No          |      |     |  |
| Circumferential Seams   |             | N    | N   |  |
| Separation (mm)   |             |      |     |  |
| Longitudinal Seams  |             | 6    | N   | Rivetted seams. Viewed from ends. Appears in good condition.   |
| 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)  |             |      |     |  |

| Bridge Culvert Barrel  |          |          |          |  |
|--|----------|----------|----------|--|
| Culvert Component  |          | Last     | Now      | Explanation of Condition   |
| (Pipe # : 2, Secondary Span, Location Code: MAIN, Span (mm): , Rise (mm): 760, Type: MP) |          |          |          |  |
| Coating  |          | 5        | N        |  |
| Corrosion By Soil (Y/N)  | No       |          |          |  |
| Corrosion By Water (Y/N)   | Yes      |          |          |  |
| Camber POS/ZERO/NEG  |          |          |          | Can't tell - d/s end blocked - not enough light.   |
| Ponding (Y/N)  |          |          |          | Cannot see.  |
| Fish Passage Adequacy  |          | 1        | N        | Blocked D/S.   |
| Baffle   |          | X        | X        |  |
| (Type : )  |          |          |          |  |
| Waterway Adequacy  |          | 1        | N        | d/s end blocked.   |
| Icing (Y/N)  | No       |          |          |  |
| Silting (Y/N)  | Yes      |          |          |  |
| Drift (Y/N)  | Yes      |          |          |  |
| <b>Barrel General Rating</b>   |          | <b>N</b> | <b>N</b> |  |
| Downstream End   |          |          |          |  |
| Culvert Component  |          | Last     | Now      | Explanation of Condition   |
| (Pipe # : 2, Span Type: Secondary Span)  |          |          |          |  |
| Direction  |          | W        |          | North barrel. Could not view end of pipe under trees/grass. Not sure where d/s end is located. |
| End Treatment (Concrete, Steel, Others, None)  | CONCRETE |          |          |  |
| Headwall   |          | X        | X        |  |
| Collar   |          | X        | X        |  |
| Wingwalls  |          | X        | X        |  |
| (Shape : )   |          |          |          |  |
| Cutoff Wall  |          | X        | X        |  |
| Bevel End  |          | N        | N        |  |
| Heaving (mm)   | 0        |          |          |  |
| Invert Above/Below Stream Bed  | ABOVE    |          |          |  |
| Above/Below (mm)   | 1200     |          |          |  |
| Scour Protection   |          | N        | N        |  |
| (Type : <b>NATURAL</b> )   |          |          |          |  |
| (Avg. Rock Size(mm) : )  |          |          |          |  |
| Scour/Erosion  |          | N        | N        |  |
| Beavers (Y/N)  | No       |          |          |  |
| <b>Downstream End General Rating</b>   |          | <b>5</b> | <b>5</b> | (G.R. carried forward from 12/Nov/2005)GR carried fwd from 12-Nov, 2005                        |
| Structure Usage  |          |          |          |  |
|  |          | Last     | Now      | Explanation of Condition   |
| <b>Channel (U/S and D/S)</b>   |          |          |          |  |
| Alignment  |          | 4        | 4        | 90 degree bend 5m from u/s end.<br><br>North pipe (2), no flow.                                |
| Bank Stability   |          | 5        | 5        |  |
| HWM (m below Top of Culvert)   |          |          |          | NOT VISIBLE  |
| Drift (Y/N)  | No       |          |          |  |

| Structure Usage                              |           |          |          |                          |
|--|-----------|----------|----------|--------------------------|
|  |           | Last     | Now      | Explanation of Condition |
| Channel Bottom Degrading/Aggrading           | DEGRADING |          |          |                          |
| Beavers (Y/N)                                | No        |          |          |                          |
| (Fish Compensation Measure 1 : <b>NONE</b> ) |           |          |          |                          |
| (Fish Compensation Measure 2 : <b>NONE</b> ) |           |          |          |                          |
| <b>Channel General Rating</b>                |           | <b>4</b> | <b>4</b> |                          |

| 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                                      | 2011  | Access culvert.                          |                           |               |           |                   |     |
| OTHER ACTION                                      |   |  |                           |               |           |                   |     |
| OTHER ACTION                                      |   |  |                           |               |           |                   |     |
| OTHER ACTION                                      |   |  |                           |               |           |                   |     |
| <b>Structural Condition Rating (Last/Now) (%)</b> | <b>22.2/22.2</b>  | <b>Sufficiency Rating (Last/Now) (%)</b> | <b>6.6/34.4</b>           | Est. Repl. Yr | 2012      | Maint. Req. (Y/N) | Yes |
| Special Comments for Next Inspection              | Low rating advisory sent July 13, 2009.<br>Low rating sent April 5, 2011 to Rizwan Hussain and Brent Herrick. |  | 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                              | 05-Jan-2013   |  | Previous Inspection Date  | 23-Jun-2009   |           |                   |     |
| Inspection Cycle (Default) (months)               | 21  |  |                           |               |           |                   |     |
| Comment   |   |  |                           |               |           |                   |     |