

| Bridge Culvert Inspection |   |  |                     |               |
|---------------------------|---|--|---------------------|---------------|
| Bridge File Number        | 07687 -1 Bridge Culvert   |  | Form Type           | CUL1          |
| Year Built                | 1972  |  | Lot No.             | 1             |
| Bridge or Town Name       | YOUNGSTOWN  |  | Inspector Name      | Jason Saly    |
| Located Over              | 2ND ORDER TRIBUTARY TO BLOOD INDIAN CREEK, 3.9.4.1, WATERCRS-ST |  | Inspector Class     | BR CLS A      |
| Located On                | 884:10 C1 13.862  |  | Assistant Name      |               |
| Water Body Cl./Year       |   |  | Assistant Class     |               |
| Navigabil. Cl./Year       |   |  | Inspection Date     | 23-Nov-2010   |
| Legal Land Location       | SW SEC 27 TWP 27 RGE 9 W4M                                      |  | Data Entry By       | Marcia Chavez |
| Longitude, Latitude       | -111:12:01, 51:20:05  |  | Data Entry Date     | 05-Jan-2011   |
| Road Authority            | Alberta Transportation (AIT)                                    |  | Reviewer Name       | John O'Brien  |
| Contract Main. Area       | CMA22   |  | Review Date         | 11-Dec-2010   |
| Clear Roadway/Skew        | 9.5 / -20 deg. (LHF)  |  | Dept. Reviewer Name | Chris Black   |
| AADT/Year                 | 530 / 2009 (A)  |  | Dept. Review Date   | 12-Jan-2011   |
| Road Classification       | RCU-210-110   |  | Follow-Up By        |               |
| Detour Length (km)        | 100   |  |                     |               |

| Bridge Culvert Information |        |                    |                |      |        |               |                    |         |
|----------------------------|--------|--------------------|----------------|------|--------|---------------|--------------------|---------|
| Number of Culverts         |        | 1                  |                |      |        |               |                    |         |
| Pipe #                     | Barrel | Span               | Rise (or Dia.) | Type | Length | Corr. Profile | PI./Slab Thickness | Shape   |
| 1                          | MAIN   | 2281               | 2586           | SPE  | 42.8   | 152X51        | 3.5                | ELLIPSE |
| Special Features           |        | VERT TIMBER STRUTS |                |      |        |               |                    |         |
| Special Features Comment   |        |                    |                |      |        |               |                    |         |

| Utilities (Located at) |                    |               |                           |
|------------------------|--------------------|---------------|---------------------------|
| Utility Attachments    |                    |               |                           |
| Telephone              | West side.         | Gas           | 80m West-East central gas |
| Power                  | 90m to E - 1 wire. | Municipal     |                           |
| Others                 |                    | Problem (Y/N) | No                        |
| Remarks                |                    |               |                           |

| Approach Road / Embankment                       |       |          |          |                          |
|--|-------|----------|----------|--------------------------|
|  |       | Last     | Now      | Explanation of Condition |
| Horizontal Alignment                             |       | 8        | 8        | Farm access north        |
| Vertical Alignment                               |       | 8        | 8        |                          |
| Roadway Width (m)                                | 9.500 |          |          |                          |
| Embankment                                       |       | 7        | N        | Snow covered.            |
| Sideslope ( :1)                                  | 3.2   |          |          |                          |
| (Height of Cover(m) : 3.4)                       |       |          |          |                          |
| Guardrail (Y/N)                                  | No    |          |          |                          |
| <b>Approach Road / Embankment General Rating</b> |       | <b>7</b> | <b>8</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  |             | 6        | 6        |   |
| Heaving (mm)   | 100         |          |          |   |
| Invert Above/Below Stream Bed  | BELOW       |          |          |   |
| Above/Below (mm)   | 150         |          |          |   |
| Scour Protection   |             | 6        | N        | Snow covered.   |
| (Type : )  |             |          |          |   |
| (Avg. Rock Size(mm) : )  |             |          |          |   |
| Scour/Erosion  |             | 6        | N        |   |
| Beavers (Y/N)  | No          |          |          |   |
| <b>Upstream End General Rating</b>   |             | <b>6</b> | <b>6</b> |   |
| Bridge Culvert Barrel  |             |          |          |   |
| Culvert Component  |             | Last     | Now      | Explanation of Condition  |
| (Pipe # : 1, Primary Span, Location Code: MAIN, Span (mm): 2281, Rise (mm): 2586, Type: SPE) |             |          |          |   |
| Barrel Last Accessible Date  | 23-Nov-2010 |          |          |   |
| <b>Special Features</b>  |             |          |          |   |
| Special Feature  |             | 6        | 6        | 150 x 200 struts on 1.2m o/c  |
| (Type : <b>VERT TIMBER STRUTS</b> )  |             |          |          |   |
| Special Feature  |             |          |          |   |
| (Type : )  |             |          |          |   |
| Roof   |             | 5        | 5        | Rise could not be measured due to dirt & ice.   |
| Measured Rise (mm)   | 2430        |          |          |   |
| Measured At Ring No.   | 6           |          |          |   |
| Sag (mm)   | 156         |          |          |   |
| Percent Sag  | 6           |          |          |   |
| Sidewall   |             | 2        | 2        | Cracked seam runs through sidewall. Span measured at R1=2265 16mm; R3=2432 151mm; R5=2460 179mm; R7=2477=8.6%; R9=2344 63mm |
| Measured Span (mm)   | 2477        |          |          |   |
| Measured At Ring No.   | 7           |          |          |   |
| Deflection (mm)  | 196         |          |          |   |
| Percent Deflection   | 9           |          |          |   |
| Floor  |             | 5        | N        | Covered by dirt & ice.  |
| Bulge (mm)   | 0           |          |          |   |
| Measured At Ring No.   |             |          |          |   |
| Abrasion (Y/N)   | No          |          |          |   |
| Circumferential Seams  |             | 6        | 6        |   |
| Separation (mm)  | 0           |          |          |   |
| Longitudinal Seams   |             | 2        | 2        | no change   |
| Total No. of Cracked Rings   | 6           |          |          |   |
| Total No. of Rings with Two Cracked Seams  | 0           |          |          | Ring 6 - no change. All cracked seams on north wall. cracks are marked for future reference. Not changed.                   |
| Min. Remaining Steel Between Cracks (mm)   | 47          |          |          |   |
| Proper Lap (Y/N)   | No          |          |          |   |
| Longitudinal Stagger (Y/N)   | No          |          |          |   |
| Coating  |             | 6        | 5        |   |
| Corrosion By Soil (Y/N)  | No          |          |          |   |
| Corrosion By Water (Y/N)   | Yes         |          |          |   |
| Camber POS/ZERO/NEG  | NEG         |          |          |   |
| Ponding (Y/N)  | No          |          |          |   |

| Bridge Culvert Barrel  |       |          |          |   |
|--|-------|----------|----------|---|
| Culvert Component  |       | Last     | Now      | Explanation of Condition  |
| (Pipe # : 1, Primary Span, Location Code: MAIN, Span (mm): 2281, Rise (mm): 2586, Type: SPE) |       |          |          |   |
| Fish Passage Adequacy  |       | X        | X        |   |
| Baffle   |       | X        | X        |   |
| (Type : )  |       |          |          |   |
| Waterway Adequacy  |       | 5        | 5        |   |
| Icing (Y/N)  | No    |          |          |   |
| Silting (Y/N)  | No    |          |          |   |
| Drift (Y/N)  | No    |          |          |   |
| <b>Barrel General Rating</b>   |       | <b>3</b> | <b>3</b> | 1 point rating bump for struts                                      |
| Downstream End   |       |          |          |   |
| Culvert Component  |       | Last     | Now      | Explanation of Condition  |
| Direction  |       | E        |          | Sloped section 3.05m long   |
| End Treatment (Concrete, Steel, Others, None)  | STEEL |          |          |   |
| Headwall   |       | X        | X        |   |
| Collar   |       | X        | X        |   |
| Wingwalls  |       | X        | X        |   |
| (Shape : )   |       |          |          |   |
| Cutoff Wall  |       | X        | X        |   |
| Bevel End  |       | 6        | 6        |   |
| Heaving (mm)   | 0     |          |          |   |
| Invert Above/Below Stream Bed  | BELOW |          |          |   |
| Above/Below (mm)   |       |          |          |   |
| Scour Protection   |       | 5        | N        | (minor erosion. 28Jan2009).   |
| (Type : )  |       |          |          |   |
| (Avg. Rock Size(mm) : )  |       |          |          |   |
| Scour/Erosion  |       | 5        | N        | (Erosion @ bevel end of culvert and embankment eroding. 28Jan2009). |
| Beavers (Y/N)  | No    |          |          |   |
| <b>Downstream End General Rating</b>   |       | <b>5</b> | <b>5</b> | GR for scour from 28Jan2009.  |
| Structure Usage  |       |          |          |   |
|  |       | Last     | Now      | Explanation of Condition  |
| <b>Channel (U/S and D/S)</b>   |       |          |          |   |
| Alignment  |       | 8        | 8        |   |
| Bank Stability   |       | 8        | 8        |   |
| HWM (m below Top of Culvert)   |       |          |          | No HWM 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>8</b> | <b>8</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                                      |   |  |                     |                      |             |                          |           |  |  |  |
| OTHER ACTION                                      |   |  |                     |                      |             |                          |           |  |  |  |
| OTHER ACTION                                      |   |  |                     |                      |             |                          |           |  |  |  |
| OTHER ACTION                                      |   |  |                     |                      |             |                          |           |  |  |  |
| <b>Structural Condition Rating (Last/Now) (%)</b> | <b>33.3/33.3</b>  | <b>Sufficiency Rating (Last/Now) (%)</b> | <b>43.8/43.8</b>    | <b>Est. Repl. Yr</b> | <b>2020</b> | <b>Maint. Req. (Y/N)</b> | <b>No</b> |  |  |  |
| Special Comments for Next Inspection              | Cracked seams remain unchanged. No action required for 2 rating.                                      |  | Department Comments |                      |             |                          |           |  |  |  |
| Maintenance Reviewed By                           |   | Date                                     |                     |                      |             | Estimated Total          | 0         |  |  |  |
| Proposed Long-Term Strategy                       | 2008.12.16 Struttred, shape good. Repair if required in future. Culvert should be good until 2032. RS |  |                     |                      |             |                          |           |  |  |  |
| On 3-Year Program (Y/N)                           |   |  |                     |                      |             |                          |           |  |  |  |
| Proposed Action                                   |   |  |                     |                      |             |                          |           |  |  |  |
| Previous Inspector's Name                         | Garry Roberts   | Previous Assistant's Name                |                     |                      |             |                          |           |  |  |  |
| Next Inspection Date                              | 23-Feb-2014   | Previous Inspection Date                 | 28-Jan-2009         |                      |             |                          |           |  |  |  |
| Inspection Cycle (Default) (months)               | 39  |  |                     |                      |             |                          |           |  |  |  |
| 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                   |      |                    |                     |             |           |       |
| OTHER ACTION                   |      |                    |                     |             |           |       |
| OTHER ACTION                   |      |                    |                     |             |           |       |
| OTHER ACTION                   |      |                    |                     |             |           |       |

|   |                  |  |                  |               |      |                   |    |
|---|------------------|--|------------------|---------------|------|-------------------|----|
| <b>Structural Condition Rating (Last/Now) (%)</b> | <b>33.3/33.3</b> | <b>Sufficiency Rating (Last/Now) (%)</b> | <b>43.8/43.8</b> | Est. Repl. Yr | 2020 | Maint. Req. (Y/N) | No |
|---|------------------|--|------------------|---------------|------|-------------------|----|

|                                      |  |                     |  |
|--------------------------------------|--|---------------------|--|
| Special Comments for Next Inspection | Cracked seams remain unchanged. No action required for 2 rating. | Department Comments | Continue to monitor the cracked seams. |
|--------------------------------------|--|---------------------|--|

|                                     |  |                           |             |                 |   |
|-------------------------------------|--|---------------------------|-------------|-----------------|---|
| Maintenance Reviewed By             | Andrew Smikles   | Date                      | 12-Dec-2011 | Estimated Total | 0 |
| Proposed Long-Term Strategy         | 2008.12.16 Strutted, shape good. Repair if required in future. Culvert should be good until 2032. RS |                           |             |                 |   |
| On 3-Year Program (Y/N)             |  |                           |             |                 |   |
| Proposed Action                     |  |                           |             |                 |   |
| Previous Inspector's Name           | Garry Roberts  | Previous Assistant's Name |             |                 |   |
| Next Inspection Date                | 23-Feb-2014  | Previous Inspection Date  | 28-Jan-2009 |                 |   |
| Inspection Cycle (Default) (months) | 39   |                           |             |                 |   |
| Comment                             |  |                           |             |                 |   |