

| Bridge Culvert Inspection | | | | |
|---------------------------|---------------------------------|--|---------------------|----------------|
| Bridge File Number | 75734 -1 Bridge Culvert | | Form Type | CULM |
| Year Built | 1969 | | Lot No. | 1 |
| Bridge or Town Name | CASTOR | | Inspector Name | Owen Salava |
| Located Over | CASTOR CREEK, 5.20, WATERCRS-ST | | Inspector Class | BR CLS A |
| Located On | 36:12 C1 59.491 | | Assistant Name | |
| Water Body Cl./Year | | | Assistant Class | |
| Navigabil. Cl./Year | | | Inspection Date | 16-Jul-2012 |
| Legal Land Location | NW SEC 6 TWP 37 RGE 13 W4M | | Data Entry By | Marcia Chavez |
| Longitude, Latitude | -111:51:43, 52:09:04 | | Data Entry Date | 02-Aug-2012 |
| Road Authority | Alberta Transportation (AIT) | | Reviewer Name | John O'Brien |
| Contract Main. Area | CMA21 | | Review Date | 31-Jul-2012 |
| Clear Roadway/Skew | 11 / | | Dept. Reviewer Name | Andrew Smikles |
| AADT/Year | 1,100 / 2011 (A) | | Dept. Review Date | 07-Aug-2012 |
| Road Classification | RAU-211.8-110 | | Follow-Up By | |
| Detour Length (km) | 3 | | | |

| Bridge Culvert Information | | | | | | | | |
|----------------------------|--------|------|----------------|------|--------|---------------|--------------------|-----------|
| Number of Culverts | | 3 | | | | | | |
| Pipe # | Barrel | Span | Rise (or Dia.) | Type | Length | Corr. Profile | PI./Slab Thickness | Shape |
| 1 | MAIN | 2490 | 1752 | RPP | 23.7 | 152X51 | 3.5 | PIPE ARCH |
| 2 | MAIN | 2311 | 1475 | CPA | 25.6 | | | ARCH |
| 3 | MAIN | 2311 | 1473 | CPA | 25.7 | | | ARCH |
| Special Features | | | | | | | | |
| Special Features Comment | | | | | | | | |

| Utilities (Located at) | | | |
|------------------------|--------------------------|--|------------------|
| Utility Attachments | | | |
| Telephone | East r/w. | | Gas |
| Power | 3 wires 20m East of c/l. | | Municipal |
| Others | | | Problem (Y/N) No |
| Remarks | | | |

| Approach Road / Embankment | | | | |
|--|--------|----------|----------|---|
| | | Last | Now | Explanation of Condition |
| Horizontal Alignment | | 8 | 8 | Wide crack directly above SPCSP arch pipe, full width of ACP. |
| Vertical Alignment | | 8 | 8 | |
| Roadway Width (m) | 10.600 | | | |
| Embankment | | N | 8 | |
| Sideslope (__:1) | 3.0 | | | |
| (Height of Cover(m) : 1.2) | | | | |
| Guardrail (Y/N) | No | | | |
| Approach Road / Embankment General Rating | | 8 | 8 | |

| Upstream End | | | | |
|---|-------|------|-----|---|
| Culvert Component | | Last | Now | Explanation of Condition |
| (Pipe # : 1, Span Type: Primary Span) | | | | |
| Direction | | W | | South pipe. SPCSP arch. 300m South of CP pipes. |
| 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 | | N | 6 | |
| Heaving (mm) | 100 | | | |
| Invert Above/Below Stream Bed | BELOW | | | |
| Above/Below (mm) | 200 | | | |
| Scour Protection | | N | 6 | |
| (Type : RIP RAP) | | | | |
| (Avg. Rock Size(mm) : 300) | | | | |
| Scour/Erosion | | N | 6 | |
| Beavers (Y/N) | No | | | |
| Upstream End General Rating | | N | 6 | |
| Bridge Culvert Barrel | | | | |
| Culvert Component | | Last | Now | Explanation of Condition |
| (Pipe # : 1, Primary Span, Location Code: MAIN, Span (mm): 2490, Rise (mm): 1752, Type: RPP) | | | | |
| Barrel Last Accessible Date | 27-Aug-2009 | | | South barrel. 300m South of CP pipes. Water 0.75m deep; viewed from ends, shape OK. |
| Special Features | | | | |
| Special Feature | | | | |
| (Type :) | | | | |
| Special Feature | | | | |
| (Type :) | | | | |
| Roof | | N | N | (Roof has isolated small perforations. Roof seam flattening. 27Aug2009). |
| Measured Rise (mm) | 1775 | | | |
| Measured At Ring No. | 3 | | | |
| Sag (mm) | 26 | | | |
| Percent Sag | 1 | | | (1.5%. 27Aug2009). |
| Sidewall | | N | N | (Sidewall has large multiple perforations. Largest was 75x90 in 2003, now 100x 120. Most at springline height in R1 & R2 - photo. In strips as measured from D/S crown 16-20, 28-32, 41-43, 50-53 ft, typically from sidewall seam to 3N above @ both sides of culvert. 0.8%. 27Aug2009). |
| Measured Span (mm) | 2470 | | | |
| Measured At Ring No. | 3 | | | |
| Deflection (mm) | 20 | | | |
| Percent Deflection | 1 | | | |
| Floor | | N | N | |
| Bulge (mm) | 0 | | | |
| Measured At Ring No. | | | | |
| Abrasion (Y/N) | No | | | |
| Circumferential Seams | | N | N | |
| Separation (mm) | 0 | | | |
| Longitudinal Seams | | N | N | (Invert seams not visible. 27Aug2009). |
| Total No. of Cracked Rings | 0 | | | |
| Total No. of Rings with Two Cracked Seams | 0 | | | |
| Min. Remaining Steel Between Cracks (mm) | | | | (Long. stagger only at crown. 27Aug2009). |
| Proper Lap (Y/N) | No | | | |
| Longitudinal Stagger (Y/N) | No | | | |
| Coating | | N | N | (Perforations, scaling lower half. 27Aug2009). |
| 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): 2490, Rise (mm): 1752, Type: RPP) | | | | |
| Camber POS/ZERO/NEG | NEG | | | |
| Ponding (Y/N) | Yes | | | |
| Fish Passage Adequacy | | 7 | 7 | |
| Baffle | | X | X | |
| (Type :) | | | | |
| Waterway Adequacy | | N | N | |
| Icing (Y/N) | No | | | |
| Silting (Y/N) | No | | | |
| Drift (Y/N) | No | | | |
| Barrel General Rating | | 3 | 3 | GR carried forward from 27Aug2009 based on roof, sidewall ratings. |
| Downstream End | | | | |
| Culvert Component | | Last | Now | Explanation of Condition |
| (Pipe # : 1, Span Type: Primary Span) | | | | |
| Direction | | E | | South pipe. 300m South of CP pipes. |
| 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) | 50 | | | |
| Invert Above/Below Stream Bed | BELOW | | | |
| Above/Below (mm) | 100 | | | |
| Scour Protection | | N | 6 | |
| (Type : RIP RAP) | | | | |
| (Avg. Rock Size(mm) : 300) | | | | |
| Scour/Erosion | | N | 6 | |
| 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 | | South barrel. |
| End Treatment (Concrete, Steel, Others, None) | CONCRETE | | | |
| 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 | | N | 6 | |
| Heaving (mm) | 0 | | | |
| Invert Above/Below Stream Bed | BELOW | | | |
| Above/Below (mm) | 400 | | | |
| Scour Protection | | N | 6 | |
| (Type : RIP RAP) | | | | |
| (Avg. Rock Size(mm) : 300) | | | | |
| Scour/Erosion | | N | 6 | |
| Beavers (Y/N) | No | | | |
| Upstream End General Rating | | N | 6 | |
| Bridge Culvert Barrel | | | | |
| Culvert Component | | Last | Now | Explanation of Condition |
| (Pipe # : 2, Secondary Span, Location Code: MAIN, Span (mm): 2311, Rise (mm): 1475, Type: CPA) | | | | |
| Barrel Last Accessible Date | 27-Aug-2009 | | | South barrel. 0.7m water in pipe; viewed from ends, shape OK. |
| Special Features | | | | |
| Special Feature | | | | |
| (Type :) | | | | |
| Special Feature | | | | |
| (Type :) | | | | |
| Roof | | N | N | |
| Measured Rise (mm) | 1460 | | | |
| Measured At Ring No. | 5 | | | |
| Sag (mm) | 15 | | | |
| Percent Sag | 1 | | | |
| Sidewall | | N | N | |
| Measured Span (mm) | 2260 | | | |
| Measured At Ring No. | 6 | | | |
| Deflection (mm) | 51 | | | (2.2%. 27Aug2009). |
| Percent Deflection | 2 | | | |
| Floor | | N | N | Water covered. |
| Bulge (mm) | 0 | | | |
| Measured At Ring No. | | | | |
| Abrasion (Y/N) | No | | | |
| Circumferential Seams | | N | N | |
| Separation (mm) | 0 | | | |
| 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 | | X | X | |
| Corrosion By Soil (Y/N) | | | | |
| Corrosion By Water (Y/N) | | | | |
| Camber POS/ZERO/NEG | NEG | | | |

| Bridge Culvert Barrel | | | | |
|---|-----|----------|----------|---|
| Culvert Component | | Last | Now | Explanation of Condition |
| (Pipe # : 2, Secondary Span, Location Code: MAIN, Span (mm): 2311, Rise (mm): 1475, Type: CPA) | | | | |
| Ponding (Y/N) | Yes | | | |
| Fish Passage Adequacy | | 7 | 7 | Rating carried forward. |
| Baffle | | X | X | |
| (Type :) | | | | |
| Waterway Adequacy | | N | N | |
| Icing (Y/N) | No | | | |
| Silting (Y/N) | No | | | |
| Drift (Y/N) | No | | | |
| Barrel General Rating | | N | N | GR was 6 from 27Aug2009 based on roof & sidewall ratings. |

| Downstream End | | | | |
|--|----------|----------|----------|--------------------------|
| Culvert Component | | Last | Now | Explanation of Condition |
| (Pipe # : 2, Span Type: Secondary Span) | | | | |
| Direction | | E | | South barrel. |
| End Treatment (Concrete, Steel, Others, None) | CONCRETE | | | |
| Headwall | | X | X | |
| Collar | | X | X | |
| Wingwalls | | X | X | |
| (Shape :) | | | | |
| Cutoff Wall | | X | X | |
| Bevel End | | N | 6 | |
| Heaving (mm) | 0 | | | |
| Invert Above/Below Stream Bed | BELOW | | | |
| Above/Below (mm) | 400 | | | |
| Scour Protection | | N | 6 | |
| (Type : RIP RAP) | | | | |
| (Avg. Rock Size(mm) : 300) | | | | |
| Scour/Erosion | | N | 6 | |
| Beavers (Y/N) | No | | | |
| Downstream End General Rating | | N | 6 | |

| Upstream End | | | | |
|--|----------|------|-----|--------------------------|
| Culvert Component | | Last | Now | Explanation of Condition |
| (Pipe # : 3, Span Type: Secondary Span) | | | | |
| Direction | | W | | North CP pipe. |
| End Treatment (Concrete, Steel, Others, None) | CONCRETE | | | |
| Headwall | | X | X | |
| Collar | | X | X | |
| Wingwalls | | X | X | |
| (Shape :) | | | | |
| Cutoff Wall | | X | X | |
| Bevel End | | N | 6 | |
| Heaving (mm) | 0 | | | |

| Upstream End | | | | |
|---|-------------|----------|----------|--|
| Culvert Component | | Last | Now | Explanation of Condition |
| (Pipe # : 3, Span Type: Secondary Span) | | | | |
| Invert Above/Below Stream Bed | BELOW | | | |
| Above/Below (mm) | 400 | | | |
| Scour Protection | | N | 6 | |
| (Type : RIP RAP) | | | | |
| (Avg. Rock Size(mm) : 300) | | | | |
| Scour/Erosion | | N | 6 | |
| Beavers (Y/N) | No | | | |
| Upstream End General Rating | | N | 6 | |
| Bridge Culvert Barrel | | | | |
| Culvert Component | | Last | Now | Explanation of Condition |
| (Pipe # : 3, Secondary Span, Location Code: MAIN, Span (mm): 2311, Rise (mm): 1473, Type: CPA) | | | | |
| Barrel Last Accessible Date | 27-Aug-2009 | | | North barrel. 0.7m water in pipe; viewed from ends, shape OK. |
| Special Features | | | | |
| Special Feature | | | | |
| (Type :) | | | | |
| Special Feature | | | | |
| (Type :) | | | | |
| Roof | | N | N | |
| Measured Rise (mm) | 1460 | | | |
| Measured At Ring No. | 5 | | | |
| Sag (mm) | 13 | | | |
| Percent Sag | 1 | | | |
| Sidewall | | N | N | |
| Measured Span (mm) | 2260 | | | |
| Measured At Ring No. | 5 | | | |
| Deflection (mm) | 51 | | | |
| Percent Deflection | 2 | | | |
| Floor | | N | N | (Water covered. 27Aug2009). |
| Bulge (mm) | 0 | | | |
| Measured At Ring No. | | | | |
| Abrasion (Y/N) | No | | | |
| Circumferential Seams | | N | N | |
| Separation (mm) | 0 | | | |
| 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 | | X | X | |
| Corrosion By Soil (Y/N) | | | | |
| Corrosion By Water (Y/N) | | | | |
| Camber POS/ZERO/NEG | NEG | | | |
| Ponding (Y/N) | Yes | | | |

| Bridge Culvert Barrel | | | | |
|--|----------|----------|----------|--|
| Culvert Component | | Last | Now | Explanation of Condition |
| (Pipe # : 3, Secondary Span, Location Code: MAIN, Span (mm): 2311, Rise (mm): 1473, Type: CPA) | | | | |
| Fish Passage Adequacy | | 7 | 7 | |
| Baffle | | X | X | |
| (Type :) | | | | |
| Waterway Adequacy | | N | N | |
| Icing (Y/N) | No | | | |
| Silting (Y/N) | No | | | |
| Drift (Y/N) | No | | | |
| Barrel General Rating | | N | N | GR was 6 from 27Aug2009 based on roof & sidewalls. |
| Downstream End | | | | |
| Culvert Component | | Last | Now | Explanation of Condition |
| (Pipe # : 3, Span Type: Secondary Span) | | | | |
| Direction | | E | | North CP pipe. |
| End Treatment (Concrete, Steel, Others, None) | CONCRETE | | | |
| Headwall | | X | X | |
| Collar | | X | X | |
| Wingwalls (Shape :) | | X | X | |
| Cutoff Wall | | X | X | |
| Bevel End | | N | 6 | |
| Heaving (mm) | 0 | | | |
| Invert Above/Below Stream Bed | BELOW | | | |
| Above/Below (mm) | 400 | | | |
| Scour Protection (Type : RIP RAP) (Avg. Rock Size(mm) : 300) | | N | 6 | |
| Scour/Erosion | | N | 6 | |
| Beavers (Y/N) | | No | | |
| Downstream End General Rating | | N | 6 | |
| Structure Usage | | | | |
| | | Last | Now | Explanation of Condition |
| Channel (U/S and D/S) | | | | |
| Alignment | | 7 | 7 | U/S channel very shallow on CPA pipes. |
| Bank Stability | | N | 7 | |
| HWM (m below Top of Culvert) | | | | HWM not visible. |
| Drift (Y/N) | | No | | |
| Channel Bottom Degrading/Aggrading | | NONE | | |
| Beavers (Y/N) | | No | | |
| (Fish Compensation Measure 1 : NONE) | | | | |
| (Fish Compensation Measure 2 : NONE) | | | | |
| Channel General Rating | | 7 | 7 | |

| 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 | 2012 | Bridge assesement for RPP pipe, if not already done. | | 2014 | | | | | | Yes |
| OTHER ACTION | | | | | | | | | | |
| OTHER ACTION | | | | | | | | | | |
| OTHER ACTION | | | | | | | | | | |
| Structural Condition Rating (Last/Now) (%) | 33.3/33.3 | Sufficiency Rating (Last/Now) (%) | 58.6/60.5 | | | | | | | |
| Special Comments for Next Inspection | SPCSP arch will require liner or replacement in teh next several yrs due to corrosion of roof & sidewalls; monitor perforations, appears to have stabilized. | | Department Comments | | | | | | | |
| Maintenance Reviewed By | | | Date | | Estimated Total | 0 | | | | |
| Proposed Long-Term Strategy | DH to review for liner by HMC in 2012. RS 2004.05.30 Concrete culverts should be ok until 2044. Steel culvert should be ok until 2014. Monitor corrosion normal BIM. | | | | | | | | | |
| On 3-Year Program (Y/N) | | | | | | | | | | |
| Proposed Action | | | | | | | | | | |
| Previous Inspector's Name | Jason Saly | | Previous Assistant's Name | | | | | | | |
| Next Inspection Date | 16-Apr-2014 | | Previous Inspection Date | 08-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 | 2012 | Bridge assesement for RPP pipe, if not already done. | programmed liner | 2013 | | |
| OTHER ACTION | | | | | | |
| OTHER ACTION | | | | | | |
| OTHER ACTION | | | | | | |
| Structural Condition Rating (Last/Now) (%) | 33.3/33.3 | Sufficiency Rating (Last/Now) (%) | 58.6/60.5 | Est. Repl. Yr | 2014 | Maint. Req. (Y/N) Yes |
| Special Comments for Next Inspection | SPCSP arch will require liner or replacement in teh next several yrs due to corrosion of roof & sidewalls; monitor perforations, appears to have stabilized. | | Department Comments | Programmed installation of liner by HMC in 2013. DA | | |
| Maintenance Reviewed By | Darron Ahlstedt | | Date | 27-Nov-2012 | Estimated Total | 0 |
| Proposed Long-Term Strategy | DH to review for liner by HMC in 2012. RS 2004.05.30 Concrete culverts should be ok until 2044. Steel culvert should be ok until 2014. Monitor corrosion normal BIM. | | | | | |
| On 3-Year Program (Y/N) | | | | | | |
| Proposed Action | | | | | | |
| Previous Inspector's Name | Jason Saly | | Previous Assistant's Name | | | |
| Next Inspection Date | 16-Apr-2014 | | Previous Inspection Date | 08-Mar-2011 | | |
| Inspection Cycle (Default) (months) | 21 | | | | | |
| Comment | | | | | | |