

APPENDIX B

All Weather Access Road
Photographs



Photographs 1 to 5 were taken at KM6.0 of the Char River Bridge. Some finer grained material observed on downstream side of Left (north) Abutment, should be monitored for signs of erosion.

Photograph 1: Char River Bridge at KM6.0 Looking South (13 September 2018)



Photograph 2: Char River Bridge, Left (north) Abutment Armouring from the Upstream Side of the Right (south) Abutment (13 September 2018)



Photograph 3: Char River Bridge, right (south) abutment armouring, from the upstream side (13 September 2018)



Photograph 4: Char River Bridge, right (south) abutment, upstream side taken from the upstream side of the left (north) abutment (13 September 2018)



Photograph 5: Char River Bridge, downstream side of left (north) abutment, taken from the downstream side of the right (south) abutment. Finer grained material observed over coarse rockfill. (13 September 2018)



Photograph 6: At KM6.2, Downstream ends of 3 CSP culverts. Lower two culverts are 1300 mm \varnothing , upper culvert is 700 mm \varnothing . All are in good condition. Small erosion between culverts, consider adding armouring (13 September 2018)

Photographs 6 to 8 were taken at KM6.2 where there are 3 CSP culverts. The culverts are in good condition. Some minor erosion on the embankment between the culverts, consider additional armouring.



**Photograph 7: Upstream to downstream view of 3 CSP culverts at KM6.2
(13 September 2018)**



Photograph 8: Road over 3 CSP culverts at KM6.2 (13 September 2018)



Photographs 9 to 12 were taken at KM7.0 where there are 3 CSP culverts. There is minor damage to the upstream ends of two of the culverts. Some exposed sand on embankments, additional armoring should be considered.

Photograph 9: At KM7.0, downstream ends of 3 CSP culverts. Lower two culverts are 1000 mm \varnothing , upper culvert is 700 mm \varnothing . All are in good condition. Water ponded in lower culvert at the time of inspection (13 September 2018)



Photograph 10: Upstream ends of 3 CSP culverts at KM7.0. Minor damage to the upper and lower right culverts. Some exposed sand around the culvert inlets, additional armoring should be considered (13 September 2018)



**Photograph 11: Downstream embankment and road over 3 CSP culverts at KM7.0
(13 September 2018)**



**Photograph 12: Upstream embankment and road over 3 CSP culverts at KM7.1
(13 September 2018)**



Photographs 13 to 16 were taken at KM7.1 where there are 3 CSP culverts. The culverts and riprap appear to be in good condition.

Photograph 13: At KM7.1, downstream ends of 3 CSP culverts. Lower two culverts are 1000 mm \varnothing , upper culvert is 700 mm \varnothing . All are in good condition. Small flow through lower culvert at time of inspection. Riprap in good condition (13 September 2018)



Photograph 14: Upstream ends of 3 CSP culverts at KM7.1 (13 September 2018)



Photograph 15: Upstream embankment and road over 3 CSP culverts at KM7.1, looking south (13 September 2018)



Photograph 16: Downstream embankment and road over 3 CSP culverts at KM7.1, looking north (13 September 2018)



Photographs 17 to 22 were taken at KM7.4 where there are 3 CSP culverts. The inlet of one of the culverts has been partially crushed, possibly by boulders rolling down the embankment. Finer grained material surrounds the inlet and outlet which should be monitored for signs of erosion. Also extending the outlet of the upper culvert should be considered to reduce the chance of erosion.

Photograph 17: At KM7.4, upstream ends of 3 CSP culverts. Lower two culverts are 900 mm \varnothing (left) and 1000 mm \varnothing (right), and the upper culvert is 700 mm \varnothing . Inlet of the 900 mm has been damaged, (13 September 2018)



Photograph 18: Downstream ends of 3 CSP culverts at KM7.4 (13 September 2018). Consider extending the upper culvert to reduce erosion of the embankment.



Photograph 19: Damaged upstream end of 900 mm culvert at KM7.4, similar to what was observed in 2017. It appears the damage may have been caused by boulders that rolled down the slope (13 September 2018)



Photograph 20: Downstream embankment and road over 3 CSP culverts at KM7.4, looking south (13 September 2018)



Photograph 21: Upstream embankment and road over 3 CSP culverts at KM7.4, looking south (13 September 2018)



Photograph 22: Road surface north of 3 CSP culverts at KM 7.4 looking north (13 September 2018)



Photographs 23 to 30 of the Meliadine River Bridge were taken at KM8.0. Riprap and embankments are in good condition. Some finer grained material observed under the abutments which should be monitored for signs of erosion.

Photograph 23: Meliadine River Bridge at KM8.0, looking southwest (13 September 2018)



Photograph 24: Left (northeast) Abutment of the Meliadine River Bridge at KM8.0 from the downstream side of Right (southwest) Abutment (13 September 2018)



Photograph 25: Meliadine River Bridge at KM8.0. Left (northeast) Abutment from the upstream (13 September 2018)



Photograph 26: Meliadine River Bridge at KM8.0. Right (southwest) Abutment from the downstream side (13 September 2018)



Photograph 27: Meliadine River Bridge at KM8.0. Right (southwest) Abutment, from the upstream side (13 September 2018).



Photograph 28: Meliadine River Bridge at KM8.0. Embankment for the Right (southwest) Abutment, from the upstream side. The far abutment in the photo is the Left (northeast) Abutment. Riprap is in good condition (13 September 2018)



Photograph 29: Meliadine River Bridge at KM8.0 view of Right (southwest) Abutment, photo taken from the Left (northeast) Abutment. Finer grained material on abutment was observed in 2017; grass has grown on this material since 2017, no substantial erosion observed. Continue to monitor. (13 September 2018)



Photograph 30: Road leading northeast from Meliadine River Bridge at KM8.0. (13 September 2018)



Photographs 31 to 35 were taken at KM9.1 where there are 2 CSP culverts, each 1000 mm in diameter. There is some minor deformation in the culverts under the road, no flow, water ponded below inverts.

Photograph 31: At KM9.1, upstream ends of two 1000 mm \varnothing CSP culverts (13 September 2018)



Photograph 32: Downstream ends of two 1000 mm \varnothing CSP culverts at KM9.1, (13 September 2018)



Photograph 33: View through lower CSP culvert at KM9.1 from downstream to upstream. No observable change in deformation of culvert when compared to 2017 inspection (13 September 2018)



Photograph 34: Upstream embankment and road surface over two CSP culverts at KM9.1, looking southwest (13 September 2018)



Photograph 35: Road surface and slope north of KM9.1, looking northeast (13 September 2018)



Photograph 36: At KM9.5, upstream end of a single 1300 mm ø CSP. Culvert inlet is elevated, allowing water to pond upstream. (13 September 2018)

Photographs 36 to 39 were taken at KM9.5 where there is a single CSP culvert. It is generally in good condition, there is a small deformation of the culvert under the road. The culvert inlet is elevated resulting in water ponding on the upstream side of the road. The ponded water extends approximately 100 m north and 50 m south of the culvert location.



Photograph 37: Downstream end of a single 1300 mm CSP culvert at KM9.5 (13 September 2018)



Photograph 38: View through 1300 mm Diameter CSP Culvert at KM9.5 from the downstream end. Slight deformation of culvert under the road (13 September 2018)



Photograph 39: Road surface looking north from single CSP culvert at KM9.5 (13 September 2018)



Photograph 40: M-5 Bridge at KM10.5, photo of Left (north) Abutment, downstream side taken from the Right (south) Abutment (13 September 2018)

Photographs 40 to 47 taken of M-5 Bridge, at KM10.5. The bridge abutments are generally in good condition. No change to area previously noted as possible erosion. There is a damaged gabion on the downstream side of the Left (north) Abutment that should be replaced.



Photograph 41: M-5 Bridge at KM10.5, photo of damaged gabion on the downstream side of the Left (north) Abutment that should be replaced. (13 September 2018)



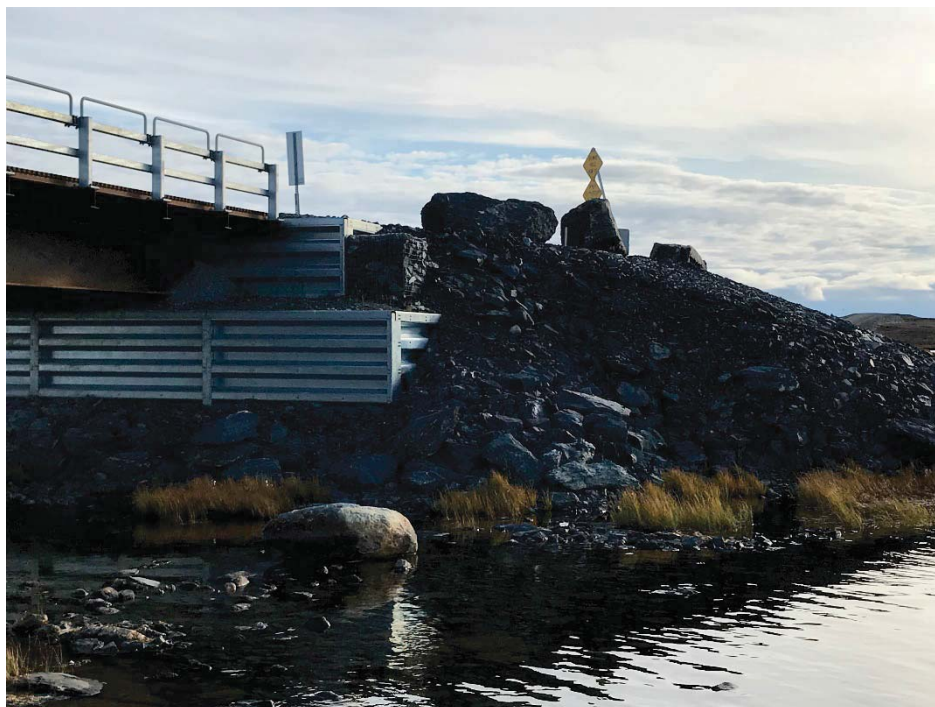
Photograph 42: M-5 Bridge at KM10.5, photo of the upstream side of the Left (north) Abutment (13 September 2018)



Photograph 43: M-5 Bridge at KM10.5, photo of the bridge and the Left (north) Abutment from the upstream side of the Right (south) Abutment (13 September 2018)



Photograph 44: M-5 Bridge at KM10.5 Right (south) Abutment, downstream side (13 September 2018)



Photograph 45: M-5 Bridge at KM10.5 Right (south) Abutment, upstream side. Previously noted as area of possible erosion, no obvious change since 2016/2017, material may have been placed in this way during construction (13 September 2018)



Photograph 46: M-5 Bridge deck at KM10.5, looking south. Speed limit sign was knocked down at time of inspection (13 September 2018)



Photograph 47: Road leading north from M-5 Bridge at KM10.5 (13 September 2018)



Photograph 48: Upstream ends of four CSP culverts at KM12.1. From left to right the diameters are 900 mm, 1300 mm, 700 mm, 1300 mm. Small dent in inlet of uppermost culvert (13 September 2018)

Photos 48 to 52 were taken along AWAR at KM12.1 where there are four CSP culverts. The embankments are generally in good condition. There is deformation of the culverts visible under the road.



Photograph 49: Downstream ends of four CSP culverts at KM12.1. Small flow observed through the lowest culvert (second from right in the photograph). Visible deformation of the culverts under the road (13 September 2018)



Photograph 50: Downstream ends of four CSP culverts at KM12.1, looking north along the embankment (13 September 2018)



Photograph 51: Upstream ends of four CSP culverts at KM12.1 looking south along the embankment (13 September 2018)



Photograph 52: Road leading north from four CSP Culverts at KM12.1 (13 September 2018)



Photos 53 and 54 were taken along AWAR at KM12.6. At this location flow is visible along the road. No culvert is present and water seeps under the road.

Photograph 53: West side of AWAR at KM12.6 where water flows along the side of the road and seeps under the road from west to east (13 September 2018)



Photograph 54: AWAR KM 12.6, ponded water on the east side of the road where it is seeping out of the road fills (13 September 2018)



Photos 55 to 58 were taken along AWAR at KM13.5. Five CSP culverts are installed at this location, three of 1300 mm \varnothing and two of 900 mm \varnothing . The inverts of the 900 mm culverts are elevated higher than the inverts of the 1300 mm culverts. Minor deformation of the culverts noted under the road, embankments are generally in good condition.

Photograph 55: At KM13.5, upstream ends of 5 CSP Culverts (3×1300 mm \varnothing ; 2×900mm \varnothing). The 900 mm culverts are vertically elevated. Minor deformation of the culverts under the road (13 September 2018)



Photograph 56: Downstream ends of 5 CSP culverts at KM13.5 (13 September 2018)



Photograph 57: View of the embankment and road over upstream ends of 5 CSP culverts at KM13.5 looking south (13 September 2018)



Photograph 58: View of the road leading north from 5 CSP culverts at KM13.5 (13 September 2018)



Photographs 59 to 62 were taken at KM14.7 on the AWAR at intersection with access road to B12 Quarry. There is a single corrugated HDPE culvert under the B12 access road. The culvert and road embankments are generally in good condition.

Photograph 59: At KM14.7, access road to B12 Quarry. View of intersection of B12 Quarry access road with AWAR looking east. (13 September 2018)



Photograph 60: View through culvert under B12 Quarry access road at KM14.7 of AWAR, no flow, small amount of ponded water within culvert (13 September 2018)



Photograph 61: Upstream end of culvert through B12 Quarry access road at KM14.7 of AWAR (13 September 2018)



Photograph 62: Looking north at AWAR from B12 Quarry access road at KM 14.7 (13 September 2018)



Photographs 63 to 66 were taken at KM16.3 where there are 3 CSP culverts. Some minor deformation of one culvert and erosion visible at the outlet of the lowest culvert.

Photograph 63: At KM16.3, upstream ends of 3 CSP culverts, looking south (13 September 2018)



Photograph 64: AWAR surface over downstream ends of 3 CSP culverts at KM 16.3 (13 September 2018)



Photograph 65: Downstream ends of three CSP culverts at KM16.3. Diameters of the culverts from left to right are: 1000 mm, 700 mm, and 1300 mm Ø. Small flow in 1300 Ø culvert and minor deformation. Some erosion visible at outlet of 1300 mm culvert (13 September 2018)



Photograph 66: AWAR looking north from KM16.3 (13 September 2018)



Photograph 67: At KM18.1, upstream ends of two CSP culverts. Upper culvert is 900 mm Ø and the lower is 1000 mm Ø. Cover over upper (900 mm Ø) culvert is thin on upstream side (13 September 2018)

Photographs 67 to 70 were taken at KM18.1. There are 2 vertically offset, CSP culverts the upper culvert is 900 mm Ø and the lower culvert is 1000 mm Ø. Note that the road near KM18.1 would need to almost be flooded to reach inlet of 900 mm Ø culvert. If water management in this area is a problem, suggest lowering the culvert or installing another culvert at a lower elevation. Some damage was observed on the inlet of the lower culvert, embankment is generally in good condition. A ditch on the upstream side hydraulically connects the culverts at KM18.1 to culvert at KM18.15.



Photograph 68: Damage to the inlet of the lower (1000 mm Ø) CSP culvert at KM18.1. View north along the AWAR road embankment, slope looks good, but water ponded along road. Culvert at KM18.15 visible in background (13 September 2018)



**Photograph 69: Downstream ends of two CSP culverts at KM 18.1
(13 September 2018)**



**Photograph 70: View north at slope of AWAR road embankment from the
downstream ends of the culverts at KM 18.1 (13 September 2018)**



Photograph 71: Upstream end of a 600 mm Ø CSP Culvert at KM18.15. Water ponding below inlet. (13 September 2018)



Photograph 72: Downstream end of 600 mm Ø CSP culvert at KM18.15 and view of AWAR slope, looking south (13 September 2018)

Photographs 71 to 75 were taken at KM18.15 where there is a single 600 mm Ø CSP culvert, the inlet of which is hydraulically connected to the inlets of the CSP culverts at KM18.1 by a ditch. The inlet of the culvert is elevated above some ponded water. Culvert and embankment are in good condition.



Photograph 73: Closer view of downstream end of 600 mm Ø CSP culvert at KM18.15 (13 September 2018)



Photograph 74: View of AWAR surface and slope over culverts at KM18.15 and KM 18.1, looking south (13 September 2018)



Photograph 75: AWAR surface looking north from KM18.15 (13 September 2018)



Photograph 76: Water ponding on the west side of the road at KM19.5, looking south. Installation of a culvert should be considered (14 September 2018)

Photographs 76 and 77 were taken at KM19.5 water is ponding on the west side of the AWAR, reportedly the water ponds here year-round and can reach as high as half way up the embankment. Installation of a culvert at this location should be considered.



Photograph 77: East side of AWAR at KM19.5 where water is ponding on the west side, looking south (14 September 2018)



Photograph 78: At KM21.2 where water is ponding on the west side of the AWAR, looking north (14 September 2018)

Photographs 78 to 80 were taken at KM21.2 where water is ponding on the west side of the AWAR. There are no culverts present at this location. Water flowed over the road at this location during freshet. A straw log has been placed on the east side of the road to manage erosion. It is recommended that a culvert be installed at this location.



Photograph 79: View of the east side of the AWAR at KM21.2 where water is ponding on the west side of the road, looking south. (14 September 2018)



Photograph 80: At KM21.5, a straw log on east side of the road. Water reportedly flows over the road during spring freshet at this location. (14 September 2018)



Photographs 81 to 84 were taken at KM21.7. There are two 170 mm outside \varnothing pipes, vertically offset. Mine personnel reports that the road was excavated at this location this spring to allow water to drain. The capacity of the pipes may be inadequate, or pipes could have been frozen/blocked causing water to backup. Installation of larger diameter culvert should be considered at this location.

Photograph 81: At KM21.7, view of the upstream ends of two steel pipes, each with an outside diameter of 170 mm. Water is ponded year-round at this location. Mine personnel reported that during freshet it was necessary to excavate the road at this location to let the water drain (14 September 2018)



Photograph 82: At KM21.7, view of the upstream ends of two steel pipes, looking north (14 September 2018).



Photograph 83: Downstream ends of two 170 mm Ø steel pipes at KM21.7 (14 September 2018)



Photograph 84: Straw logs placed on west side of the road, south of the steel pipes at KM21.7 (14 September 2018)



Photographs 85 to 88 were taken at KM22.3. There are two 160 mm Ø steel pipes that are vertically offset. Both pipes were clear with no flow. Water is ponding on the upstream (west) side of the road. Inverts of culverts are elevated above the ponded water. Consider lowering the culverts to reduce ponding.

Photograph 85: At KM22.3, upstream ends of two 160 mm Ø steel pipes that are vertically offset. Water is ponded on the upstream side (14 September 2018)



Photograph 86: Upstream ends of two steel pipes at KM22.3, looking north (14 September 2018)



Photograph 87: Downstream ends of two steel culverts at KM22.3 looking south (14 September 2018)



Photograph 88: View of the road north from KM22.3 (14 September 2018)



Photographs 89 and 90 were taken at KM22.7 where water is ponded on the east side of the road. Wet soil was observed on the west side of the road indicating seepage through the road. There is no culvert at this location. Consider installation of culvert.

Photograph 89: Ponded water on the east side of the AWAR near KM22.7. No culvert at this location (14 September 2018)



Photograph 90: East side of the AWAR at KM22.7, looking north. Wet soil observed near toe of embankment. (14 September 2018)



Photographs 91 through 93 were taken at KM25.8 where there is a single HDPE corrugated 600 mm Ø culvert. Some damage and granular material partially blocking the inlet of the culvert. Culvert should be cleaned out to re-establish capacity.

Photograph 91: Damaged upstream end of corrugated 600 mm Ø HDPE culvert at KM25.8. Inlet is partially blocked and should be cleaned out. (14 September 2018)



Photograph 92: Downstream end of corrugated 600 mm Ø HDPE culvert at KM25.8 (14 September 2018)



Photograph 93: Road over single corrugated HDPE culvert at KM25.8, looking south (14 September 2018)



Photograph 94: Upstream ends of two 160 mm Ø steel pipes at KM26.2. The lower pipe is bent upwards and should be replaced. The inlets are elevated close to road surface and nearly covered by road fill, consider lowering and extending (14 September 2018)

Photographs 94 and 95 were taken at KM26.2 where there are 2 vertically offset, 160 mm Ø steel pipes. The lower pipe is bent upwards. The Inlets are elevated close to the road surface elevation and are nearly covered by road fill. Replacing the bent pipe and lowering and extending the inlets should be considered.



**Photograph 95: Downstream ends of two steel pipes at KM26.2
(14 September 2018)**



Photograph 96: Upstream ends of three 700mm Ø CSP culverts at KM26.5. Minor sediment buildup in the bottom of the culverts shouldn't substantially influence flows, monitor. (14 September 2018)

Photographs 96 through 100 are at KM26.5 where there are three 700mm Ø CSP culverts installed at about equal elevation. Small dents in culverts, minor deformation observed under the road. Minor sediment buildup observed in the culverts, riprap and embankments are in good condition.



Photograph 97: Downstream ends of three CSP culverts at KM26.5. Riprap and embankments are in good condition (14 September 2018).



Photograph 98: At KM26.5, road surface and embankment over culverts, looking south (14 September 2018).



Photograph 99: At KM26.5, road and embankment over culverts, looking south (14 September 2018).



Photograph 100: View of AWAR looking north from KM26.5 (14 September 2018).



Photographs 101 through 104 are at KM26.8 where there are two 160mm Ø steel pipes installed, vertically offset. The inlet of the lower pipe was covered by new road fill placed in 2018. The culvert should be extended or replaced. There is some erosion evident below the outlets of both pipes.

Photograph 101: At KM26.8, upstream ends of two vertically offset 160mm Ø steel pipes. The inlet of the lower pipe has been covered during placement of new road fill, should be extended. (14 September 2018).



Photograph 102: Downstream ends of two 160mm Ø steel pipes at KM26.8. Some minor erosion of the road embankment evident beneath the outlets of both pipes (14 September 2018).



Photograph 103: At KM26.8, water ponded on west side of road north of culverts. Water is not against road, but should be monitored during higher water levels to assess if larger culverts needed. (14 September 2018).



Photograph 104: View of road surface and embankment looking south from KM26.8 (14 September 2018).



Photographs 105 through 108 are at KM27.1 where there are 3 CSP culverts installed: 900 mm, 700 mm, and 1000 mm ø. Some minor sloughing of riprap observed around the culvert inlets. Some erosion/deposition observed under culvert outlets. Otherwise embankment slope is generally in good condition.

Photograph 105: At KM 27.1, upstream ends of three CSP culverts. Some minor sloughing of riprap observed around culvert inlets. (14 September 2018)



Photograph 106: Downstream ends of three CSP culverts at KM27.1. From left to right, 1000 mm, 700 mm, and 900 mm ø. (14 September 2018)



Photograph 107: Downstream outlets of three CSP culverts at KM27.1, some minor erosion/deposition evident under outlets. Monitor and add rip-rap if further erosion occurs. (14 September 2018).



Photograph 108: Road looking north from KM27.1. (14 September 2018)



Photographs 109 and 110 are at KM28.7 where water is ponding on the east side of the AWAR. Mine personnel report that water flowed over the road in the spring. Consider installing culvert.

Photograph 109: At KM28.7 where water is ponding on the east side of the AWAR. Mine personnel report that water flowed over the road in the spring. Consider installing a culvert at this location (14 September 2018).



Photograph 110: Wet ground and some ponded water on the west side of the AWAR at KM28.7 (14 September 2018).



Photographs 111 through 114 are at KM29.6 where a single 500 mm Ø corrugated HDPE culvert is installed. Ponding water observed on the west side of road. Culvert inlet is partially blocked by road fill and riprap and is elevated above level of ponded water. Move riprap from in front of inlet and recommend lowering culvert invert to reduce ponding adjacent to road.

Photograph 111: At KM29.6, upstream end of single 500 mm Ø corrugated HDPE culvert. Inlet to the culvert is partially blocked by riprap and road fill and is elevated above ponded water at this location. Remove riprap, clean out culvert and recommend lowering invert. (14 September 2018).



Photograph 112: View of water ponded upstream of 500mm Ø corrugated HDPE culvert at KM29.6 (14 September 2018).



Photograph 113: Downstream end of 500 mm Ø corrugated HDPE culvert at KM29.6 (14 September 2018).



Photograph 114: AWAR embankment and road over culvert at KM29.6, looking south (14 September 2018).