Duval River Bridge, Pangnirtung, NU

Temporary Repair 2004

Site Photographs

Duval River Bridge, Pangnirtung, NU
Bridge Condition Report, July 2004

South Elevation of bridge: Reportedly the riverbed was built up to the top of Rock Berms visible in front of both abutments. The rock was placed during previous attempts to stabilize the riverbed.

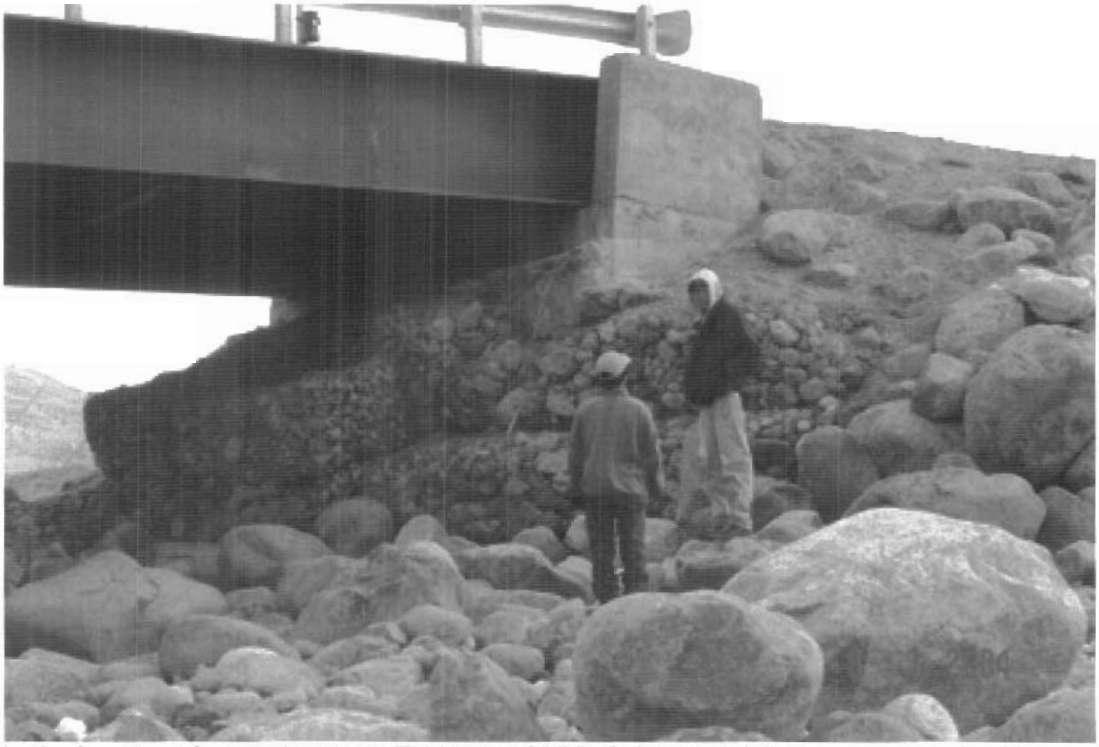
Bridge deck in good condition. Bridge superstructure in excellent condition.

Duval River Bridge, Pangnirtung, NU
Bridge Condition Report, July 2004

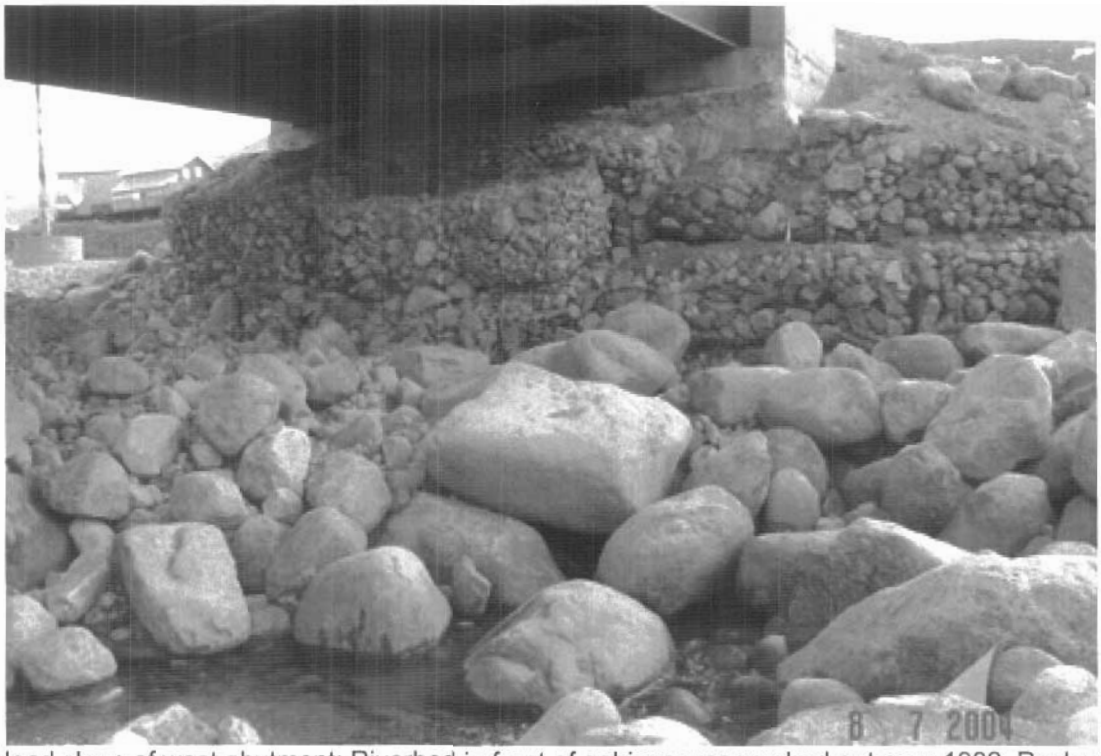
South elevation of west abutment: Evidence of "tilt" of the pile cap. Tilt is due to scour of riverbed under the pile cap; sliding of embankment towards the river; and failure (buckling) of steel piles supporting the cap. Pile cap is being held from sliding down by rebar tie-backs shown on pictures below

North elevation of west abutment: Evidence of "tilt" of abutment (pile cap); slump of gabions towards the river; and missing (washed out) gabions. Riverbed in front of gabions was washed out near 1992. Rock was placed in attempt to stabilise abutment.

Duval River Bridge, Pangnirtung, NU
Bridge Condition Report, July 2004



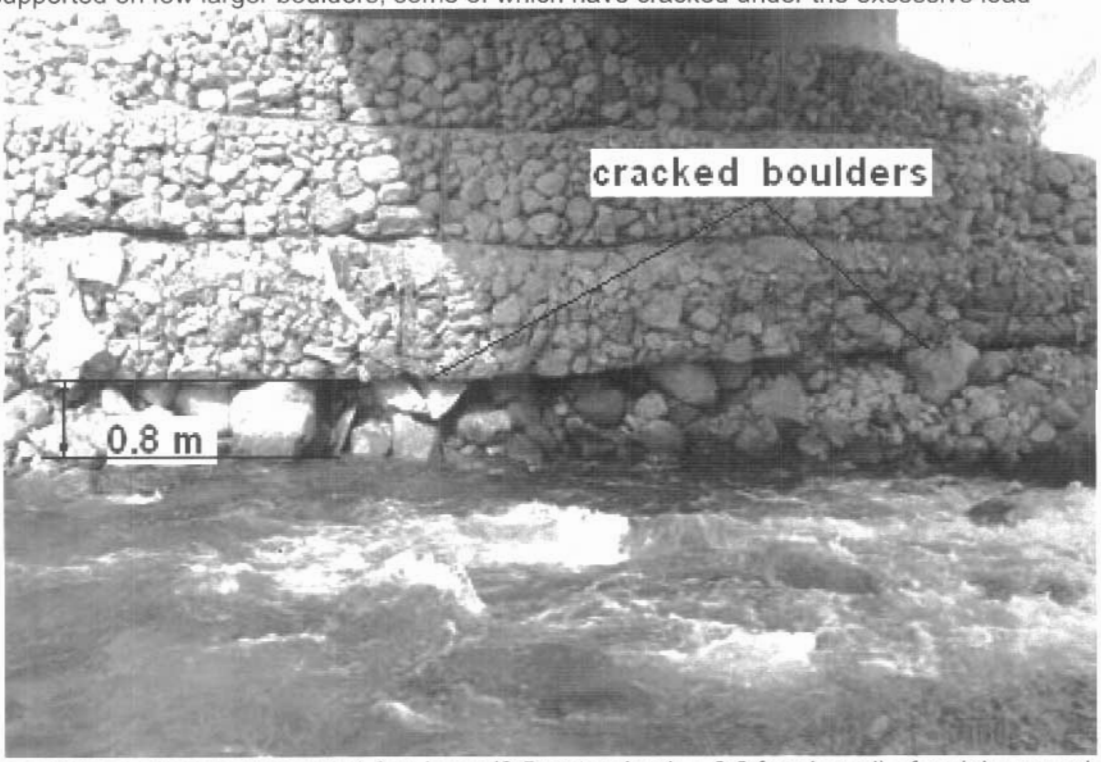
North elevation of west abutment: Evidence of "tilt" of abutment (pile cap); slump of gabions towards the river; and missing (washed out) gabions.



Head slope of west abutment: Riverbed in front of gabions was washed out near 1992. Rock was placed in attempt to stabilise abutment.

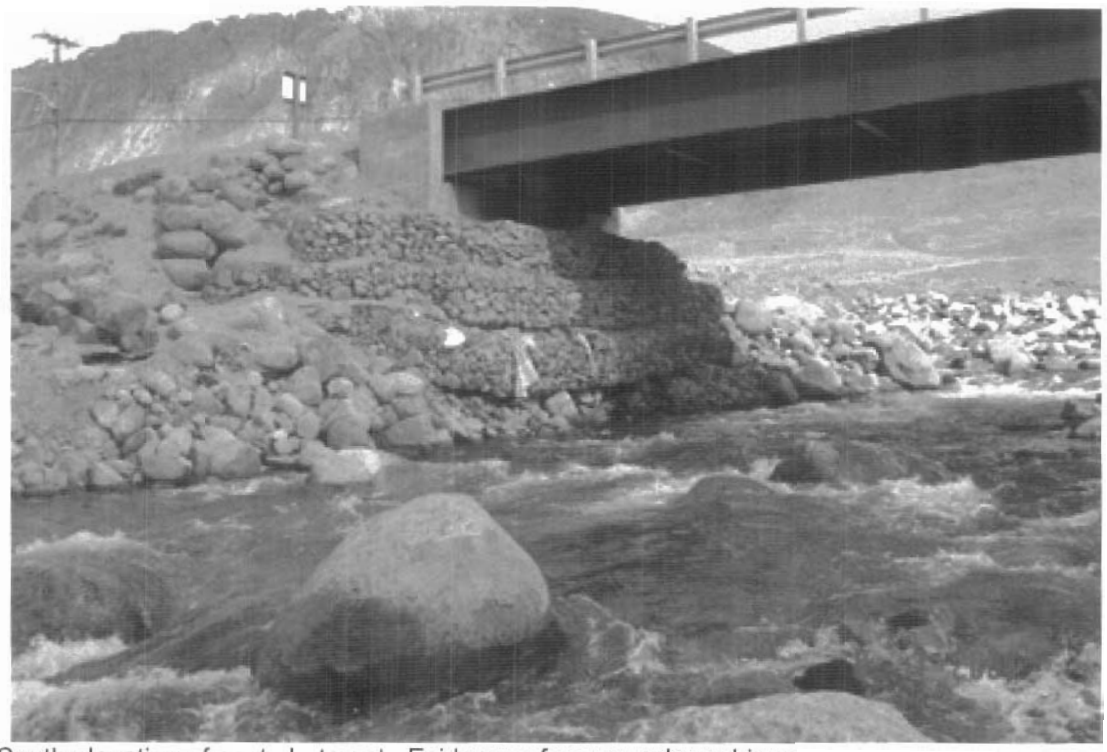
Duval River Bridge, Pangnirtung, NU
Bridge Condition Report, July 2004

Head Slope of east abutment: 4.0 m section of gabion base is washed out. Gabions are point-supported on few larger boulders, some of which have cracked under the excessive load



Head Slope of east abutment: 1.3 m layer (0.5 water depth + 0.8 free board) of rock base under gabions is scoured out. After next major flood/ice discharge more rock will be washed out and gabions most likely will collapse and. As a result the fill behind gabions will slide down, the piles supporting cap will buckle and the abutment will tilt as did the one on the west side.

Duval River Bridge, Pangnirtung, NU
Bridge Condition Report, July 2004



South elevation of east abutment. Evidence of scour under gabions

Gabions on east abutment. Boulder cracked under excessive weight (close plan to the right)

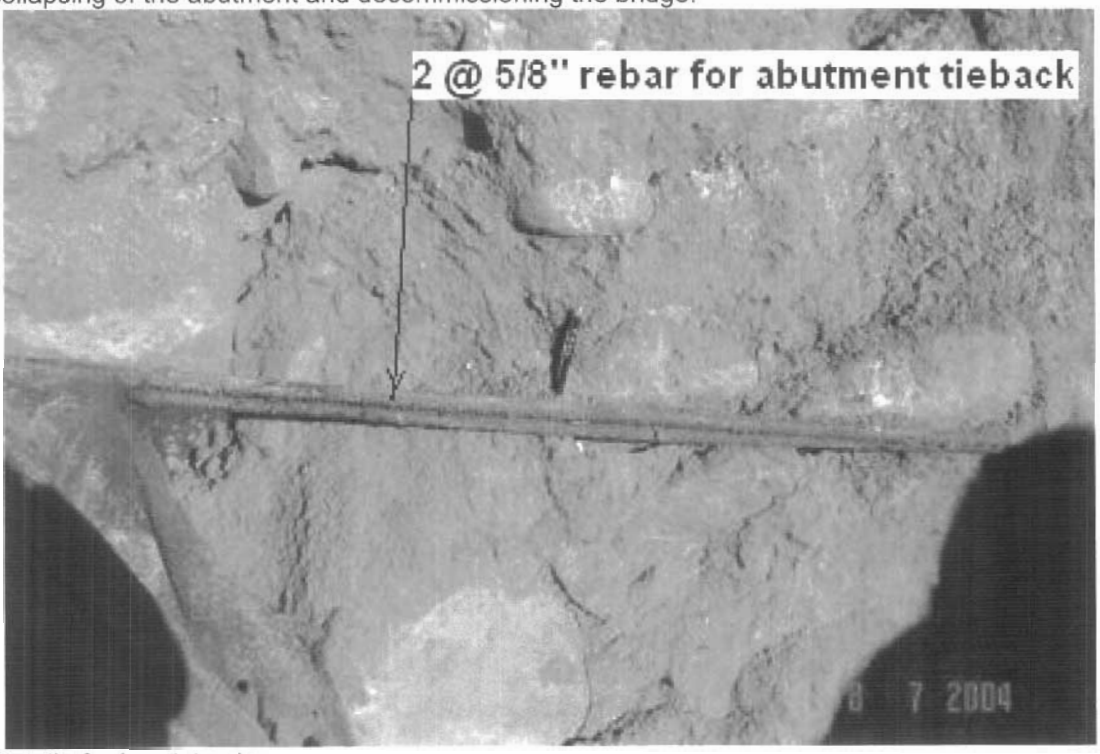
Duval River Bridge, Pangnirtung, NU
Bridge Condition Report, July 2004

Base of gabions on east abutment. Boulders cracked and split under excessive weight

Current undermining the base of gabions on east abutment. In close plan: rock previously placed in attempt to protect abutment

Duval River Bridge, Pangnirtung, NU
Bridge Condition Report, July 2004

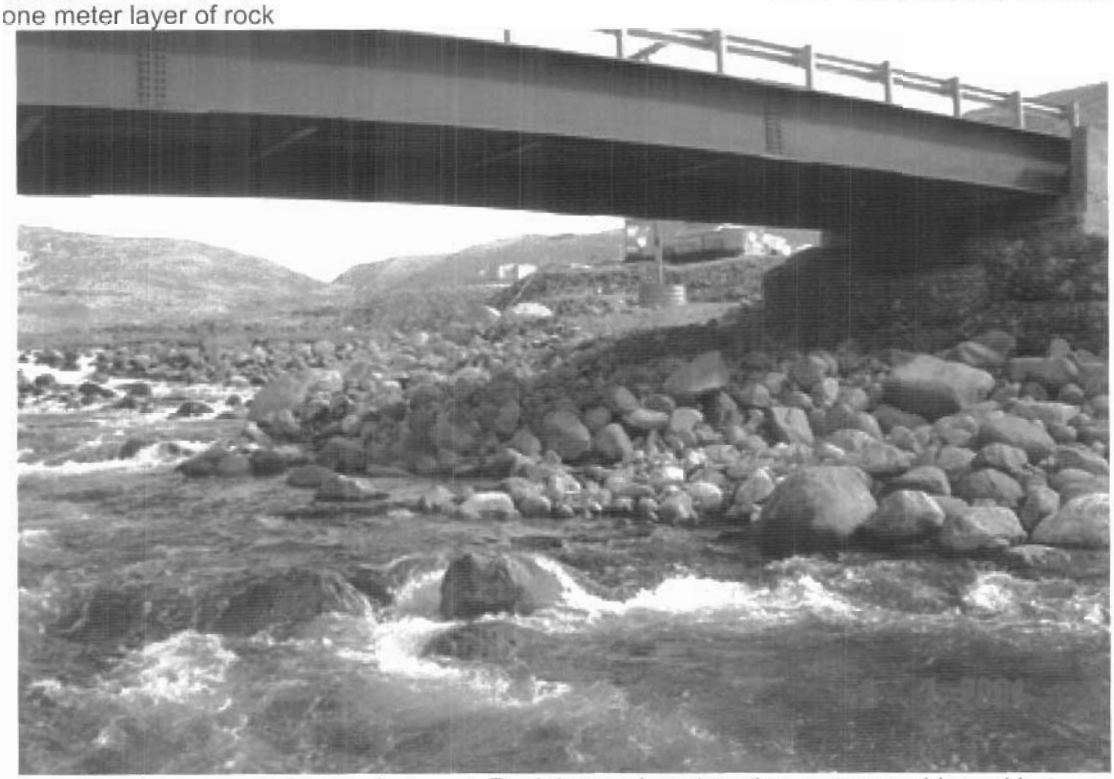
Excavation behind west (tilted) abutment. Note rebar tiebacks anchoring pile cap to dead man behind. Tiebacks are in good condition. Failure of these tiebacks will most certainly cause collapsing of the abutment and decommissioning the bridge.



Detail of rebar tiebacks

Duval River Bridge, Pangnirtung, NU
Bridge Condition Report, July 2004

View of upstream part of east abutment. Rock berm placed on the upstream side and between abutments during repair around 1993. River current and ice traffic have washed out not less than one meter layer of rock



View of upstream part of west abutment. Rock berm placed on the upstream side and between abutments during repair around 1993. River current and ice traffic have washed out not less than one meter layer of rock

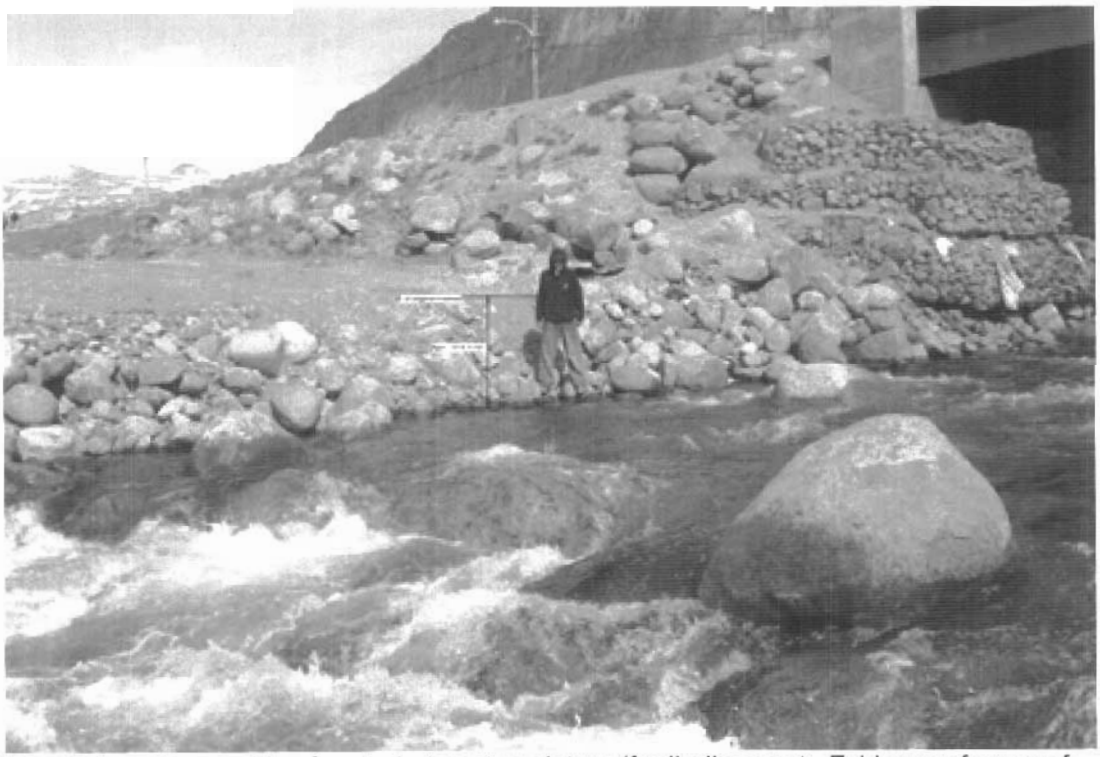
Duval River Bridge, Pangnirtung, NU
Bridge Condition Report, July 2004

North elevation of bridge. Riverbed width in excess of 80 m immediately downstream from bridge

General View of the bridge area towards north. In close plan, rapids between high river banks. Riverbed of appx 45 m width appears to be stable

Duval River Bridge, Pangnirtung, NU
Bridge Condition Report, July 2004

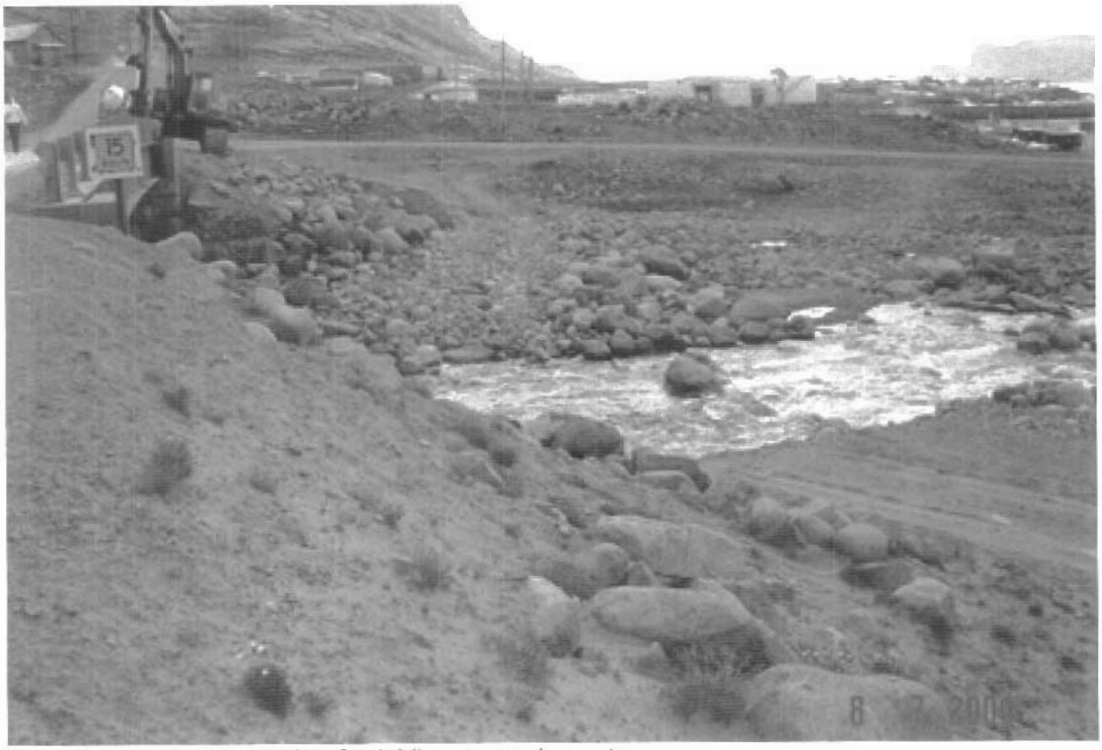
View of upstream side of west abutment. Evidence of failure (cracking and down-sliding) of the embankment due to undermining



View of downstream side of east abutment on detour (ford) alignment. Evidence of scour of riverbed

Duval River Bridge, Pangnirtung, NU
Bridge Condition Report, July 2004

Detour alignment on existing ford. View towards east. Reportedly, 6-8 years ago riverbed at ford was 1.3 m - 1.5 m higher than presently.



Detour alignment on existing ford. View towards east

Duval River Bridge, Pangnirtung, NU
Bridge Condition Report, July 2004

Heavy equipment fording the river. River at ford appx 0.9 m deep. Reportedly heavy equipment on tracks and overload vehicles regularly ford the river. No siltation was noted during the crossing, since the riverbed consists almost exclusively of large boulders

Heavy equipment on east shore after fording the river