

Improving Fish Passage and Widening the Trans-Canada Highway

Connaught Creek
Rogers Pass, Glacier National Park, BC



McElhanney





Outline

- **Project Partners**
- **Background**
- **Existing Conditions**
- **Objectives and Proposed**
- **Challenges**
- **Construction – 2017**
- **Construction – 2018**
- **Post-Construction**
- **Time-lapse**



Project Partners

Owner

Parks Canada Agency

Highway Engineering Services: Gilles Lussier, P.Eng.

Mount Revelstoke and Glacier NP Field Unit: Danielle Backman, M.Sc., RPBio



Project and Construction Managers

McElhanney Ltd.



McElhanney

Contractor

Emil Anderson Construction Inc.



Environmental Monitoring

Ecoscope Environmental Consultants Ltd.





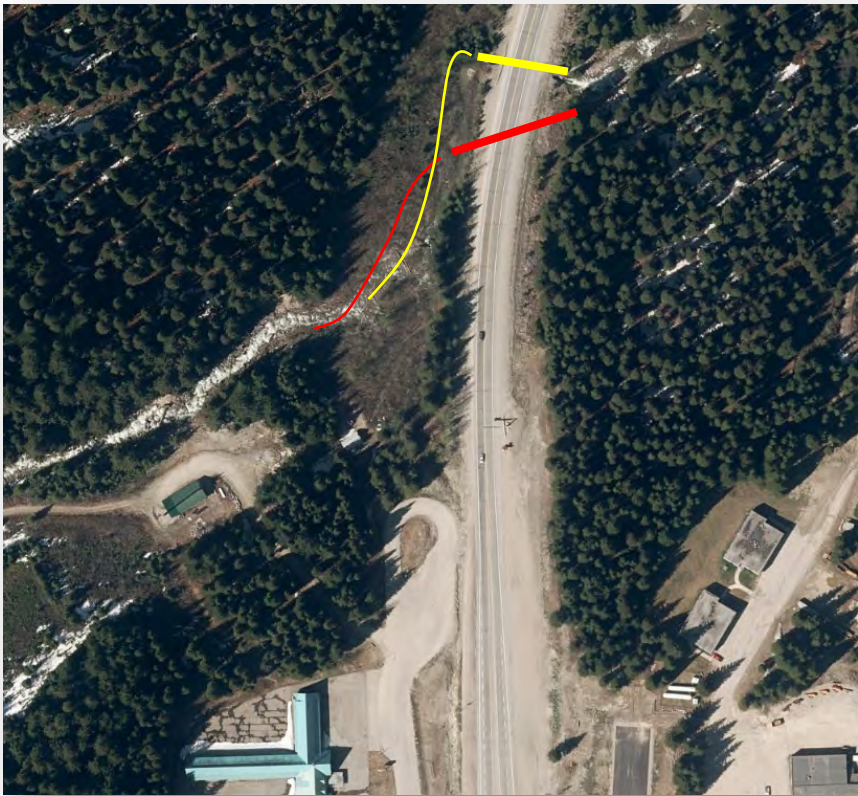
Background

- Illecillewaet Curve Safety Improvements

Existing Culvert and Channel

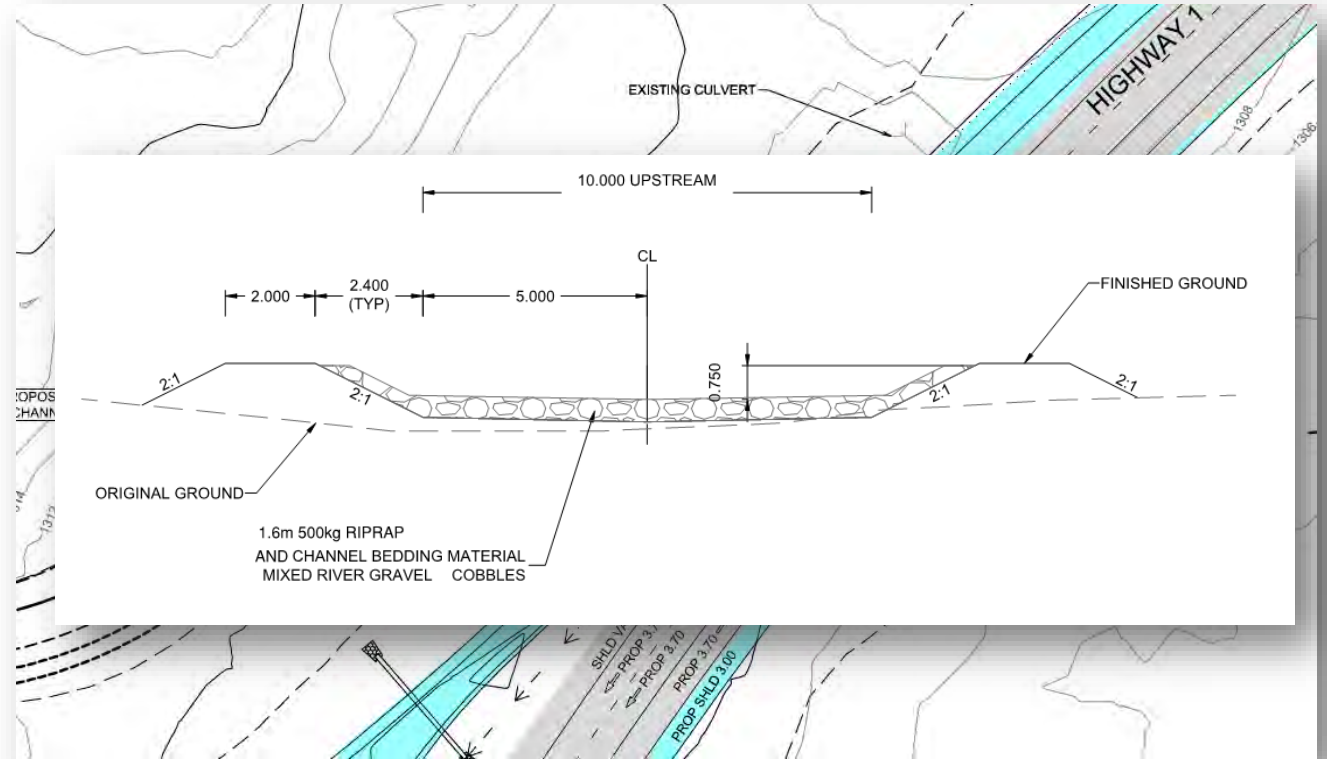
- 2800mm x 27m multiplate structural steel culvert
 - Perched outlet
 - No fish baffles
 - No buffer from highway
 - Not designed for current flows
 - Undefined and braided channel upstream
 - Confirmed bull trout downstream, but none upstream
-



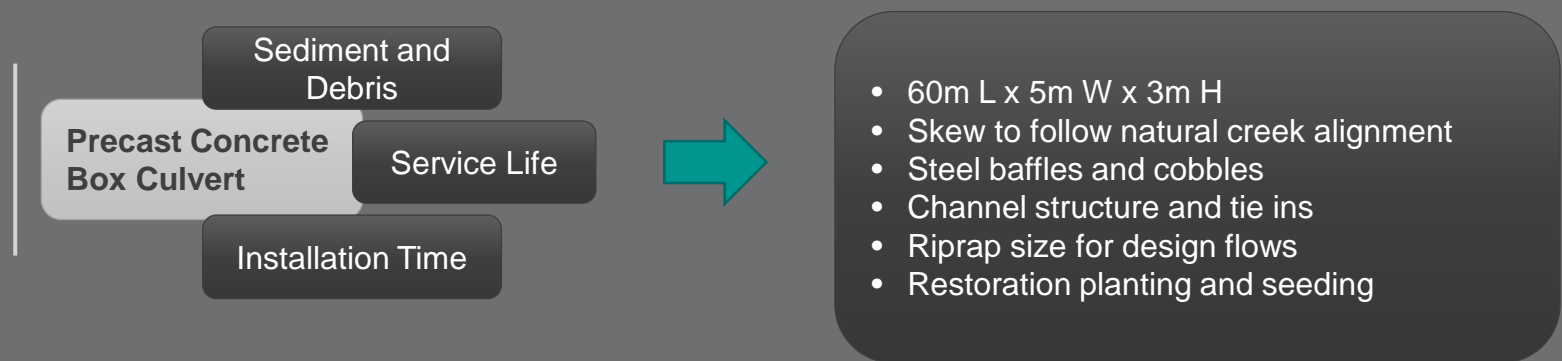


Objectives

Renew culvert design service life	Current flows and climate change
Provide room for new off-ramp	Enhance & promote aquatic connectivity
Restoration planting for erosion protection	Future highway twinning



Proposed



Challenges

- Short construction season June 1 – Oct 15
- Timing windows for least risk to fish and migratory birds
- DFO approval and length of process
- Archaeological area sensitivity and monitoring
- Small / congested site with steep topography
- Limited availability of large riprap
- Utilities in road shoulder, power to snowsheds for lighting
- Road geometry, traffic accommodation and nearby works
- Mountain weather and creek levels



Construction - 2017

- 2 stage culvert installation, 2 highway detours
- Creek diversion during construction
- Shifted culvert and channel for constructability
- Outlet side excavation and ½ culvert installation
- Inlet side excavation and ½ culvert installation
- Channel construction
- Culvert baffle and cobble installation





May 2018



August 2018



August 2019

Construction - 2018

2018 SPRING MELT
LOW-FLOW CHANNEL

TOPSOIL &
WOODY DEBRIS

HYDROSEEDING &
WILLOW STAKING

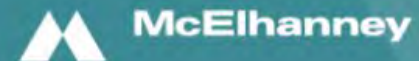
Post Construction

- Fish presence confirmed upstream of culvert
- High flows rearranged cobbles in the culvert
- Extended old culvert, converted to a short-term wildlife highway crossing
- Lessons learned:
 - Diversion sizing
 - Consider constructability against existing conditions
 - Low flow conditions of creek and riprap design
 - Reusing existing infrastructure for a new purpose



ILLECILLEWAET CURVE SAFETY IMPROVEMENTS

Connaught Creek Box Culvert Installation and Creek Realignment, Trans-Canada Highway,
Roger's Pass, Glacier National Park, BC



Thank-you

Presenters

Elliott Reimer, CET

Naginder Jabbal, P.Eng, C.Eng, PMP



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