

RECLAMATION, TRANS CANADA HIGHWAY TWINNING, BANFF NATIONAL PARK

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INTRODUCTION

Parks Canada's primary objective is the protection and preservation of the natural environments. The Trans Canada Highway is Canada's primary east-west transportation route from St. John's Newfoundland to Victoria, British Columbia, with the twinning changing a two-lane highway built in the early sixties to a median separated highway with dual east and westbound lanes. The SADT of 13,500+- vehicles has resulted in extensive platooning and a number of serious accidents, thus necessitating the need to continue with the twinning of an 18.2 km section from the Sunshine to Castle Interchange. Banff National Park has been recognized as a World Heritage Site, putting additional emphasis on environmental protection. Spiking of some trees withing the proposed Right of Way to hopefully stop the twinning has received wide media coverage.

PHASE I & II TWINNING

Work on Phase I started in 1980 and Phase II in 1984 with the twinning of the Trans Canada Highway from the Banff National Park East Gate to the Sunshine Interchange completed and providing relevant information for the current Phase IIIA Twinning Works. Phase I & II cover a length of 26.5 km, medians are wide with remaining forest cover where possible by the terrain,--- with narrow, Concrete Barrier Medians in areas of difficult terrain. Eight feet high Wildlife exclusion fencing has reduced wildlife mortality to 5% of the previous levels. Ten Wildlife Underpasses were constructed consisting of Bridge Structures with a 15 m wide top-span, 4m high vertical clearance and a level 4-5m wide passage area at the bottom. A Multi-Plate-Culvert with a 4m height and 7m width also was constructed and proved successful. These underpasses are used by bears (even though some black bears have been observed of climbing the fence), they receive high use by ungulates, Rocky Mountain Sheep and small mammals. On the other hand the page wire fencing does allow the penetration of Coyote, who seek out the grasslands within the fenced Right-of-Way leading to a high mortality rate. Therefore the decision has been taken to use variable mesh fencing with closer wire spacing at the bottom for the Phase III Twinning.

The driving experience is pleasant, with the one way traffic flow allowing the drivers more time to enjoy the mountain scenery. Special care was taken to realign Chinamen's Creek providing pools and riffles and generally improving fisheries for the Brown and Brook Trout. Two

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weeks ago I personally observed some monsterfish. The required borrow materials for Phase II were extracted from Healy Creek Pit, creating a much improved Ungulate Habitat in the process. This no longer can be classified as the typical borrow area, this is a pleasant landscape of interconnected extraction areas with gentle, rolling cut slopes and protective tree cover within 100 metres from any foraging areas. What started out as a grassy mono-culture has turned into a bio-diverse landscape with flowering native legumes and forbs, invading tree and shrub seedlings, and shallow ponds with emergent sedge and willow vegetation.

PHASE IIIA TWINNING

With this experience under our belts we set out to design and construct the 18.2 km of twinning for the Trans Canada Highway from the Sunshine to Castle Mountain Interchange within a montane/sub-alpine environment. The montane valley bottoms present the most productive environment within Banff National Park, which is especially important as winter wildlife range. Unfortunately, the valley bottoms have also seen the highest level of man-made infrastructure. The existing highway alignment is along the lower north facing slopes of the Bow Valley, with the slopes on the south and the Bow River on the north side, thus limiting alignment changes for the twinned highway. In order to minimize any adverse environmental impacts the following measures have or will be taken:

- * The chosen alignment is at the toe of the north facing slopes to avoid more productive valley-bottom lands.
- * More than 1km of narrow median using Concrete Jersey barriers will be constructed to reduce environmental impact.
- * Rather than using the valley bottom or Mannix Pit as a source for the required borrow material, all material will be borrowed from the km 39 sidehill cut borrow area in a less sensitive environment.
- * Even though the earlier proposed highway alignment showed some encroachments on open river waters, the alignment in the final design avoids any infringement upon river waters.
- * Impact on sensitive wetlands has been minimized by avoiding them and through run-off control.
- * The bridge over Red Earth Creek is being constructed while none of the fish are spawning, with the new culvert Crossing over Wolverine Creek completed while no waters flowed in this intermittent mountain stream.
- * Culverts for any potentially fish-bearing streams have been set to facilitate fish passage.
- * The decision has been made to continue with the 8 feet high wild life exclusion fencing along the entire right-of-way using a variable mesh pagewire fencing. The final fence location will be chosen to maximize wildlife habitat, a visually/aesthetically acceptable alignment and maintenance access/repair. This wildlife fence will reduce wildlife mortality due to vehicle collisions by at least 95 %.

* 30% of the total twinning budget will be spend on environmental mitigation, two major wildlife overpasses will be constructed at a cost of 2 million dollars each, two major 4m high, 7m wide & 30 m long clear span underpasses will be constructed, numerous other wildlife underpasses with a minimum size of 1.0m to facilitate wildlife movement will also be constructed.

* Two Picnic Areas have been closed, two trailheads will be retained as well as the Castle Mountain viewpoint for a reduced environmental impact.

* Retaining walls will be constructed using naturally coloured concrete to minimize visual and sidehill impacts, with 0.9: 1 rock retaining slopes proposed to avoid impact on open water.

* All topsoil and fine grained subsoils will be salvaged, with all disturbed areas covered with a 10 cm of topsoil prior to seeding.

* Slopes will be established generally to a maximum gradient of 2:1 to facilitate a permanent vegetation cover. Slopes will also be rounded and modulated to achieve a natural look.

* Rather than burning, ---all roots, stumps, brush and tree trunks less than 10 cm in diameter will be chipped for composting and later reclamation use.

* merchantable timber has been sold with the credit applied towards this project providing for improved mitigations.

* All disturbed areas will be seeded to a native grass mixture of Northern Wheatgrass, Streambank Wheatgrass, Slender Wheatgrass, Fringed Brome, Tufted Hairgrass, Fowl Bluegrass, Rocky Mountain Fescue, Junegrass, Alpine Bluegrass with 5% non-native Perennial Ryegrass added as short-lived nursecrop. The proposed seeding will also use Biosol an organic fertilizer to activate soil bacterial action and provide slow, non-leaching nutrient release, with Copolymers, Woodfibre Mulch, and Tackifier to prevent surface erosion.

*Extensive plantings using landscaped sized native trees and shrubs will be used for the Wildlife Over and Underpasses. Reforestation plantings using locally collected tree seed are planned to soften the exposed forest edges.

* An Environmental Subcommittee and an Environmental Surveillance Officer assigned full-time to this project will ensure acceptable reclamation and mitigation procedures.

The twinning works for Phase III A are in progress. When complete, I expect happy wildlife and happy people,---if some people will be unhappy, it will not be for lack of reclamation effort.



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*Conservation and Reclamation:
An Ecosystem Perspective*

Canadian Land Reclamation Association's
21st Annual Meeting

Calgary, Alberta
September 18-20, 1996

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