

Fish Passage Culvert Replacement 33.5 km Underdown Road, TFL 35 (Inkaneep block), Wabash Creek, Southern Interior Forest Region

Objectives of the overall project

Replacement of two circular culverts with one arch culvert to restore upstream rainbow trout passage on Wabash Creek (an S3 stream not within a community watershed).

FIA Investment Schedule Number, Project Number, and Fiscal Year

SOTFL154662, 4662001, 2006/07.

Recipient Name and Division/ MoFR District/ MoFR Region

Weyerhaeuser Company Limited, Okanagan Falls. Okanagan Shuswap, Southern Interior Forest Region.

Names/Affiliation of Registered Professionals Involved in the Project

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Name of Watershed / Sub-basin, & Location

Solco Creek / Wabash Creek. From Okanagan Falls sawmill take the R201 from 0km (behind mill) to 12.5 km turning right onto the R200. Travel to approximately 32 km and turn right onto the Underdown Road. Travel to 33.5 km (site location). UTM Zone 11 3335,363 / 5,459,158

Introduction

Fish Passage Culvert Inspection Procedures identified this location as an upstream barrier to rainbow trout migration in 2001 with a score of 47. The culverts had been installed in the early 1980's and were undersized and perched. A hydrologic assessment and culvert design were subsequently prepared but funding constraints prevented the structure from being installed until fiscal 2006/07. Prior to installation a new design was identified to reduce costs. A reinforced soil arch design was prepared and the original designs modified to utilize a soil arch. The soil arch used layers of compacted, re-enforced soil (wire baskets and woven geotextile) along and over top of the culvert to create a rammed-earth structure with sufficient strength to suspend a culvert over the stream. Traditional approaches use concrete footings to support the footing from below; our approach uses the reinforced soil of the road bed as a platform from which to hang the culvert.

Description of Design

Reinforced soil arch design was selected as it appeared to offer cost savings for the installation phase. Use of this design in the south Okanagan is just beginning and there are few, if any, installations to compare against in terms of cost or performance.

Description of Completed Work

On-site works commenced August 28 and were substantially completed by September 1 (only final grading and capping remained.) Two excavators and a 4-6 person crew were required to install the soil arch and culvert over this period. Prior to installation, fish were removed from the work area and downstream / upstream fish fences were installed to isolate the work site. The bottom fence only was removed after construction was complete and fish were found upstream of the culvert three weeks later. Having demonstrated that the culvert was fish passable, the upstream fish fence was removed.

Cost Summary

Total installation costs (excluding pipe) \$44,754.

Post-construction Inspection

The culvert will be inspected every year as part of Weyerhaeuser's ongoing CSA and ISO certification requirements.

Photographs

Photo 1. Before: outlet of perched culverts that were undersized for Q100.



Photo 2. Looking upstream from outlet showing layers of reinforced soil constrained by geotextile inside of wire baskets. The stone facing protects underlying geotextile from UV damage. Several stone lines were constructed inside of culvert to mimic natural stream structure.



Photo 3. Looking at outlet of finished product.

