

Simms Creek Duromaxx SRPE Reline

DuroMaxx steel reinforced high density polyethylene pipe was selected for this project due to its ability to handle the design and construction loads, maintain the necessary hydraulic capacity of the structure and cost effectiveness. Simms Creek is an important Chinook and Coho salmon habitat located in the City of Campbell River. This ecologically sensitive creek travels under Galerno Road through a 26m long 3.66m diameter circular pipe. The existing buried structure had a height of cover of 1.5m with numerous utilities buried under the two vehicle travel lanes. The existing structure had been in use much longer than its intended service life and there was evidence that both the pipe and surrounding engineered fill had been compromised. Under high water events there was a potential that the stream crossing could fail in a catastrophic manner which would be harmful to the aquatic environment and cause great inconvenience to the road users. The City of Campbell River issued a request for Proposal to evaluate all options available for rehabilitation. The City needed to find an effective solution which would minimize road closures, be cost effective, meet the new design and service life requirements, and allow the installation to be completed during the very tight fish window when in-stream works would be permitted by DFO. Armtec presented several options and it was determined that relining would eliminate time, cost and safety problems that would arise with a complete structure replacement. A reline option using DuroMaxx steel reinforced high density polyethylene pipe was selected due to its ability to handle the design and construction loads, maintain the necessary hydraulic capacity of the structure (the smooth interior surface provides a Manning's "n" of 0.012), and cost effectiveness. The pipe sections were placed onto runners which were connected to the invert of the existing pipe. The contractor, Upland Excavating Ltd., was able to slide the lightweight pipe with no special equipment into the existing structure and electrofused the pipe sections together into a single unit.

Grout ports were installed into the DuroMaxx pipe to facilitate the grouting of the annulus between the DuroMaxx and the host pipe. The grouting was completed in several pours to reduce the risk of pipe flotation and minimize the grout pressures. Preparation work on the existing culvert started on August 29, 2012. The DuroMaxx arrived on site two weeks after the construction contract was awarded. Following the successful grouting operation, in-stream work continued with the upstream and downstream riprap, as well as river rock within the new culvert to improve.