



Project Summary

Bridge River Substation

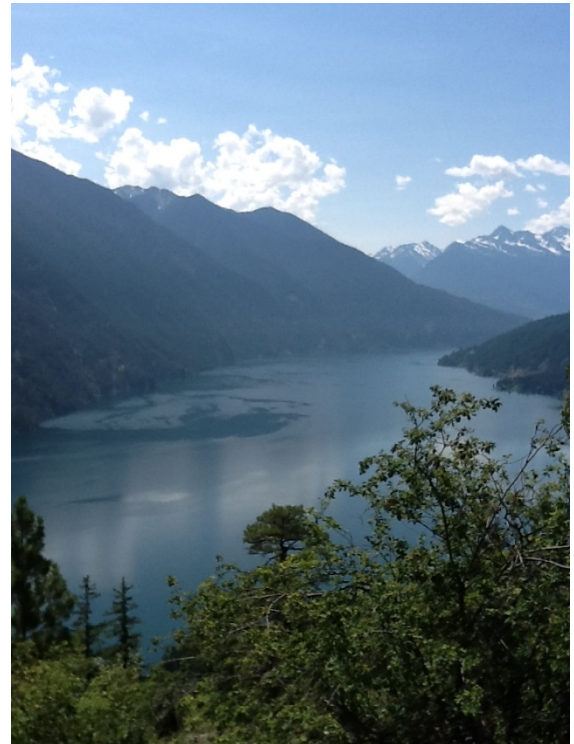
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BC Hydro is a major Canadian electric utility in British Columbia, Canada. It provides electricity to much of the province of British Columbia. They operate 30 hydroelectric facilities in some very remote locations in the province. One such facility is the Bridge River substation on Seton Lake. The Bridge River Substation is a 2 hour drive from the nearest town and it houses 50 staff. The staff work in shifts where they are on site for 2 weeks and then home for 2 weeks, so housing facilities were required at the substation. The architects wanted a nice look to the facility to make the employees comfortable while they were out on site working for extended periods of time. They liked the aesthetics of the AB Abbey Blend from the AB Europa Abbey Blend collection based on the photos they saw on the Allan Block website.



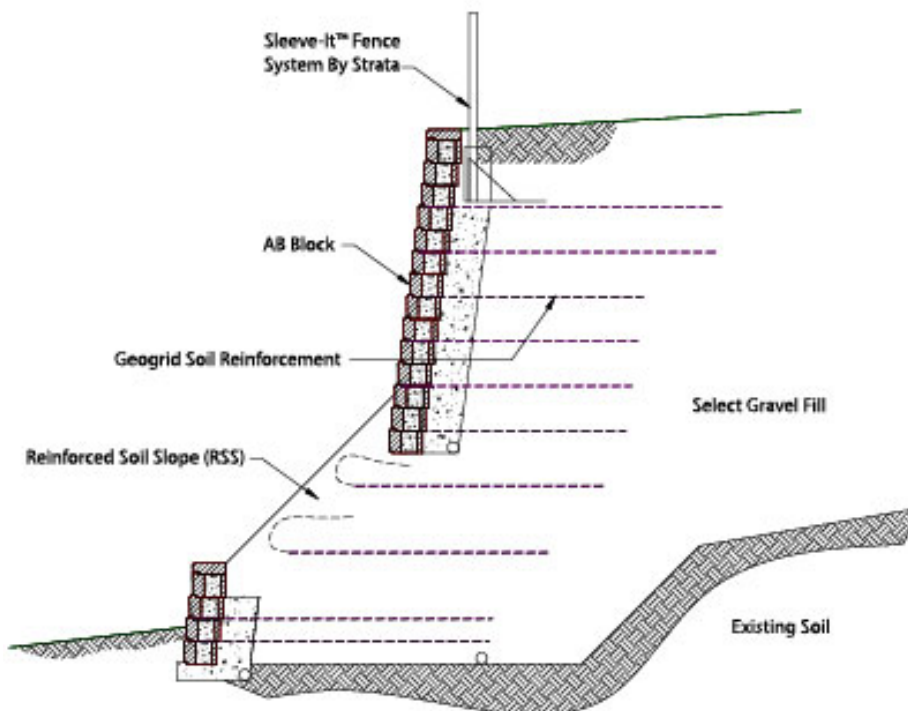
PLAN

The Bridge River Substation site is a very difficult site to access since it is perched on the side of a mountain and it is only accessible by one lane gravel roads from either side of the project. Some sections of road are barely big enough for a single vehicle and there are cliffs on both sides which leaves no room for driver error. The large number of walls on the project and the quantities of material required to construct the walls required careful planning and logistics to ensure successful completion. Since the project is on the side of a mountain, careful planning for material storage was imperative so construction would not be hindered. Over 25,000 square feet (2325 square meters) of AB Europa Abbey Blend was necessary to carve the buildings onto the tight construction site and the design of this project makes it a LEED Gold project.



DESIGN

Many of the walls were built as terraced structures and required the analysis of the global stability of the slope. The extreme grade changes in the area and the tight construction site called for the use of some unique terrace designs. Some of the wall structures were required to support loads from the structures above. The engineers had to carefully consider the structural load before they could analyze the behavior of the terraces below. Once the proper surcharge for design was determined the engineers had to perform a global stability analysis to ensure that the overall structure was sound. An interesting twist to the global stability model was that some of the terraced structure designs had a very steep slope between them. Providing slopes at the top and bottom of a retaining wall may improve site drainage and site construction; however, increasing the slope at the top of a retaining wall also increases the surcharge that is applied to the retaining wall. This also left an intermediate gap in the structure that could allow for slope failure. The solution was to use layers of geogrid to stabilize the slope in between the terraces and thus prevent an intermediate global stability failure to the system. By using geogrid Reinforced Soil Slope (RSS) design techniques and good infill soils the structure could be designed to work for the challenging site.



BUILD

For the Bridge River Substation, the biggest project challenge was to get the project started. The facility is located in a very rugged part of BC where there are very few roads. The contractors literally had to carve a path along steep forested mountain terrain to even get to the project site. Once the access was completed, transportation of material into the site was still very difficult due to the extensive distance of one lane gravel road. Also, due to the remote location, the contractor had to basically live on site during the construction of the camp. Construction occurred during the harsh BC winter months.

Deerwood Landscaping Ltd. successfully won the bid to construct the Allan Block Walls on the project. They were one of the first contractors to install an Allan Block wall in British Columbia in 1993.

Their team possessed the high level of skill required to undertake such a large and uniquely challenging project such as this.

During the installation the contractor developed techniques that allowed them to maintain a high level of detail throughout the project. They took the time to construct precision corners and install the fence posts above the walls properly. They also paid special attention to leveling the base course and maintaining true and level coursing along the length of the walls. The excellence of their construction skill is clearly evidenced by the perfectly level sight lines down beautiful walls they created.

Deerwood has constructed many large projects in the past. The Bridge River project was large enough to elevate several employees to Allan Block master wall builder status. The experience gained from this project now has them comfortably building incredible wall projects throughout the greater Vancouver area.

The Bridge River Substation project had significant challenges (mainly relating to its remote location) that required both a skilled contractor and strong support from the local manufacturer. The combination of excellence by both Expocrete and Deerwood Landscaping made this project a huge success.

