

SOUTHVIEW BEACH SHORELINE RESTORATION



PARTICIPANTS

Owner: Private, Single Waterfront Lot

Engineering & Environmental: Jim Mitchell, PEng, MSc., Emerald Sea Engineering

Contractor: Sorenson and McDonald

KEY WORDS: coastal erosion control, beach restoration, buried sea defense

PROJECT OBJECTIVE

Protect eroding shoreline and trees from wave and runoff erosion, while maintaining sandy beach and native plants.

PROJECT LOCATION

15 km north of Powell River, Southview Beach, Sunshine Coast, British Columbia.

PROJECT BACKGROUND

In the winter of 2007-2008, an extreme high tide combined with high winds, waves and upland runoff resulted in drainage channels on either side of the property eventually joining and running along a bank in front of the house. Property owners estimated that 15 to 20 m³ of sand were lost threatening the cottage, a large fir and a cedar.

OVERALL DESIGN STRATEGY

The overall design concept was to divert the creek runoff away from the bank, protect the roots of the large trees from erosion, and restore the sand beach that had washed away. Two truckloads of 60 cm rounded rock were buried under the sandy beach to act as a backup defense. Clean sand, bedding gravel and small rock were used under the large rock. Sand was also placed over the large rock. Materials included 25 yds³ clean, larger rounded rock; 25 yds³ clean, medium to small rounded rock (approximately 50% 2" minus and approximately 50% 3" to 12"); and 45 yds³ of clean quarry sand. It was expected that the rock would only be exposed during an extreme event and that the site would normally have a naturally accreted sand berm extending up to near the highest tide levels.

PLANTING PLAN

Native plants disturbed by construction were set aside and replanted and native plantings were enhanced. 150 clumps of beach grasses were replanted along with some Nootka rose bushes.

EROSION AND POLLUTION CONTROL

All work was done below the natural boundary and the July tides did not wet the construction area. The existing berm was maintained to isolate any potential construction runoff from tidal waters. Two spill kits were kept on site.

KEY CHALLENGES

Neighbours on adjacent properties had placed wave-reflecting, large rock structures for their shore protection. The deflected wave energy could threaten the softer shore protection at this site. One of the objectives of this project was to protect the trees. However, since the beach restoration efforts, they have been pounded by driftwood in big storms. Therefore, a few boulders will be placed around the base of the trees for protection.

LESSONS LEARNED

The Green Shores example gallery will be a useful tool for convincing neighbouring property owners of the merits and effectiveness of a collaborative Green Shores approach. A collective neighbourhood design would also increase the overall shore protection effectiveness while reducing costs, since design costs are a significant portion of the total costs in a very small project.

OUTCOME

The final result blends well with the properties to the west and east and appears to be very close to a natural beach. This is expected to improve with time due to natural accretion. The project has successfully withstood storms as of February 2010. Many thanks to the owners, the Sliammon First Nation, and the Department of Fisheries and Oceans for allowing this project to happen.

TOTAL COSTS

Total cost was \$20,000. Design, authorization and supervision \$5000 split evenly between design/permit and construction supervision. Construction costs were \$15,000, with about 50% of the cost being materials and 50% equipment and labour.

Contact for More Information:

Jim Mitchell, P.Eng, MSc

Emerald Sea Engineering

204-4685 Alderwood Place, Courtenay, BC
V9N 9A1

Email: k3380882@telus.net

Phone: 250-338-0882

CONCEPTUAL DESIGN GRAPHICS

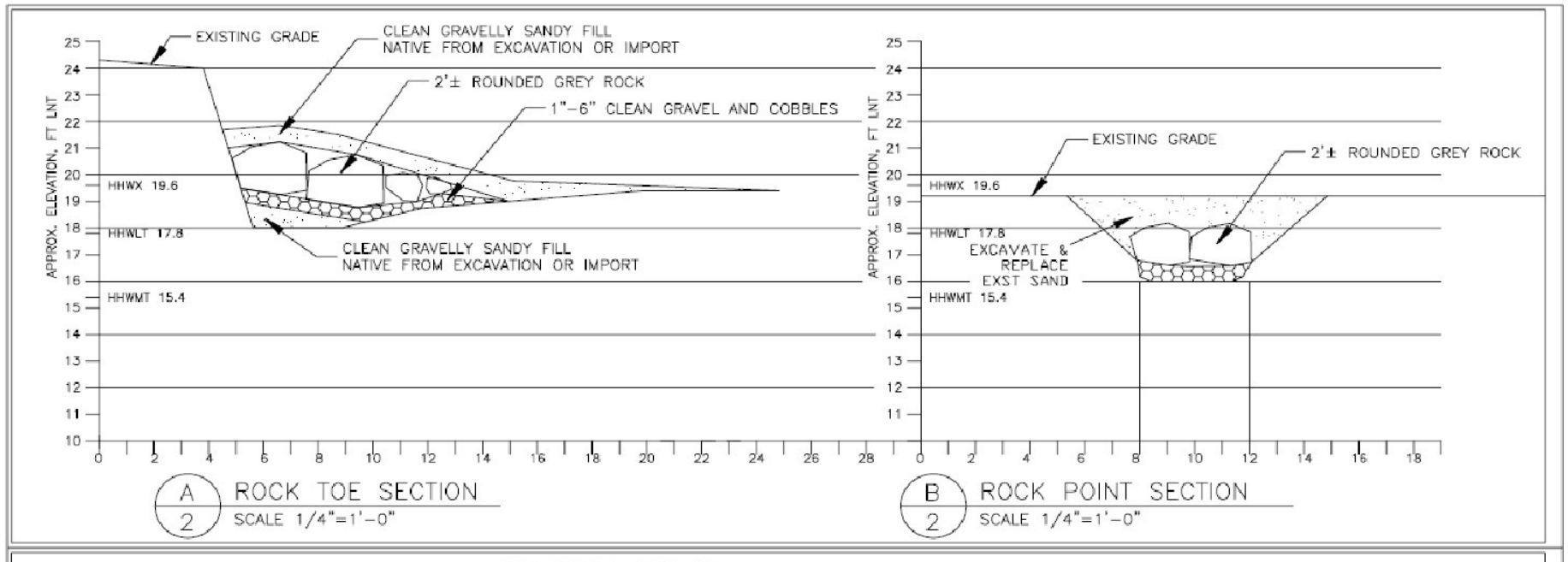


PHOTO DOCUMENTATION:

Pre-Construction



Construction Phase



Post-Construction

July 2009

October 2009 (first storm)

January 2010

