

## 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. These channels eventually joined and ran along a bank in front of the house. Property owners estimated that 15 to 20 m<sup>3</sup> 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 yds<sup>3</sup> clean, larger rounded rock; 25 yds<sup>3</sup> clean, medium to small rounded rock (approximately 50% 2" minus and approximately 50% 3" to 12"); and 45 yds<sup>3</sup> 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 Green Shores green 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.

## LESSONS LEARNED

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.

## 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.

## COSTS

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

## Contact for More Information:

Jim Mitchell, P.Eng, MSc

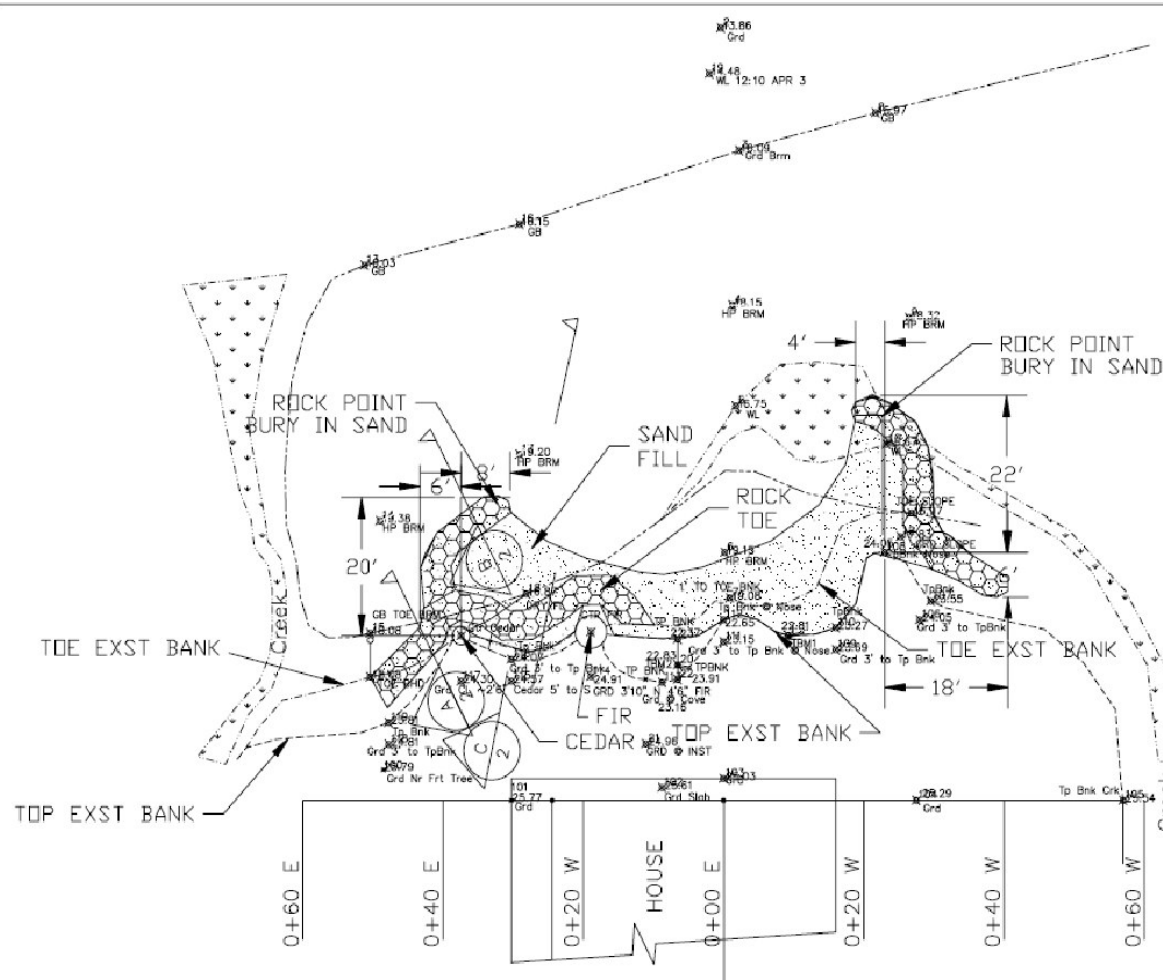
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CONCEPTUAL DESIGN  
GRAPHICS



GENERAL NOTES  
 1. ELEVATIONS ARE APPROXIMATELY LNT BASED ON ESTIMATED TIDES.  
 2. REMOVE EXISTING DRIFTWOOD & SET ASIDE.  
 3. TRENCH AND REGRADE SAND TO ALLOW PLACEMENT OF ROCK BEDDING, ROCK POINTS AND ROCK TOE.  
 4. PROVIDE CLEAN 1" TO 6" BEDDING ROCK OVER EXISTING SAND & GRAVELS 6" THICK MIN.  
 5. PLACE SINGLE LAYER OF 2'± ROUNDED ROCK ON TOP OF BEDDING ROCK.  
 6. COVER ROCK WITH NATIVE &/OR IMPORTED CLEAN GRAVEL & SAND MIN 6" DEEP.  
 (SEE SECTIONS).

REVISIONS BY	

**Emerald Sea Engineering**  
 Southview Cottage  
 Shoreline Restoration & Enhancement – Plan

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DATE: 10 Jun 09  
 Scale: 1/16" = 1'  
 Drawn: JAM  
 Job: Southview  
 Sheet  
 1  
 of 2 Sheets

# CONCEPTUAL DESIGN GRAPHICS

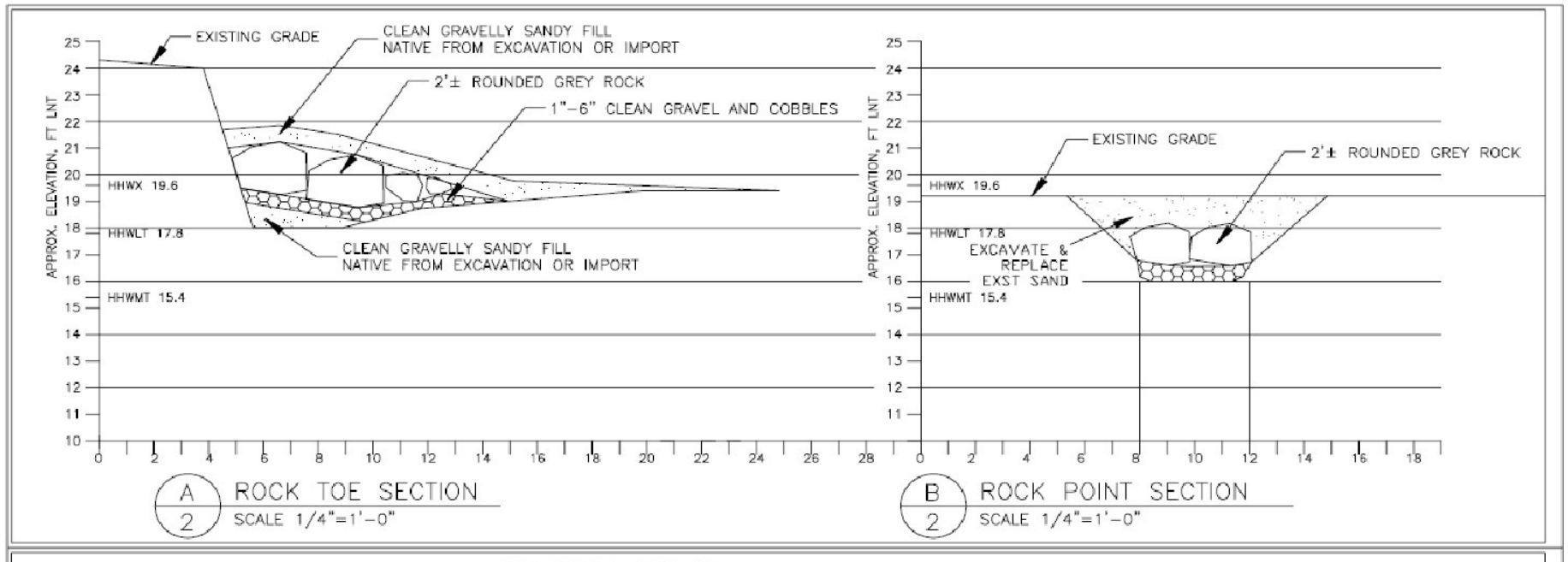


PHOTO DOCUMENTATION:

**Pre-Construction**



**Construction Phase**



**Post-Construction**

July 2009

October 2009 (first storm)

January 2010

