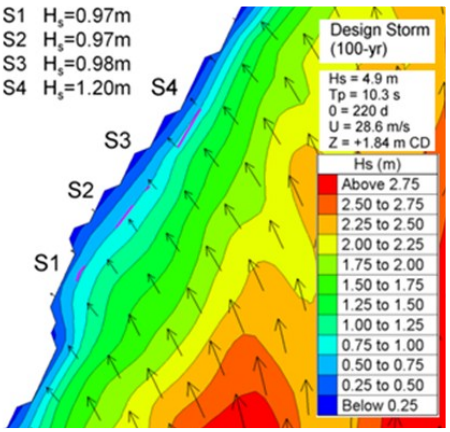
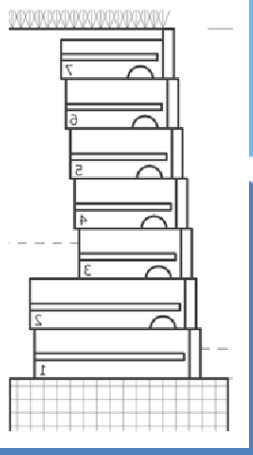
## *PROJECT* Amherst Island Shore Protection



### *PROJECT DESCRIPTION*

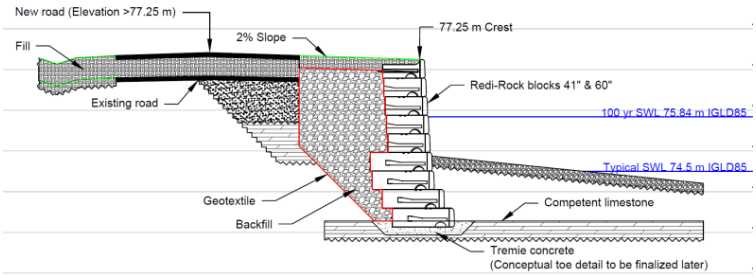
Shoreline erosion and wave-generated overtopping and flooding are ongoing problems for South Shore Road and Front Road on Amherst Island. Coldwater Consulting Ltd. was contracted by Loyalist Township to develop shore protection solutions for these two coastal roads in collaboration with AECOM. Coldwater was selected for this project because of our expertise in shoreline work, especially our experience with coastal roads subject to flooding. Coldwater's role is to provide coastal engineering analysis including the determination of design conditions, and evaluating the proposed design alternatives for wave loading, runup and overtopping.

### *PROJECT APPROACH*

An important aspect of this project was the shore geology, which was characterized by varying layers of limestone of varying strength and competence. Of the 163 m of South Shore Road, approximately 80% was fronted by cobble beach, with the remainder limestone. Of the 337 m of Front Road, approximately 67% was along cobble beach, with the remainder along vegetated bluff.

The design wave conditions along Amherst Island were established using SWAN, a spectral wave transformation model. Offshore conditions were taken from the Lake Ontario Wave Information Study (WIS) hindcast dataset. The spatially-varying results were used in wave runup and overtopping calculations to determine the design crest elevations. The results indicated that seawall would be needed to achieve the required degree of protections.

After geotechnical, structural and scour analyses were conducted, Coldwater developed seawall designs for the two locations using Redi-Rock precast concrete blocks.




### *CLIENT*

Loyalist Township
Odessa, ON

### *LOCATION*

Amherst Island, ON

### *DATE*

2009-11

Coldwater Consulting Ltd

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