

## Geotube® Shoreline Protection at Round Lake, Ontario

### *The Challenge...*

Winters have been hard times for the cottagers of Round Lake, Ontario. Ice damage has become detrimental to waterfront properties causing erosion and ice destruction. Typically cottage owners would install stone barriers, timber or steel bulkheads and other solutions to combat this problem. This has proven ineffective - the structures simply can't withstand the severe ice push.

As seen from photo (A-1) the ice warps the structures out of position, damaging the surrounding area.

As many solutions exist to combat ice damage, property owners had several options on how to go about the problem.

A solution was sought that would not only provide protection from the ice during winter months, but would be inexpensive and aesthetically pleasing.

### *The Solution...*

Bishop Water Technologies were contacted by a property owner of Round Lake in September 2013 to see if Geotube® Technology could prevent ice damage.

It was decided that a single Geotube® structure would be built and span the 100-foot shoreline. The Geotube® would act as a reinforcement to the present stone structure.

After a short period of time, construction of the Geotube® began.



*Photo A-1*

### *The Construction...*

Working in partnership with Geotube® manufacturer TenCate, Bishop Water optimized a solution for the shoreline. In a few short days the shoreline was prepped and the Geotube® was installed.

The Geotube® was filled with 100 cubic yards of sand. A thick Geo-synthetic was then put on top of the Geotube® to protect it from debris. A scour apron was then added to ensure wave action would not erode under the Geotube® and a small anchor tube was then added to keep the apron in place.

Covering the Geotube® in sand allowed for the structure to blend in with the surrounding area and be aesthetically pleasing. When filled with sand, the Geotube® became a monolithic structure - 100 feet long, three and a half feet high and almost seven feet wide. In comparison to other shoreline protection technology, the Geotube® is immune to weather and erosion. The sloping design of the structure not only allows for the Geotube® to blend into the surrounding area, but also provides deflection of ice as it pushes up against the container.

The cost of construction was less expensive than conventional barriers, lasts longer and requires less upkeep.

# The Aftermath...

Nearly a year on, the Geotube® constructed at Round Lake has proven a complete success. The owner observed no movement in the Geotube®.

In jurisdictions where no armour stone is required in front of the Geotube® the results have proved to exceed those experienced with armour stone. For over 40 years the Geotube® has been utilized worldwide and successful in protecting shorelines against ice erosion and ice push. Cost effective and durable, the technology has proven easy to install and flexible to any shoreline project.



*Geotube® Installation in Fall of 2013*



*Shoreline in June 2014 . No movement was visible in the Geotube or the Armour stone that covers it.*