

## Drillers bring ancient fern leaf back from prehistory

Drillers on a project in Tumbler Ridge, British Columbia, Canada, have discovered a fossilised fern leaf in a core sample.

While tasked to drill down 160ft (48.7m), provide core samples and assist with soil-penetration testing every 5ft, the Sonic Drilling workers found the ancient leaf embedded in coal.

"The drillers just arbitrarily picked up a piece of the core sample and found the leaf inside," Bill Fitzgerald, general manager of Sonic Drilling, said.



*The prehistoric fern fossil*

## Cone penetration test will help with restoration of quake-hit Cenotaph

Drilling and soil testing has been employed prior to restoration works on the Cenotaph in Gisborne, New Zealand.

The Cenotaph was damaged in a December 2007 earthquake and has yet to be repaired.

The Cenotaph is a significant gathering place for commemorative services and is registered in Category 1 with the New Zealand Historic Places Trust.

The soil test is part of a broader investigation that will provide Gisborne District Council with information to help decide whether to repair, restore or relocate the monument.

Geotech workers from Tauranga drilled holes in the man-made mound. From inside a remote-controlled unit, they inserted a probe at 2cm/s into the 25m holes.

The cone-penetration test uses a probe with three components to pick up information. A compression cone at the tip of the probe provides a reading about soil resistance, a friction sleeve helps

The engineer on site estimated the leaf to be approximately 80 million years old. Sonic drill rigs are often used on projects such as this due to their ability to provide undisturbed, continuous core samples to 300ft and beyond.

Using patented sonic drilling technology, samples, ranging from 3in to 8in (76.2mm to 203.2mm) in diameter, can be obtained from a variety of mixed materials (overburden) including boulders, clays, silt, sand and gravel.

Extruded into clear plastic sleeves and then neatly laid out, these core samples can be subject to a detailed visual examination and analysis, followed by sampling, photographing and archiving for a permanent record of the existing conditions.

determine the soil's cohesive strength, while another component gathers data about the pressure of groundwater between soil particles.

The soil beneath the Cenotaph is mostly made up of estuarine material with sand approximately 22m down. Information from the probe is sent up an umbilical cable to a digitiser.

"We get 14 pages of data per 24m," CPT operator Jarred Kavanaugh said.

"We sort that into a readable format and send it to a geotechnical engineer."



*The cenotaph in Gisborne*



*Geomechanics' new Sonic 450-24 is said to bore five times faster than conventional rigs*

## Sonic drill rig joins Geomechanics fleet in South Africa

Geomechanics, part of South Africa-based GeoGroup, has acquired a track-mounted drill rig, manufactured by Canada-based Sonic Drill, for US\$763,000.

The Sonic 450-24 rig bores up to five times faster than conventional drill rigs in ground conditions where sonic drilling is more appropriate, the company says. It is also able to provide continuous core samples, 6in (154.2mm) in diameter, to depths of up to 200m.

As a result, sonic drilling can be employed in many applications, including geotechnical and geothermal projects, environmental investigation and mineral exploration.

The sonic rig offers many advantages over conventional rotary-core and percussion drilling techniques in overburden ground conditions and promises superior information collection and a waste reduction of up to 80%, the company said.

"This product can be used for well construction and reduces the risk of project failure in unknown or difficult subsurface conditions where excellent core collection is an essential requirement," commented GeoGroup CEO David Rossiter.

"It also enables more to be done with a single borehole because it can advance a temporary outer casing as the borehole is drilled."

Sonic drilling will be better suited than other equipment when drilling in sand and soft ground conditions, where core samples are difficult, time-consuming and expensive to produce using conventional methods, the company added.

"The exploration of mineral sands was previously undertaken using reverse-circulation or vacuum drilling.

"These methods produce dry samples well but do not work well in overly saturated conditions," Rossiter explained.

Sonic Drill Corporation's patented Sonicator 50K drill head sends high-frequency resonant vibrations down the drill string to the drill bit, while the operator controls these frequencies to suit the specific conditions of the soil and rock geology.

At present Geomechanics is awaiting the delivery of specialised rod strings and core barrels, manufactured in Germany.

Geomechanics currently has over 60 drill rigs in its fleet at its 4,000m<sup>2</sup> in-house engineering workshop.