

# Sonic Rigs Rescue Surrey School Installation

TR3 Geological Services, based in Abbotsford, BC, Canada, won a tender to install a geothermal grid during the summer of 2009, under what would be Woodward Hill Elementary School's brand new, all-weather soccer field in Surrey.

"Geothermal is a good idea for new schools as well as retrofitting old schools," said Bill Fitzgerald, general manager of Sonic Drilling, the Vancouver-based firm contracted to rescue the project from some challenging ground conditions.

"A school geothermal grid shouldn't need replacing for 50-70 years, and it pays for itself quite quickly. After that, you've got free energy," he added.



But, first of all, the system had to be installed – a total of 120 vertical holes, each drilled to a depth of 180ft, with pipe running all the way back to the mechanical room in the new school. However, with the field already compacted for the installation of the soccer surface, a rainstorm hit, forcing the fines in the soil to vibrate up to the surface and turning the field into a giant marsh. A conventional drill rig worked the site, but spent far too long trying to drill through and install the loops, so two sonic rescue rigs were brought in.

"The sonic drills did the work six times as fast," said Rick Saari, president and owner of TR3. "The two sonics drilled four to six holes a day, and they are the only rigs that could do that in the specified time." With the geothermal grid in place, Mr. Saari said the school would save at least 30-50% on its heating costs. He added: "I know they put in a large heat-recovery ventilator, which will help the building keep the heat. This is more for the operating cost savings."

Geothermal applications have caught on in a big way in the last few years for both commercial and residential development. TR3 has completed a number of geothermal fields for schools in Ontario, and Mr. Saari suspects British Columbia will be doing many more in the future with the environmental advantages and cost savings.

For the Woodward Hill Elementary School project, general contractor Envoy Construction Services aimed for a gold Canadian Leadership in Energy and Environmental Design standard. Certain features and equipment help the contractor to accumulate points for either bronze, silver, gold or platinum ratings. The energy efficiency of geothermal adds considerably to achieving the gold standard, and TR3 boosted the total score by ensuring no drilling water or mud was left at the site.

## Drill Pads

As Mr. Saari explains, all of the water was recycled, filtered and reused by the drills after passing through a MudPuppy mud-recycling device, built by Tony Tibban in California. The filtered, air-dried mud and sand was reused as backfill in the manifold trenches.

Modern sonic drilling technology was pioneered and developed by Canadian engineer Ray Roussy, president of Sonic Drill Corp and Sonic Drilling. Today, sonic rigs are in use all over the world.

Although a sonic drill rig looks much like a conventional air or mud rotary drill rig, a big difference can be found in the drill head, which is slightly larger and uses award-winning, patented technology to transmit vibrations and power through a drill string. The energy produced liquefies overburden and bedrock, and pushes the material up and away from the drill pipe.

According to the manufacturer, this enables a sonic drill to achieve penetration rates three to five times greater than conventional drilling systems, such as mud rotary, air rotary and auger drilling – all without the use of drilling mud.