suspends contract

warded a contract to Smythe Contractors to install a new 500mm dia sewer, 340m continuous under the Mt Rosskell Masonic Retirment Village in Auckland. The propossed sewer was 4 to 11m deep at 1% grade.

A Vermeer D50 drill was anchored in Korma Road and the drill crew proceeded to drill down into a pre-installed 4m deep MH and then away on line and grade at 1% grade. 60m into the drilling unexplaned strong electomagnetic interferiance was encoutered which played havoc with the traditional location equipment resulting in eratic and unpredictable information displayed. The drill rods were withdrawn and a wireline sonde installed into the beckon housing. *(The wireline sonde enables a direct link back to the drills on board computer).* The drilling recomenced. After reaching the 90 metre mark, drill rode rotation toque began to climb steeply. Changes in drilling fluid had no effect on rotation toque. At the 180m mark solid basalt rock was encoutered.

The back ground

The existing sewer running along Pah Road is in very poor condition and had become under sized. Pah Road is a main arterial Road with many underground services and over lays a basult rock formation. To avoid the basalt rock located under Pah Road the designers pushed the propossed sewer 30-40m away from the road and into private property.

Consultants are forced to draw pictures about underliying strata based on snap shots of information they gain through ground invetigation. It was latter concluded that the rock encoutered was probably formed by lava flowing down an existing water course. Over the years several volcanic eruptions and then a man-made fill has covered the rock formation.

Installing underground services always has an element of risk. The more ground investegation undertaken the lower the risk, however this investigation comes at a cost. The number of bore logs required to totally eliminate risk is uneconomical.

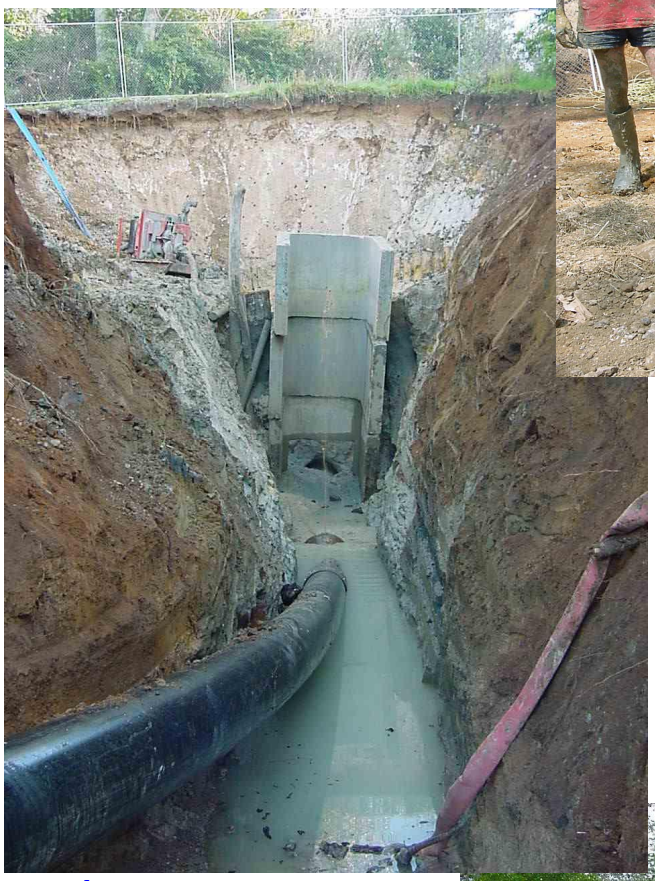
After the rock was encoutered it was decided to prob the lava flow to establish its extent. Smythe Contractors utilised an 860 Ditchwitch drill to undertake seven vertical drills. The extent of the lava was established and extended seven meters to the right of the propossed alignment and it was then agreed to pull back 80m and change the alignment to drill around the rock. This was undertaken however the drill was constantly battling high rotation toque. On the 12th October 2001 the pilot drilling was complete but this reqired all of the drills 13,560 Nm toque rotation to turn the drill string. The constant battle with the ground gripping the drill string (no matter what drilling fluid was utilised) made the propossed pipe installation unachievable and after eight frustrating weeks the contract was mutuily agreed to be suspended.

Further bore logs encoutered highly plastic and elastic ground existing infront of the lava flow. New Zealand is a very young country and the Auckland region alone has 48 known volcanic centres. The plastic ground may have been formed with a variety of different materials deposited from several eruptions and baked by the lava. The electomagnetic interferiance experianced with the location equipment was latter concluded to be a product of the lavas own magnetic field producing a much stronger field at its ends than any where else alone its surface. A Magnetometer survey was latter undertaken by the University of Auckland to detect further lava edges.

Over the next 14 months the client undertook a multitude of further ground investigation. Other trenchless methods were concidered as well as a pump station option. Due to the length, the access and the cost, Directional Drilling was still considered the most apropriate and cost effective construction choice. A new pipeline route was decided. And in January 2003 Smythe Conractors returned to site.

more inportantly the pipe line was designed to dive a further 7m and then proceed at 1% grade. This was a key feature of the new the East Coast Bays formation consisting of uncemented dence to oor and underlies the majority of volcanic events.

Reamer changed after ecoutering mud stone



Launch pit excavation

In order to achieve an intersection with the existing sewer down stream the drill length was increased
to 400m. The deepest point on the sewer alignment was now 18m. On March 20th 2003 the pipeline was installed.

This project spanning 18 months was completed successfully to the jubilation of all involved. It demonstrates the importance of understanding the geology of the site and having a firm client / consultant / contractor relationship with a can achieve attitude.

Lunch time on the day of pipe installation

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