

Elaine Gibson of Wexford-based Staplestown Engineering reports that the company has maintained its business by lowering prices while pushing productivity as far as it can. 'Our reputation for good service in the past few years has stood us well as we continue to get repeat business,' she says. 'We strive to be better than the competition by keeping our plant and machinery, as well as design methods, up to date. We also provide an in-house design and technical back-up service, which has proven to be very valuable to clients. We continue to see tender prices dropping as the market gets even more competitive. And enquiries, particularly in the roads sector, and, of course, housing remains low. We have also suffered, as other subcontractors have, in winning contracts only to find that they are put on hold indefinitely due to funding issues. Elsewhere, there is obviously a cut-off pricing point that we can't go below without making a loss. Unfortunately, some contractors are operating at these low levels and that will not be sustainable.'

Staplestown Engineering has completed a number of significant projects in the past year for clients such as BAM, SIAC Ferrovial and Shannon Valley Developments. Works include the improvement of the 300mm Cement Bound Granular Material (CBGM) layer on the main



alignment of the Portlaoise Bypass. A similar contract was carried out at an Aldi Distribution Centre in Mitchelstown, Co Cork. Both projects were for BAM. The company is also carrying out ongoing modification work for SIAC Ferrovial on the M3 Motorway and has treated grounds at Phibblestown, Dublin for Shannon Valley Developments. 'We stabilised 3,500m³ of unsuitable material with the addition of lime for use in a new school development for Shannon Valley Developments,' says Elaine.

Tensar specialises in roads, retaining wall structures and embankment ground stabilisation. Their Irish distributor is TAL Distribution Ltd. A spokesperson for Tensar says that the company has remained successful in Ireland by sticking

Vacuum Consolidation Improves Peat Ground Conditions

Trinity College Dublin is currently testing an innovative technique, known as vacuum consolidation, to improve peat ground conditions, as part of the National Roads Authority Fellowship initiative.

In July 2009 National Vibration Monitoring Ltd were contacted by Eric Farrell of Trinity College Dublin to provide geo technical instrumentation for a vacuum consolidation field trial. Through NVM's agency and close affiliation with Geosense Instrumentation UK, NVM supplied monitoring instrumentation and provided backup to the field trial by way of installation support and data acquisition. The following is an update on how this first of its kind project is currently performing.

Vacuum consolidation is a ground improvement method used to accelerate ground settlements and increase the shear strength of soft soils using the atmospheric pressure as a temporary surcharge. The surface of the ground is covered by a geomembrane and the air pressure beneath this sheet is reduced using a vacuum pump. Prefabricated vertical drains are used to accelerate the flow of water from the peat. This technique has not been used before in this country.

The TCD/NRA Vacuum Consolidation field trial is being carried out at Bórd Na Móna grounds on the Ballydermot bog, Co Offaly. The field trial comprises a heavily instrumented 10 metre x 10 metre area where 98 vertical drains were driven down to a depth of 2.65 metres from the surface. To investigate the effect of the spacing of the drains in the ground improvement, two sub areas were built, one with 0.85 metre spacing and a second with 1.20 metre spacing. The test was required to measure settlement, positive and negative pore water pressure, barometric pressure, temperature, water table and rainfall.

The instrumentation for this test section was supplied by National Vibration Monitoring Ireland Limited/Geosense who also contributed valuable technical assistance. The system includes six push-in Vibrating Wire Settlement Cells, 10 push-in Vibrating Wire Piezometers (calibrated for both positive and negative pressure) and a surface barometer/thermometer. The system described was complemented with 26 surface settlement plates to monitor surface settlement, 17 stand pipes to monitor water table and a rain gauge.

Due to the difference in spacing of the two sub areas, each of them required independent monitoring of settlement and pore pressure.

This was achieved by pushing in three settlement cells and four piezometers at the centre of each subarea, at different depths. One of the remaining piezometers was located at the inner edge of the site to investigate the broader effect, while the other was placed outside to observe if the vacuum pressure has any effect outside of the studied area. The surface barometer/thermometer and one of the settlement cells are connected to data loggers taking hourly readings, allowing constant monitoring of the test.

The field trial has been running continuously



A before and after shot showing the effects of vacuum consolidation to accelerate the flow of water from the peat



for over five months, through the winter and spring of 2009 and 2010. The information gathered from the instrumentation system has allowed Trinity College to understand the behaviour of the peat ground subjected to vacuum pressures and the effect of the different spacing of the drains.

Commenting on the assistance provided by NVM/Geosense to the project, Juan Pablo Osorio Salas (BEng, MEng) of the geotechnical research group at the Department of Civil, Structural and Environmental Engineering at TCD says that 'on top of reliable, accurate and easy to use instruments, I have always found somebody willing to help me every step of the way, from the system design to the installation and monitoring, with a friendly attitude, whether over the phone or on site, even in the worst winter we have seen in 40 years'.