

## Softly does it

Geotechnical engineers are increasingly relying on software packages for data management.

Software and computer aided design equipment have become essential tools for geotechnical engineers. Most now use databases, ground modelling packages and sectioning software to help predict ground conditions and design accordingly.

Many leading consultants and contractors – including Arup, Mouchel Parkman, Scott Wilson, Costain and Fugro – use gINT database software for storing and manipulation data.

Mouchel Parkman is using the software in its role as contractor's consultant on the A419 Blunsdon Bypass in Wiltshire.

"We use the gINT database to pull in and analyse the AGS data provided by the Highways Agency's design agent," explains senior assistant geotechnical engineer Tony Daly, referring to the industry's standard format for information handling.

"We export from there into a ground modelling package to predict the rock head and groundwater profiles, then export again into a programme that allows us to draw up the sections for our slope stabilisation options."

gINT software has now been available for 17 years. It was initially used mainly on major projects. But according to Arup senior engineer Neil Chadwick, it can be employed just as easily on smaller jobs. "We started using it two years ago routinely instead of just on big projects," he says. "We find it flexible and can make it do the things we want, especially in London, where we need to work on a lot of smaller projects with the occasional large one."

Leading consultants are increasingly adapting the way

they use the software, experimenting with inputting different forms of data – such as GIS and pile installation information.

Arup has been doing trials with contractor Soil Mechanics to transmit lab test scheduling information through the database. "We wanted to see if we could transmit the data more accurately and more quickly," says Chadwick. "As an experiment it's gone reasonably well."

Chadwick likes the structure of gINT because it enables him and his colleagues to develop it to suit them. "Software, at the end of the day, provides the tools that enable you to do what you want," he says. "Then it's down to us to decide how it's used."

## Reclamation application

Scott Wilson is providing geotechnical design and supervision services in connection with the reclamation and redevelopment of the former Brymbo Steelworks near Wrexham. Around 200 years of iron and steel production generated 3M.m<sup>3</sup> of surplus material at the site, containing a range of geotechnical hazards that includes abandoned mine shafts and potentially expansive slag.

The reclamation scheme involves bulk excavation to generate clean fill, extracting associated minerals – mainly coal – controlling the compaction operations, and treating old mineworkings. Once the site has been restored, it will be used for housing and industrial development.

Scott Wilson is supervising the placement and compaction of approximately 1M.m<sup>3</sup> of coal measures materials to form the

development platforms. Large amounts of geotechnical data are generated by the monitoring regime, which includes daily in situ testing by nuclear density gauge, and on and off site laboratory testing of compaction and classification properties.

The consultant has worked with Leeke Associates, the UK distributor of gINT software, to develop a data management system using gINT Professional Version 6. The system incorporates a data entry Excel spreadsheet, which is imported into the gINT database, which then stores information such as the test locations, results and specifications and query results for periodic averages for each specification material type.

The software generates a range of reports such as maps, tables and graph reports for analysis, and periodic reporting for the client.



Geotechnical Engineering & Marine Surveys (GEMS) performs offshore investigations for the oil and gas industry, and nearshore projects for port developments. Its drilling vessel, Albatros 1, is

working in Ghana, West Africa, on sewerage outfall and port breakwater investigations.

Engineers on the vessel are using gINT processing in real time. The logs generated by

the software – and associated GIS presentations – are transferred to the client by satellite link from the vessel to allow route and foundation alterations to be made as the investigation proceeds.