

DIMENSIONS

WHEN SMALL IS BEAUTIFUL

In our last issue, we reported on massive bulldozers used in Weipa for mining, with blades guided by Terramodel via GPS. This issue looks at the way the technology is being adapted: blade guidance software is running on a tractor mower to renovate golf greens!

Watching an AFL match at the Melbourne Cricket Ground on a wet day, the spectator might wonder how the playing field can stand up so well to the heavy traffic of footballers. The reason lies underneath: the MCG playing surface has 4 layers: clay at the bottom with drainage pipes through it, then 100 mm of 2-5 mm bluemetal above that, topped with a 100 mm layer of washed sand under the final 290 mm of topsoil.

A golf green is constructed in a similar layered way, but with an added complexity: the surfaces of the greens are not flat, each having its own undulating character. In terms of turf management, the underlying layers need to echo the surface undulations and be of a uniform thickness to prevent parts of the green drying out or becoming waterlogged.

To maintain this undulating

pattern right down to the clay layer, the standard method of constructing greens was to hammer long stakes (pegs) into an excavated area at 1 metre intervals and then fill up the area layer by layer to align with marks on the pegs: a very labour-intensive method.

Protecting golf course integrity

Design history is becoming an important element of golf courses, with managers trying to keep them true to the plans from which they were created. The Royal Melbourne Golf Course, for instance, is known as a Dr. MacKenzie course.

'Our brief at Royal Melbourne was to help renovate the greens, but to ensure that they remained with 5 mm of the original design,' says Gary Thomas of the Northern Metropolitan

Institute of Technology. 'Using the peg system would have taken a long time so we set up our prototype bladed machine for this project.'

'We hooked up Terramodel via GPS to the tractor mower. The system guides the blade but can be overridden by the driver. This is a pure sand profile but most other courses are not, so in the future we can easily set it to maintain the layer thicknesses normally required with any kinds of undulations.'

'I don't know of any other turf manager in Australia using this system,' says Gary.

'And I think it's a world first on golf greens.'

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Above: The 'dashboard' on one of the bladed mowers. The GPS receiver poles are on each side near the front wheels.

Below: The bladed mower in action on a green at Royal Melbourne Golf Course.

SEASON'S
GREETINGS!



The Directors
and Staff of
GEOCOMP SYSTEMS
sincerely wish
all of our clients
and their families
a safe Christmas season
and a prosperous
New Year.



INDUSTRY NEWS



Redefining route alignment planning

Geocomp Systems Pty Ltd has established an alliance with Quantm Ltd, recognising the complementary and compatible nature of our respective decision-support tools for planning and designing transport infrastructure.

Quantm's technology enables it to optimise alignment construction costs within all environmental, heritage and social constraints. The Queensland Department of Main Roads (QMR) recently described this as revolutionary technology.

Using the Quantm system, the New South Wales Roads & Traffic Authority (RTA) identified routes that saved more than 20% on alignment construction costs; and bidders for the Sydney–Canberra high-speed rail line cut more than 40% off the construction cost of their alignment.

Quantm's system has already been widely adopted throughout Australia and New Zealand, with the New South Wales RTA using it for nine

highway projects. It is also being applied to the California High Speed Rail project, a high-speed rail project in Europe and a 150-km expressway in China.

The Quantm system has undergone comprehensive trials by the Queensland and New South Wales governments and the benefits have been independently defined as:

Alignment construction cost savings. QMR planners identified alignments that saved \$36 million on a 17-km highway project, within complex environmental, social and land rights constraints.

Improved community relations. The speed of Quantm's system reduces the period of uncertainty and allows planners to respond quickly to issues raised in the consultation phase, demonstrating respect for community concerns. The RTA used the Quantm system on the Barton Highway bypass for just this reason.

Better environmental outcomes. Planners can identify and protect sensitive environmental and cultural heritage areas from the feasibility stage through to completion of Environmental Impact Statements. The latest upgrade automatically calculates user cost and greenhouse gas emissions so that planners can compare alternative alignments from the perspective of ecologically sustainable development.

Lifecycle costing. The Quantm system can be linked with engineering and financial models so that the operating implications of alternative alignments can be compared to determine the best route from a 'whole of life' perspective.

When the planning process is complete, the selected alignment can be easily transferred into Terramodel for detailed design.

The Quantm system received an Australian Technology Award in 2001 in recognition of its contribution to reducing infrastructure costs.

For further information, contact Robert Nixon on 03 9620 3445 or email to info@quantm.net

Happy New Year with Terramodel

Geocomp Systems is offering free Terramodel software trial for those companies who don't yet have a copy.

We will visit your offices, install a copy of Terramodel and give you a day's training at no cost. Your only

commitment is to use it over the next 30 days and evaluate it on its merits. But don't worry, you won't be left on your own to figure it out: you will also have 30 days free access to our help and support line.

To take part in this free trial, contact Geocomp Systems to register.



EXPERT ADVICE

Importing, adjusting and stringing data automatically

Terramodel has a powerful feature called Raw Data Editor.

RDE collects raw survey data and computes the coordinates based on the point IDs. RDE can automatically compute least squares, traverse and network adjustments and can locate inaccessible points by resection.

You can review and edit the observations, report adjustments and customise settings including terminology.

To get data into RDE you must use an import script. However, until now this has not been possible if you have surveyed using our recommended field codes. We now have new scripts available for most instruments and formats: contact us. You will also need our updated GCJOINPT.TML.

This means that you can combine the benefits of the Geocomp coding system

with the computational power of RDE and avoid using DOS entirely.

(See also the RDE 'WhitePaper' in the \Documentation folder of the September 2001 Update CD.)

Terramodel Tip of the Week

Your Terramodel licence number and support expiry date allow you entry into the Trimble Terramodel Active Members Support web pages through <http://www.geocomp.com.au/support/cc/tcap.html>.

Probably the best feature is the TIP OF THE WEEK. These tips are quite detailed and include diagrams.

Recent examples include: Road Job Transitions and Culs-de-sac; Cut/Fill Location Map; Alignment Offsets; Profiles; Projecting Slopes; Digitize Contours; Dynaviews; Merge Layers; Quick Layer Settings; Stamp Date and Time on Plans; Volume of Stock Piles.

Geocomp plotting to networks

If you have Geocomp on Windows 95 or 98, plotting over a network is usually done by the 'Capture Printer Port' method.

However, you may not know about the NET USE method. This works with all versions of Windows from 95 to 2000. You need to add a line into your batch file like NET USE LPT1 \\mainserver\printer /yes.

For more details type NET USE /? at a DOS prompt or we can email you some notes.

Which layer?

An easy way to find out what layer an object is on is to click on the current layer shown in the tool bar and select the object in question.

This has the effect of changing the current layer to that of the object. Note that the colours and line types behave in the same way.

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Teaching and Terramodel

Gary Thomas teaches a course in Sports Turf Management in the Department of Horticulture at the Northern Metropolitan Institute. He and his students have been involved in setting up the playing turf at the Docklands Stadium in Melbourne, the Royal Randwick Racecourse in Sydney, and the Olympic Stadium at Homebush.

Geocomp Systems recently donated 20 Terramodel licences to the Department and trained 6 of their staff in using it. As of February 2002, Diploma students will spend 12 months using Terramodel. They will work in groups of 4 or 5, using total stations to gather data, then import data to Terramodel to create DTMs and do volume calculations.

The Turf Management students have the skills to build greens and ovals, but have never had tools to create modelling and earthworks designs so quickly.

These tools used to be the domain of engineers and landscape architects, but when Gary's students graduate they will now be capable of managing their own turf completely.

Above: Soil graders and scrapers guided by Terramodel are used at Royal Randwick Racecourse.

Below: Terramodel showing one of the greens at Royal Melbourne Golf Course. The underlying layers need to echo the undulating surface.



IN PROFILE

WALKIN' THE LINE



In the dense Tasmanian bush near Strahan on the west coast, an abandoned railway line waits under its cover of blackberry and bracken. Its bridges lie rotten and ravaged by fire as the rainforest creeps over them.

This was the 36-km Abt Railway. Until the line was closed in 1963, trains used to transport copper from Mt Lyell mine to Strahan and return with goods. In December 1999, Peter Diprose and his crew arrived, slashing equipment in hand, to begin the work of re-instating the line to run a tourist steam train.

Peter's company, Trigpoint Technical Services, had the job of surveying the Abt railway line. He explains, 'This job presented us with an enormous number of challenges. For a start, the land is very steep (the trains have to climb slopes of 1/16 using a toothed rack). It's also rather wet and was covered in dense rainforest which had been growing back for more than 35 years.'

'There are 40 timber trestle bridges en route. Many of them are only a few hundred metres apart.'

'These bridges required so much maintenance that in the end, the line was closed.'

'By the time we came, nearly all of the bridges were broken; some had been completely destroyed by fire and rot. Much of the old structures and track had been silted up.'

Peter's job was to traverse the stretch, and locate and map all the trestles on every bridge.

'It was vital that our measurements were accurate to a very fine degree,' says Peter.

'We had to find the old footings which had been built on concrete sometimes, or on rock. Finding solid ground was often the most difficult part.'

Steel trestles have now replaced the timber ones. Except in a few places, the track runs on its old alignment as there are extensive cuttings along the route.

'In 1896, it took a year to build this line: there were hundreds of people working

on it. Replacing the old track and structures has taken our small team two years: we are now about to connect the track.'

Certainty in the software

Peter predominantly uses the Geocomp survey program to gather his data. He sends the information to engineers in Hobart who convert it to their programs, do their work and send it back to him in AutoCAD.

'From there, I convert it into Terramodel to do some of the modeling that I need to use in the field, especially in landslip areas,' Peter explains. 'Our conversion problems were sorted out in the first week and if an AutoCAD file goes a bit strange, I put it into Terramodel and it's OK.'

'I've been using Geocomp for 10 years. I reckon it is still one of the best nuts and bolts packages around.'

'I began using Terramodel 2 years ago and I use it mainly for modelling. I attended a training session with Jerry Cresp in Hobart and I'm producing pretty good models now,' Peter smiles. 'The engineers have been pretty impressed with some of the Terramodel data I've sent them.'



Surveyor Peter Diprose has been running Trigpoint Technical Services for 3 years, mainly supplying surveying services to the mining industry near Queenstown, Tasmania.

Photo:
The remains of an old bridge on the Abt Railway in Tasmania.

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Upgrade & Support Help Hotlines

For help with all queries about using our software.

We aim to respond to your call 95% of the time within 30 minutes, and 100% of the time within 2 hours.

Toll free: 1800 800 754 (in Australia)
Email: support@geocomp.com.au

8.30 am-6 pm EST every working day

Products

Geocomp Systems supports:

GeoCalc	GeoNav	Geocomp
Terramodel	Visualizer	GCGeocode
Trenchwork	Paydirt	Sitework

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