

GPS Pays Off Handsomely

Doug Read's job of reconstructing the country racetrack at Donald, in western Victoria, has been one of the first projects in this country to utilise Topcon's latest System 5.

In fact, Laserbeams put this equipment into Doug's hands even before it was officially released onto world markets in May.

The Donald race track is a prime example of how GPS can transform a complex design into an easy and relatively economical operation, which would have been far more involved using laser and, well, not impossible using conventional stringing, but at best an extremely complicated and expensive undertaking.

In fact, it is not an exaggeration to say that if conventional survey costs had to be built into this particular job at Donald and other country centres, they would most likely never have seen the light of day.

Complex Shapes to Deal With

To broadly describe the mission, a dam was excavated to supply material for the subgrade, on top of which was 75mm of unseived topsoil, followed by 100mm of running course.

Consider the shapes to be executed. The old Donald racetrack was pretty much a flat paddock with rails. As part of their plan to revamp country facilities, the Victorian racing authorities sought to bank all the turns by building them up to an outside super-elevation rising to 1.3 metres.

Where the design became complex was that there are three entries feeding onto the course, to suit races of different length, known amongst the racing fraternity as 'chutes'.

From starting points angled to the main course, a straight portion of running track with a conventional camber joined the main course proper, each entering at one of the turns in the track. It follows that at these three junctions, there were some pretty complex shapes to be constructed, marrying the camber with the banked turn.



GPS Greatly Simplifies Job

Doug's shaping tool is a 6WD 140G and he's pretty experienced with laser guidance.

"If I was tackling this with laser, it would need to be divided into at least four sections," he says.

"As for stringing the job, well, in days gone by there would have been no alternative, but imagine the time involved for both myself and the surveyors in setting up each junction."

You've seen enough of GPS to make it unnecessary to describe the process of feeding a 3D design into the grader's onboard computer, from which the operator can see exactly what's involved in executing the design.

Doug's grader was already set up for laser with Topcon's System 4.1 and a strong advantage of the modular 'plug and play' approach used by this supplier was amply illustrated when it took no more than half an hour to add GPS functionality.

Computer Experience is Not a Factor

I don't think Doug would mind us saying that he's a 'senior' operator rather than a computer savvy young buck.

It says a lot for the user-friendly design of Topcon's touch screen controls—and we've observed this before—that no-one needs to be apprehensive about getting on top of this technology. After a brief introductory session with Bob Bent's technicians at Laserbeams, Doug was pushing buttons and scrolling through screens, in total command, like the veteran that he is.

Very Clear & Straightforward Controls

We took a ride with Doug in the cab around the racetrack, and were highly impressed with the clarity of the System 5 touch screen, and how it showed so clearly where the machine



Complex Racetrack Reconstruction
"a piece of cake" with Topcon's
System 5-Plus

was positioned in relation to the digital design. (If you'd like to see this for yourself, Laserbeams have a unit set up in a golf buggy which is great idea for getting the feel of the equipment, and obviously mobile enough to be brought to you).


Unique to Topcon, this system downloads positional data not only from the American GPS satellites, but also from the Russian Glonass constellation. This adds considerably to the reliability of staying 'locked' into the minimum of five signals needed for 2cm accuracy.

Experts Surprised by the Accuracy of Topcon Gear

Conventional wisdom has it that GPS delivers up to 2cm in the

horizontal plane, but more like 5cm in the vertical axis, and the latter is not considered sufficiently accurate for many jobs.

It's worth noting that—whether it is Glonass or some other factor—we keep hearing reports that the Topcon gear is consistently achieving better than expected results.

One example quoted to us at the recent Intermat show was the construction of a long airport runway in Sweden, where the subgrade was to be roughed in using GPS, with laser for the final trim. As it turned out, they were getting 2cm vertical accuracy from the GPS, and laser was dispensed with, remarkably advancing the completion date. And those aviation guys are pretty fussy about bumps in their runways. 

GPS— What am I up for?

So what's the cost of getting involved in GPS? We asked Bob Bent of Laserbeams to give us some indicative figures.

Naturally, it's not cheap, but there's always the option of renting the gear for a specific project. The cost of pre-wiring machines is relatively modest, and the way things are going these days, it's not a bad investment. If you are seeking work on large projects run by the likes of Leightons and Abigroup, keep in mind that they are now widely using machine guidance systems, and it seems reasonable to assume that it won't be long before machines with GPS capability will start getting preference.

Bob's prices assume that you already have, say, a Topcon laser setup with hydraulic cross-slope controls fitted, and that you need a base station. But on a dozer, for instance, the cost drops to about \$48,000 if you're just talking about the onboard installation, using a site base station owned by the lead contractor.

Option 1: A simple GPS guidance system based on visual indication will run to about \$98,000, and can later be upgraded to automatic. This price buys you the GPS receiver on the machine, the in-cab computer and display, external base station, and everything needed to make it functional.

Option 2: If you want to go straight to the top, \$127,000 will buy you a complete new Topcon System 5-Plus capable of fully automatic blade control.

Telehandlers prove surprisingly versatile and valuable on civil construction sites *(continued from Page 15)*

like—apart from gear for lifting materials, some telehandler owners are adding inspection platforms to their range of attachments,

From his years of experience with these machines Peter Nash has adopted a policy of buying only two sizes from the wide range of telehandlers available—big ones and small ones.

That might sound simplistic, but Peter says that in his fleet he needs a small machine where tight access is

the challenge. Where that's not an issue, biggest is best. The machine with the greatest capacity will get through more work in a day, so why bother with something less, he says.

At the compact end of the range, Peter operates the Telelift 2306 distributed by FSR Equipment, and is a strong admirer of its capabilities.

The 2306 is very compact and manoeuvrable, with a height of only 1.92m and width of 1.8m. Its 'T-Way' steering system offers three steering

modes to give a minimum turning circle of only 3.3 metres (outside track).

This small machine is capable of lifting 1250kg to a maximum height of 5.7 metres (over 18'), and has a maximum reach (not with that load, of course) of 3.3 metres—and reach was a vital factor for Peter on the airport job, getting down into stormwater gutters.

Bottom line—when tight access is not an issue, telehandlers offer a variety of roles on a site. 