One of Australia’s leading construction companies, Leighton Contractors, is realizing the benefits of using Leica GradeSmart and Leica DigSmart machine control technology during construction of Melbourne’s $331 million, 9.3 km Deer Park bypass. Leica Geosystems distributors CR Kennedy fitted several graders and excavators with the latest GNSS 3D technology to deliver higher productivity, machine utilization, and performance.

The Deer Park bypass is the largest design and construction contract awarded by VicRoads and features four lanes and four major interchanges over its 9.3 km length. Scheduled to open in late 2009, the bypass will eliminate 20 intersections and is expected to reduce journeys by up to 15 minutes.

Leighton Construction Manager Ray Wall chose to equip three graders (two John Deere 872 and a Caterpillar 140H) with Leica GradeSmart 3D technology and to fit two subcontractor excavators with Leica DigSmart 3D guidance systems. Calculating the return on investment was straightforward, Mr. Wall said: “The grader systems have basically cut out the need for two or three blokes with stringlines and pegs for each machine. And with the two excavator systems we have also been able to cut a man out because we don’t need a spotter measuring with the excavators. The systems are cheap to buy when compared to what you are saving. When you add up nine wages if you were using surveying crews you are miles ahead and over a two-year project like this that adds up to substantial wage costs. You also don’t have to water or feed them or get them out of the weather.”

Compatibility with surveying equipment
Deer Park bypass senior surveyor, Greg Bennett of GW Bennett & Associates said Leica Geosystems’ compatibility with surveyor’s equipment was a major feature. “We load the designs straight from our Leica LISCAD software already in the format required by the graders. With the Leica Geosystems’ system we can also load much more information onto the data card than any other system available and we can do it quicker because there are no compatibility problems. We can load 16 MB of data on one data card, but we generally break the project into two design
models of about 8 MB each. Compare that to some other systems that will only take 1 MB total – it is a massive advantage,” he said.

Ray Wall added: “This gives us great flexibility with the graders because we can move them anywhere on the project – with other systems we are limited until we load new designs if a grader needs to move.”

Set in automatic mode, the Leica GradeSmart 3D system precisely controls the blade to the design model loaded, moving it to the required elevation, angle, and side shift in real time – eliminating operator guesswork, multipassing, and the need for re-work.

One-man operation
Fitting Leica DigSmart 3D technology to two contractor’s excavators has also delivered timesavings for Leighton Contractors. “With excavators you’d generally have to peg trenches up to three times as they got closer to the design, now with Leica Geosystems’ technology we start at ground level and go through in a complete cut – the operator does everything according to the instructions,” Mr. Wall said. “It is basically stake-less and with GNSS is accurate to ±30 mm so when we are pulling up batters it is probably 20 percent quicker and you don’t have to wait for anyone to grade check – it becomes a one-man operation.”

“Wouldn’t do it any other way”
Leica DigSmart monitors the precise position of the digging bucket with the data appearing via an on-board monitor in real time allowing the operator to excavate, trench, or batter confidently. “We can have the GNSS machine cut slots in batters every 20 m and then put another excavator in there to work off those slots,” Mr. Wall said. “The accuracy we achieve using DigSmart when digging drains and other earthworks is a lot better than having an operator trying to measure off pegs. This is the first job where we’ve had a lot to do with the stake-less systems – I’ve seen it at EastLink [compare Reporter 57] and was impressed with it and thought we would give it a go here. Now I wouldn’t do it any other way.”

About the author: