

Seymour Whyte Doubles Grading Productivity with Trimble

Seymour Whyte was contracted to deliver extensive repair and rehabilitation works to Landsborough Highway in Queensland, Australia, linking Darwin and Brisbane.

Sponsored by the Transport Network Reconstruction Program, the \$102 AUD million construction and flood repair project is scheduled to take 18 months to complete, with Seymour Whyte contracted for road and shoulder reconstruction and pavement patching across a two-lane stretch of road. The 107 kilometer stretch between the towns of Barcaldine and Longreach consists of 68 kilometers of widening and full reconstruction and realignment of the road.

Approximately 230 kilometers south, another 16 kilometer stretch of the Landsborough Highway between Augathella and Tambo is also being renewed. This includes road widening, full rehab of the current alignment, and 500 meters of shoulder replacement. In all, 38 floodways are being rehabilitated and 46 existing drainage lines will be extended or replaced.

“One of the challenging elements of this project is that even the design and build of our temporary infrastructure needs to be precise because of the size of trucks we’re talking about,” said Tom Williams, Surveying Manager for Seymour Whyte. “The distances of these roadways also mean we would need truckloads of wooden pegs and survey crews to stake grade lines.”

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Williams selected Trimble Site Positioning Systems for off machine work and the Trimble GCS900 Grade Control System on a number of machines along side the Cat® AccuGrade™ Grade Control System on Cat machines for this project. The crew worked with subcontractors as well as the local Trimble dealer, SITECH Construction Systems, to set up the project and equipment with machine control capabilities. In total, 14 machine control systems were installed, including a mix of GPS/GNSS and total station-based systems. Across the project, 17 graders are being used - Williams explains that because the area is generally flat, little earthworks are required, with a majority of the effort focused on precise trim work. The total station-based survey system was chosen because it provides fast, accurate measurement.

Across two project locations, SITECH Construction systems set up 14 Trimble total stations - nine SPS930 Universal Total Stations for machine control and three Trimble systems for surveying. The team used radios for communications and GPS corrections. The base station setup consisted of a GNSS receiver, GNSS antenna, radio and radio antenna powered by a solar panel. The grade control system accurately positions the blade in real time. This improves the operators' productivity and profitability while minimizing material overages.

Seymour Whyte designers created digital terrain models for grading. Then the machine control system uses GPS technology to compare the blade position to the 3D site plan and signals the operator to raise or lower the blade automatically to achieve the design requirements. This process was used to perform initial earthworks and to build 85 kilometers of temporary roads.

The two Landsborough construction sites today run with four surveyors, instead of eight or even 10, and Williams asserts that with Trimble and Cat machine control systems, his survey crew is much more productive. Overall, Williams believes he can do the job more accurately and in half the time. "The Trimble and Cat machine control has completely eliminated the need for staking; it's also raised productivity levels which brings a lower price tag to the overall project," he said. "We are able to quickly build and rehabilitate these roads in five kilometer sections."

Because of the long distances covered by the roadway, Williams had to get creative about using the base stations. "We built custom trailers with solar panels and aerial masts for two of our Trimble base stations – they are completely self-contained units," said Williams. "That way we can quickly move them from one spot to another. We also have one base station we set up for the day and the last one is permanent."

Several months and dozens of kilometers into the Landsborough Highway project, Williams is happy with the results of using Trimble and Cat machine control systems as well as Trimble Site Positioning Systems. In fact, the project is currently ahead of the original 18-month schedule. Williams attributes the increased productivity to his crew and their skilled use of machine guidance.

"I believe that the job would take twice as long without machine control," said Williams. "We can get through so much more work and it's done to a better standard because we have accurate level control everywhere along the job, not just where we had pegs in the ground."



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