

# SEEING THE ENTIRE PICTURE IN DETAIL

Nelson Surveys, based in Seaford, Australia, offers surveying services for some of South Australia's largest infrastructure projects. Whether steel or concrete bridge constructions, building or road setouts, as-built reporting or volume surveys, Nelson Surveys can tell you exactly what is on-site, supplying vital information for construction projects.



When significant upgrades are being made to infrastructure, Nelson Surveys knows how difficult it is to make sense of how the new design will fit with already existing features. Today's infrastructure is extremely complex, and surveying tasks need to be done quickly, reliably and with precision to remain on budget.

Surveying on such construction sites is no easy task. 2D line drawing plans offer little guidance to understanding structural complexities. Quite often jobs are delayed because of the need to check paper plans on-site. To be absolutely sure work is completed properly, surveyors and construction crews usually walk the site in order to understand what changes are going to be made. Such on-site visits add additional unnecessary costs and delays to already complicated projects.

#### ADDING INSIGHT TO TODAY'S COMPLEXITIES

It was little wonder, then, when Leica Geosystems released the new Leica Captivate software, Nelson Surveys was eager to use it for their time-consuming and complicated construction projects. With Leica Captivate, they could easily view measurements on interactive 3D point cloud scans. These scans are clear representations of infrastructure sections taken on site. These scans provide reality capture 3D design visualisations to better understand and verify construction projects in real time. Measurements can also be superimposed onto 2D colour images and linework can be assigned different colours for quicker identification of complicated plans.

All measurements taken can also be simultaneously viewed by both crews and surveyors on the display screens used by any instruments on site, such as Leica Geosystems total stations, handheld tablets or field



controllers. All work on site is referenced to just one plan that automatically links any data as it is collected, saving valuable time.

With these new features, Nelson Survey completed surveying tasks much more efficiently and increased productivity immensely.

#### SIMPLE AS A SMARTPHONE

Since the Leica Captivate software is so incredibly intuitive and familiar- just like using a smartphone - almost anyone could figure it out with little more than a swipe of the screen. The experience is also fun and enjoyable, and the professionals at Nelson Survey could hardly wait to put it to use.

One of the first projects Nelson Surveys used Leica Captivate on was a complicated road design of a concrete structure positioned on top of an underground storm water system. The structure is being built to support a parking area. The road base, or foundation layer, had already been laid, but due to its odd shape and a cross-fall for water runoff, crews had difficulty understanding what the finished design should look like.

Leica Captivate provided even the smallest details, and yet, the entire picture was always there. The software enabled fast and easy understanding for crews and engineers on site. Now crews could see all data: points, lines, scans, digital terrain models (DTMs), and alignments or data from DXF files in 3D at any location and from everywhere. All jobs could be completed using a variety of apps to make such tasks as staking out points and coding linework as simple as possible.

No longer were crews limited to 2D paper maps displaying lines without any visual references. Design lines could now be quickly understood with background information or 3D point cloud scans added. Nelson Boquin, director of Nelson Surveys, explains, "For anyone experiencing this for the first time, the world





of digital reality in construction is truly amazing. Leica Captivate has brought design data to life. Users can zoom, pan and rotate, as needed, to understand any project." Nelson Surveys choose to work with the Leica Captivate Road App, which is designed to import specific road data and complete road specific tasks as simply as possible.

Boquin adds, "This 3D software gives a great visualisation of what the final finished product will look like on site. Construction issues can be easily resolved with the aid of Leica Captivate by checking the alignment (horizontal and vertical) levels and grades."

#### FEWER TRIPS, BIGGER SAVINGS

Engineers now made fewer trips to jobs, with data captured on site feeding measurements directly into one-source documentation. With only one file for crews to share what was going on with engineers back in the office, unforeseen problems could be easily avoided and significant time and cost savings added.

"With Leica Captivate, engineers and surveyors can work together to see what can or cannot be done," said Boquin. "It saves a lot of time when you can do this on the ground rather than going back to the site office and refer to a plan.

"The Leica Captivate user interface, especially the 3D Viewer, is very intuitive. Different types of objects can be displayed, configured and inspected. You can easily interact with data directly, as it is collected. All points and measurements are scaled and users can see which objects are close or further away by the size of the point symbols and text next to it," continued Boquin. "Using the Leica Captivate is something new that we have been trying out. It will be something we will be using a lot more in the future."

Nelson Boquin concludes "Background imagery makes users more visually aware of what a jobsite includes. It helps us make better decisions in real time and ultimately helps us to increase productivity."

