Customer: Premier Surveys

Project:

Survey accuracy for a 2km road project

Solution: K-Services - MX8 Mobile Mapping



Achieving survey grade accuracy with the MX8 mobile mapping system

For Premier Surveys, first time use of Trimble's MX8 mobile mapping system, through KOREC's K-SERVICES, enabled them to achieve 10mm accuracy for a 2km roads project. They shared their experiences in this case study.

"Throughout 27 years of trading Premier Surveys has always been open to new technologies that take us towards higher levels of automation, increased data integrity and reduced manual work. When we started in 1989 our task was simply the measurement and plotting of roads and buildings. Jobs then were timed in days and weeks; now it's in hours and days. As we have grown, our capabilities have expanded to take in GIS, GIA, GPR, laser scanning & 3D modelling.

Case Study

In recent years, although topographical surveys and measured building surveys continue to make up our core activities, the business focus has shifted towards laser scanning and 3D modelling. By always taking an innovative approach to the application of technology we move a step closer to achieving our goal of a seamless field-to-finish system which telescopes the

whole process, from commission to delivery, down to the tight timescales demanded by our clients.

Balancing commercial necessities with disruption avoidance

During three decades there have been numerous roads schemes surveyed throughout the UK ranging from quiet residential streets to congested and fast-moving carriageways. Our uppermost consideration is achieving a balance between the commercial necessities and the avoidance of disruption to the public and the safety of our staff. We seek to avoid or minimise intrusiveness and exposure to the dangers inherent with all road survevs.

While my responsibility is for the management of all our survey projects on

this occasion I took a very hands-on approach to see the whole process through and deal with any unforeseen events either on site or in the office. I worked closely with the KOREC K-SERVICES team on site who provided valuable advice on target set out to achieve the high quality control necessary for the successful processing of the scan data. Their support was both practical and professional

This was a small project of just over 2 kilometres of dual carriageway with an overhead section and bridge, for which the

timescales concern for the mean reduced client was that this project risk utility of our times and fast valuable resources."

Andrew Widdison, **Premier Surveys**

client was designing ...shorter a new relief road link. The key was an area already prone to severe and greater congestion at peak moving traffic at other times. The client was therefore anxious to avoid aggravating the inconvenience to motorists and the

high cost that traffic management would entail. He was also working to a strict deadline. From a safety point of view we were concerned that there was no hard shoulder and very restricted access to the road verge. A novel solution was called for.

Mobile mapping as an alternative

Owing to its short length, this was clearly a survey that we would have normally undertaken using robotic total stations and we would not have expected the use of a mobile mapping system to be economically attractive to the client. However, we were looking for a suitable scheme to trial the





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mobile mapping technology and this project offered us an ideal opportunity. Our survey teams are accustomed to the attributes and benefits of Trimble systems and equipment; having already invested in their GeoExplorer GIS kit, S6 robotic total station and R6 GPS. Naturally, we were expecting the same from the MX8 system.



Typically, with any unfamiliar technology, we would have preferred to have tested the MX8 system thoroughly before recommending it to the client; however the narrow time constraints made this impractical. Without any previous experience or knowledge of the MX8 system other than demonstrations at exhibitions, there was clearly a calculated risk to be assessed, chiefly regarding accuracy. Satisfied by our pre-survey discussions and the information supplied by KOREC, the client judged this to be an acceptable risk. Nevertheless, we resolved to test whether the stated accuracies where achievable under real site conditions by carrying out a standard total station survey that duplicated the MX8 system scan data on the overhead section, which was free of the constraints affecting the dual carriageway.

Contact us:

Throughout the test area the comparison between both sets of data was +/- 5mm. We believe this correlation was aided by the installation of three-times the recommended density of control.

Seventeen high precision survey marker boards were installed throughout the survey area and controlled using robotic total stations prior to scanning. Weather conditions on the day were not ideal. The MX8 system is mounted on the roof of a vehicle which travels at a moderate speed during data capture. Two passes were scanned on each carriageway. The work was disrupted by intermittent rain showers but, in spite of this, completed within four hours. In perfect weather conditions times would have been reduced to one hour.

Using our control co-ordinates, KOREC post-processed and registered their scan

data files within a couple of days and supplied us with a composite Pointcloud in .LAS format. This was loaded directly into AutoCAD via Recap enabling us to complete the normal plotting of the carriageways. This took 2.5 days longer than standard topographical survey plotting but this would diminish as our team became more familiar with plotting from this type of 3D data. There were certain areas where road gullies and other small objects were difficult to identify from the Pointcloud, this necessitated minor field verification."

All information was kindly supplied by Premier Surveys' Andrew Widdison, Projects Manager and John Fisher (FRICS) Director. http://www. premiersurveys.co.uk



Please do get in touch for further information on any of the products or services mentioned in this case study, a demonstration, support or just a chat about your requirements.

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