

Leica Geosystems **TruStory** Capturing Fast and Accurate Data for Highways England Area 3



Sun Hill Surveying and Engineering Ltd is a specialist Land Surveying and Engineering company with over 30 years' experience, focusing on the civil engineering sector throughout the UK. Delivering only the highest quality services through a portfolio of professional expertise, Sun Hill brings a modern approach to surveying with a unique combination of traditional and state-of-the-art technology.

Working closely with Leica Geosystems for over 20 years and investing heavily in Leica Geosystems products and solutions throughout this period; Sun Hill made a significant capital investment in the Leica Pegasus:Two in August 2015. Adopting this new mobile mapping technology from Leica Geosystems was a significant step for a growing company to invest in. Given their client base and smart ways of working, as well as the ever increasing pressures on the maintenance of the highways

infrastructure, it made the investment in the Leica Pegasus:Two a necessity.

Highways England Area 3 project
Soon after this investment in mobile mapping technology, Sun Hill was approached and commissioned by Kier to survey 119 sites on behalf of Highways England Area 3. Area 3 is Highways England's second largest network carrying around 10 per cent of the country's overall traffic flows. It includes the M27, M3, M4, A3, A303 and the Hindhead Tunnel and provides the main link routes between several major towns and cities including Oxford, London, Reading and Swindon in the north, and Bournemouth, Southampton and Portsmouth in the south.

Reducing Traffic Management Installation

The large scale project required detailed topographical surveys of the carriageway and verges, each survey measuring 600m long for the design and future replacement and installation of road



■ **Company**

Sun Hill Surveying and Engineering Ltd is a specialist Land Surveying and Engineering company focusing on the civil engineering sector throughout the UK
<http://www.sunhillsurveys.co.uk>

■ **Instruments & Software**

- Leica Pegasus:Two
- Leica Pegasus Automatic Processing -
- Leica Pegasus MapFactory for Autocad
- Leica Pegasus MapFactory for ArcGIS- Novatel Inertial Explorer
- Leica Infinity

■ **Objective**

To provide detailed topographical surveys of 119 sites

■ **Location**

Berkshire, England



■ **Challenge**

Large scale project required detailed topographical surveys of the carriageway and verges, each survey measuring 600m long

■ **Benefits**

- All 119 sites were surveyed in only 12 days, before the final deadline
- There was no disruption to the network as traffic management was not required

signage for clearer visibility across the gradients on the road. The topographical survey features for the design included the surveying of the carriageway extents, road markings, crash barriers, channels, top of kerbs, gullies, kerb weirs, verge levels, ironwork frames, sign locations, traffic loops, overhead cables, electrical boxes, railings, fences, steps, bridge soffit levels and pier positions.

To survey these sites traditionally is a long and protracted operation using laser scanners, total stations and GPS, to collect thousands of points of data per day. Typically, this would take a surveyor around 2 days per site to complete in the field. Also to survey this many sites would have required 119 individual traffic management installations. With a project of this size, there is a significant health and safety risk associated to all involved, to personnel being both in the carriageway and in the verge during all times of the day and night. A safer and more cost effective method was needed to deliver the project on time and in budget.

Data Capture through mobile mapping

Leica Pegasus:Two and the mobile mapping process have revolutionised the world of surveying. Using the mobile mapping process and Leica Geosystems' technology provided huge benefits to the Area 3 Highways England project. Access to all sites was left clear with no road closures required as the Leica Pegasus:Two acts in the same way as any other public vehicle when collecting the 3D geospatial



data. In total, the surveyors travelled more than 6,000km using the Leica Pegasus:Two to collect millions of points per second. There was no disruption to the network as traffic management was not required, allowing traffic flow to continue as normal. Safety to survey personnel was considerably improved using mobile mapping as no surveyors or traffic management crews were needed in the road as all data was captured from the safety of the vehicle. The virtual surveyors were able to create traditional topographical surveys from point clouds and images.

Results and Benefits

Mobile mapping provided a rapid data capture solution for Kier, saving them time, reducing safety risk and maximising value by reducing a 200 plus field day project to only 12 days with no traffic management. Furthermore, all

119 sites were surveyed and delivered to Kier a week before the final deadline, thanks to the speed of accuracy delivered through using the Leica Pegasus:Two. Sun Hill was able to deliver this project with less than 20mm absolute accuracy. The surveys were then delivered in a staggered program, allowing sites to be prioritised.

"At Kier we aim to be at the forefront of technology. The Leica Pegasus:Two is one of the most accurate mobile mapping units on the market and has helped deliver significant cost savings and all 119 surveys were delivered before the final deadline".

— Mr Chris Fuller
Roads Value Stream Manager
Kier Highways

Leica Geosystems AG
leica-geosystems.com



© 2016 Hexagon AB and/or its subsidiaries and affiliates. Leica Geosystems is part of Hexagon. All rights reserved.

- when it has to be **right**

Leica
Geosystems

