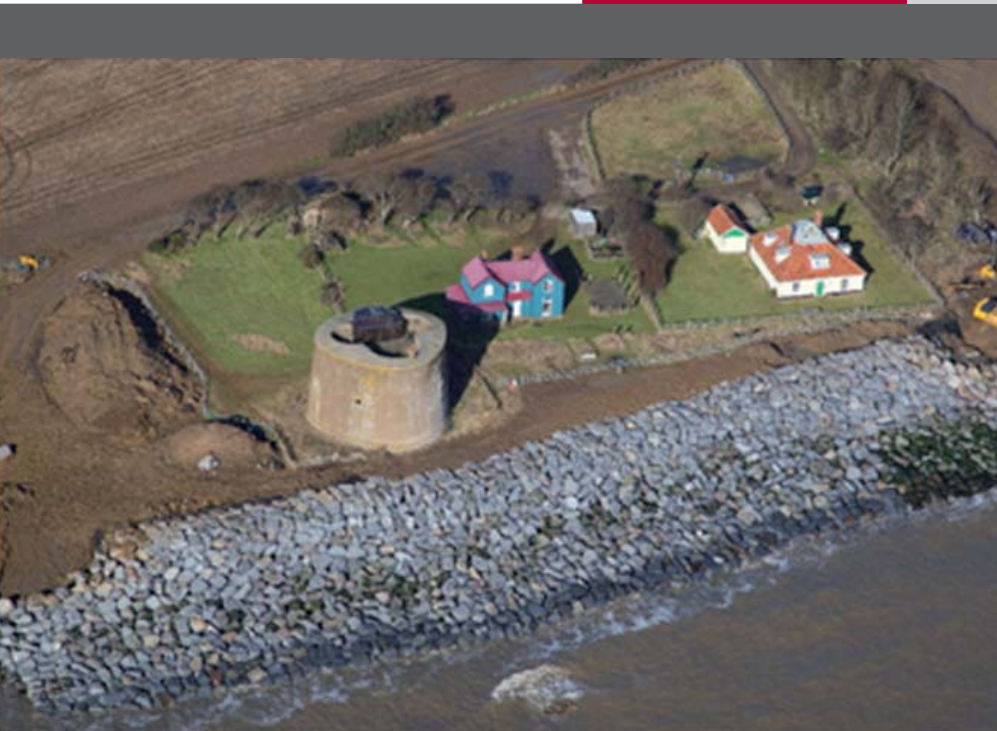


Case Study

Customer:
Dean & Dyball Civil Engineering

Project:
Suffolk DC Coastal Protection

Solution:
Trimble GCS900 dual GPS system,
SPS700 and SCS900



◀ Aerial view of work done by March 2009

re-build and construct a flood defence bund along the line of an existing Environment Agency flood defence and three, to construct a fishtail groyne to arrest any further erosion and to encourage the accretion of shingle to prevent any further local coastal erosion. I was already familiar with machine control and keen to find out exactly what the system could deliver. Following a consultation with **KOREC**, we decided that a Trimble GCS900 dual GPS system installed on our Hitachi ZX250 excavator would be the perfect solution for controlling both a dig underwater and the build of all three sections to both line and level."

The **KOREC** team fitted four sensors to the excavator, one each on the boom, stick and bucket linkage, and a pitch and fall sensor. Mounted onto the back of the

"However the main benefit for us is the time savings. We no longer need to establish stations or setting out points that may be lost to the tide"

excavator were dual MS990 smart antennas which would receive corrections transmitted via a radio back at the Trimble GPS base station mounted on the site cabin, secure and dry. These positioning sensors compute the exact position of the bucket teeth many times per second. In the cab, the Trimble CB430 control box uses this information and compares it to the design elevation to

compute cut or fill to grade. Everything is displayed on the screen, in front of the driver.

Dean & Dyball's 2D client drawings were converted to 3D design data using Trimble Terramodel software which has all the functionality for converting challenging design. It was this finished 3D data that was then uploaded into Trimble's Site Vision Office machine control software which allows the engineer to "drive" through the job with a built in emulator to

Continued overleaf ▶▶

What Lies Beneath?

A contract awarded by Suffolk Coastal District Council to coastal protection and flood defence experts Dean & Dyball Civil Engineering is set to protect a small community of farms and isolated private homes from the ravages of the North Sea.

Advancing tides have already toppled the remains of some of the pillboxes, gun emplacements and searchlight bunkers - remnants of coastal defences from two world wars - at East Lane, Bawdsey, and now threaten a 200 year old Martello Tower which stands just 10 metres from the sea after storms washed away much of the nearby shingle beach.

With the proposed defence works low on the list of priorities for national funding, the £2.2million project at East Lane, Bawdsey project has been funded through a unique partnership, the East Lane Trust, which has generated income to pay the costs of the scheme from the sale of land donated by land owners for building homes on three nearby sites. The scheme has also been supported by contributions from the Environment Agency and Suffolk Coastal District Council.

Specialising in work environments on or near the water, Dean & Dyball have already used a **KOREC** supplied Trimble SPS700 Robotic Total Station with SCS900 software to undertake similar work on a coastal job at Fairlight in East Sussex. With the Bawdsey project programmed to be completed during July 2009, and bad weather a construction consideration, Dean & Dyball were keen to look at further advancements in technology and how these advancements could maximise their work time within the 6 hour tidal shifts, deliver a first class job within the required tolerances and also increase safety for their site engineers.

Dean & Dyball Site Agent Peter Trent explains, "There are three distinct phases to the work that we are carrying out at Bawdsey; one, to rebuild and augment an existing rock revetment; two, to re-profile,

check for any major errors before the data is loaded onto the CB430 control box in the cab. The driver could then view the data displayed as a plan, profile or cross

“I would not hesitate to recommend the use of such a system on future coastal defence projects”

section. With cut and fill data on the screen in front of him, the Dean & Dyball operator is now able to check his work simply by placing the tip of the bucket on the constructed job – no engineer required.

Peter Trent continues, “The 3 to 6 tonne rock armour has +500mm and -100mm placing

tolerances. Each stone is surveyed and as-built drawings produced from the collected as-built survey data to prove that the finished build complies with the Employer’s Requirements. Our Site Engineer has been using the SCS900 system for less than five months and from the start has found it very straightforward. However the main benefit for us is the time savings. We no longer need to establish stations or setting out points that may be lost to the tide, then lose further time during a 6 hour tidal shift re-establishing such control. We also have the ability to dig underwater and in darkness. A definite plus is that only one Site Engineer is on foot, all other personnel are in machine cabs which is good news when we are moving 3-6 tonne pieces of granite.”

Dean & Dyball get additional use out of

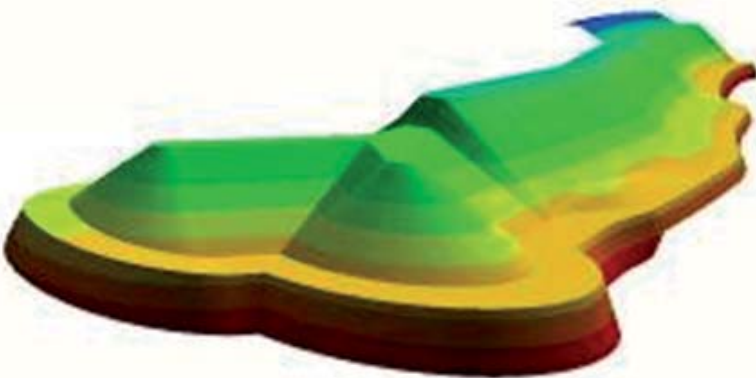


▲ Trimble GCS900 system mounted on Dean & Dyball’s Hitachi ZX250 excavator

their base station by using it in conjunction with a Trimble SPS881 GPS Rover and TSC2 logger for checking jobs on dry land and verifying the work of the GPS excavator. The SPS rover is only used as a verification tool as the excavator does its own as built survey with the bucket over finished work. This survey is then downloaded into Trimble Site Vision Office where the results can be seen graphically against the design data.

The project is due for completion in July 2009 and Peter Trent concludes “Depending on the economics of future works and available training, I would not hesitate to recommend the use of such a system on future coastal defence projects.”

▼ The project’s 3D design model produced by KOREC in Trimble Terramodel software



Product Feature

Trimble GCS900 Grade Control System

The Trimble GCS900 Grade Control System is flexible, fully upgradeable, and can be installed on machines from any manufacturer. Using the industry-standard Controller Area Network (CAN), you can easily add sensors and upgraded software to meet specific machine and application requirements.

- Significant cost saving
- Less time to completion
- Less rework
- No waiting for stakes to be set
- More accurate, more consistent excavation
- Perform more complex excavation

GPS-BASED GRADE CONTROL SYSTEMS IDEAL FOR LARGE SITE PROJECTS AND LONG-TERM, MULTI-PHASE PROJECTS.

GCS900 Grade Control System with dual GPS can be installed on excavators with standard buckets or tilt buckets for mass excavation projects; on dozers for a wide range of earthmoving applications; on scrapers for mass excavation applications; on motor graders for a wide range of earthmoving applications; and creates a full 3D control system that puts the site plan - design surfaces, grades and alignments - inside the cab.

Contact us:

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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