Global Rail Construction

CASE STUDY

Balcombe Bi-directional Signalling Scheme - 650v power works

LOCATION:	West Sussex
CLIENT:	Kier Plc
DATE COMMISSIONED:	December 2014

Introduction

Global Rail Construction were selected by Kier as E&P contractor for the installation of the new 650v power supplies and also the 400v power domestic supplies for the Balcombe to Copyhold Signalling Supply upgrade project on Network Rail's VTB lines.

Having already supported Kier on previous signalling projects, Global Rail Construction were seen as the partner of choice once more, particularly as the works involved sub-station access, calling upon the experienced in-house Level C staff that the business have.

The project on Network Rail's Sussex route involved three sites at Balcombe Tunnel, Ouse Valley and Haywards Heath and required a fully managed delivery solution from Global Rail Construction's in-house E&P division.

The project relied heavily on close co-operation between Kier's own teams and those of Global Rail Construction and it is this in-house experience in signalling and civil engineering, that provided Kier with the confidence that the E&P team fully understood the interdisciplinary nature of the works.

The programme was fast track with the power build and install having to be completed in 3 months, however, Global Rail Construction's E&P team - who are just at home delivering standalone projects under their Principal Contractors Licence – were able to call upon their experience in-house project delivery processes to provide a robust cost loaded programme of activities that could be accurately monitored.

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The Deliverables

Global Rail Construction fully managed the complete E&P install, test and commission solution, including surveying and setting out, materials logistics, project and railway access planning during a series of night possessions.

They achieved compliance with all relevant standards, the scope of which included:

Haywards Heath

- Transformer upgrades at 4No locations and installation of new 650-110v power supplies, test and commission

Balcombe Tunnel

- Factory Accept Test and Install a new Functional Supply Room (FSR) provided by Kier
- Installation of 25amp isolator from the 650v power pillar to enable the powering of the new FSR
- Powering 3No new signalling location cases, test and commission
- Installing 1.1km of new feeder cable

Ouse Valley

- Installation of 2No new power feeders (South and North)
- Factory Accept Test and Install a large Functional Supply Room (FSR) provided by Kier
- Installation of 3.3km of new feeder cables to power the North
- Installation of 1.9km of new feeder cables to power the South
- Powering of 8No new signalling location cases in the North
- Powering of 4No new signalling location cases in the South
- Test and commission both North and south feeder installations

Challenges

During the site survey, Global Rail Construction highlighted that the existing transformers were 20kva, however, the specification called for 25kva transformers, which had been procured in readiness for the upgrade works.

Cable routes were also surveyed and in some instances were also found to be full which provided Global Rail Construction with a capacity conundrum to resolve.

The programme also provided challenges, particularly the track access times. A single possession was provided for Balcombe and Haywards Heath and two track possessions were provided for Ouse Valley - all of which provided very small working windows for Global Rail Construction to deliver the full scope of works.

The logistics for the pre-fabricated FSR buildings, also provided a challenge with the access point some 1km away from the site of the works at Ouse Valley.

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Solutions

In order to resolve the logistical problems with the proposed transformers, Global Rail Construction in conjunction with the project signalling designers, re-calculated the installation requirements and were able to successfully integrate the existing transformers into the project without compromising the project timeframe.

Global Rail Construction then worked on the siting and capacity issues by undertaking a full survey to locate and provide new locations for the equipment and design a new cable route to house the new power feeding supplies.

Access issues for the Functional Supply Room buildings were resolved through negotiations with a local landowner, with Global Rail Construction managing the logistics in a collaborative manner to ensure the assets were provided in a timely manner.

Global Rail Construction also cleverly managed programme issues by flexing their resources to work concurrently during the same possession at both Haywards Heath and Balcombe Tunnel. Offering a solution to power down the whole system and change over the new 650v supplies, also helped and allowed works to be kept on track.

A full test and commissioning plan was also produced by Global Rail Construction's City and Guilds (2391) certificated testers and by providing 'witness testing', the team were able to provide surety for the suitability of the connections at each and every location case.

The Benefits

Global Rail Construction as a Railway Principal Contractor was able to use their full management systems to deliver this standalone E&P project with confidence.

The business having in house capability across a number of railway system and construction disciplines - offering signalling, E&P, civil engineering and building - was able to use this integrated experience when working with others on this standalone project. Global Rail Construction's new works signalling install and test capability in particular came to the fore.

Global Rail Construction are NICEIC accredited and their E&P division has vastly experienced staff with in-house capability working in a Level C (Sub-station access) environment. They offer experienced and competent City and Guilds installation teams, with their testing resource qualified in line with the 2391 standard.

Global Rail Construction also have a strong pedigree in mentoring and training their staff and were able to use this complex project to help up-skill resources and build competencies, to help provide their E&P engineers of the future.