

CASE STUDY

Clacton Resignalling Scheme

LOCATION: Clacton-on-Sea, CO15 6PU
CLIENT: Atkins
DURATION: April 2020 - May 2021



Introduction

Global Rail Construction Limited (GRCL), has successfully completed a railway civil engineering design and build programme of works on behalf of partner Atkins Global, to support the upgrade the signalling systems in the Clacton-on-Sea area.

The Clacton Resignalling Projects' principle driver was the asset condition of the interlocking and associated track infrastructure at the throat of Clacton-on-Sea station.

Much of the signalling in the area dated back to 1958 and utilised a lever frame dating from 1891. There was a mixture of semaphore and colour-light signals, controlled by a mechanical/electro-mechanical lever frame. There was also a mechanical ground frame

at Clacton Station. The existing signalling equipment has been previously subject of life extension works in both 1996 and 2004.

Many components were obsolete and only available on a repair and return basis. Most of the existing location cases had considerable corrosion. The signalling uses some single-cut circuits which are the subject of ORR concern. Searchlight signals were installed on this line, with known Wrong Side Failure (WSF) modes. P-Style relays in the lower portion of the box were recognised as susceptible to sliver migration. So, these works, will minimise maintenance and reduce whole life costs.

Civil Engineering Scope of Works

GRCL's GRIP 5-8 civil engineering contract covered the provision of a full site-setup, all necessary design, management and supervision, materials, plant, and delivery to the point of construction. The scope consisted of the following elements:

- ① Vegetation clearance
- ② Design and build of 1 No Double Location Staging Platform
- ③ Design and build of 11 No Signal Foundations (a mixture of concrete and piled solutions)
- ④ Installation of ancillary railway civils including:
 - location hardstanding's

- RRAP's
- cable routes
- Relocatable Equipment Building - foundation base and associated compound works including palisade fencing - designed by Atkins
- ⑤ Site Clearance and waste recovery throughout construction and upon completion
 - Demolition of signal box and relay room

Challenges and Solutions

Piling Vibration Mitigation

During the installation of the 10 No 4m long 355.6mm driven piles for the new signal structures, there was the potential to damage the platform edge because of vibration. GRCL installed additional monitoring and as a further control pre augered a further depth of 1m below the bottom of the trial pit.

Access Collaboration during piling works

Due to the amount of works being undertaken by others during the commissioning, Road Rail Vehicle (RRV) access was always going to be a challenge. To resolve this, GRCL installed a temporary Road Rail Access Point (RRAP), consisting of sleepers and steel road plates. This allowed our RRV's to access without causing interface issues with the rest of the project and still provided us with enough time to install the remaining signal foundation piles.

Location Case Installation Covid Mitigation

New location areas were installed throughout, which consisted of new precast concrete half Loc Bases and timber hardstands. One of the issues GRCL faced with this installation was determining the correct manual handling process for the Half Location Case Bases due to Covid restrictions. A detailed and specific manual handling assessment was undertaken by GRCL, involving the use of extended "Ander lifts", which were used to successfully maintain the 2m social distance throughout the works.

Platform Route Cable Congestion

Platform route works were also undertaken, which consisted of installing approximately 300m of new duct route through the station platforms. During the works, GRCL encountered numerous buried services throughout the works, so extra caution was taken - with works completed without incident or accident.

Signal Box and Relay Room Demolition

One of the final milestones for the re-signalling project was to demolish the last remaining signal box in Essex. GRCL created a plan to demolish and remove the signal box and brickwork relay room within the last two remaining busy weekends of the project. One of the issues encountered was the proximity to the OLE. To mitigate this issue, the first floor was demolished by hand in one shift to allow enough space for the RRV to demolish the remainder of the structure. GRCL then backfilled the area once the signal box was removed and installed 50m of new troughing route. The existing UTX chamber was also modified and made good, with a new 2.4T precast concrete cover slab carefully lifted and secured into position. All works were completed to meet the desired timeframe.

Testimonial

I am writing to give personal thanks to your teams for successfully completing the works at Clacton. Despite facing a number of challenges, the team's diligence and commitment to the project have resulted in it being delivered on time and to perfection.

I am particularly impressed by the efficiency and quick delivery, both of which are priority areas for us. Your attention to the specifics of the project as well as maintaining schedule has been remarkable, culminating in exceptional delivery of the job.

Please pass on my congratulations to all of the team members who have been part of this project. I look forward to our continued relationship on future projects.

Rob Cairns
Capital Delivery Director - Eastern