

# CASE STUDY: Modular Platform Extension Thameslink - Achieves Significant Positive Outcomes on Sustainability

Max 2 pages



## BASIC INFORMATION:

Sector type: Rail

Location: Bedford Station,  
Bedfordshire

Client: Network Rail

Principal Designer: Tata Steel

Principal Engineer: Carillion

Principal Contractor: Carillion

Contract Value: £4million

Contract Duration: 58 weeks  
(completion of all disciplines; civils,  
signalling, track, OHLE and M&E)

## THE PROJECT:

The Thameslink Programme will increase passenger capacity at Stations between Bedford and Brighton and through central London as at present the trains running, particularly at peak times, are overcrowded. The programme aims to increase the number of trains and the capacity of these to 12 cars to enable more passengers to travel in comfort particularly at peak times.

As part of the Thameslink Programme the platforms at Bedford Station required extending to accommodate 12 car trains being introduced on the route. Our project also involved significant adjustments to the associated rail infrastructure including alterations to overhead line electrification and signalling equipment. Carillion were initially contracted to deliver Grip Stages 3 & 4, option selection and single option development, followed by detailed design and construction which took place from February 2011 to July 2011.

Challenging conventions, we chose to be innovative and revolutionise the delivery process by using Hering Bau modular precast platform units and reclaimed steel tubular piled foundations, thus halving the build time, improving sustainability and greatly reducing the risk to the safety and wellbeing of our employees. Also this type of modular system was a first for the UK.

The precast concrete platforms are built under factory conditions allowing a high level of accuracy and quality to be incorporated. This also meant a significant reduction to the risk typically associated with insitu platform extensions construction as the environment in the factory is easily controlled and poses fewer hazards than working on or near the line. The modular platform units are delivered to site in sections and assembled onto the precast beams and piles.

## THE BENEFITS (to the client and/or end user):

The innovative approach to design and installation resulted in significant benefits in line with our Sustainability Strategy 'Positive Outcomes', including driving down carbon, protecting the environment, supporting sustainable communities and providing better prospects for our people, in addition to supporting our drive to lead the way in our sector.

- **Time saving** – we delivered 93 meters of platform surface in a 27 hour possession, work which would usually take 3 months. The Civils build programme included the foundations, beams, slabs, fencing and lighting was completed in around 8 weeks. Overall reducing the disruption to the train operators and end consumer.
- **Reduced safety risk** – having the platforms developed in a factory environment greatly and using the unique pile foundations reduced the number of man hours spent on track and in hazardous working environments. This meant a significant reduction to the level of risk to employee's safety and wellbeing. No major accidents or incidents occurred during development or installation of these platforms.
- **Cost** – often innovation or using something new means an initial increased cost to the project but the over all project life cycle cost is reduced. The prefabricated platforms and piles had an increased development cost but saved money in installation and maintenance as they were much faster to install and removed the need for remedial works (this also meant a quicker hand back). Installing platform extensions using an off site prefabrication method compared to traditional generates significant efficiencies in regard to possession costs (both the management and the compensation due to train and freight operating companies for closing the operational railway). It costs Network Rail approximately £4k to manage a possession worksite in staff and other costs. When installing a prefabricated platform, compared to a traditional in-situ platform, much fewer possessions are required resulting in a saving of £157,500
- **Reduced Carbon and Waste** – using precast platforms and pile foundations meant a reduction into carbon emissions as fewer journeys and less manpower were required to transport materials. It also meant less waste was generated as everything was specified and built in a factory environment. The method avoided the use of approximately 320 tonnes of concrete. The estimated volume of excavated material avoided was 115 cubic metres which equates to an approximate saving of 15 lorry movements. The steel piles used for the piled foundations were sourced by our sub-contractor from reclaimed steel tubes which had previously been used in the North Sea offshore drilling sector.
- **Good lineside neighbour** –majority of the works were undertaken whilst the station was partially open and in use by the general public. This would have been an issue had we used a traditional build method as much of work would have to be completed over a large number of possessions. The modular method significantly reduced the installation time and disruption to the general public.
- **Design** – all facets of a station platform were designed into the Hering Bau modular precast platform units meaning that the lighting columns, fence, trash screen brackets and drainage systems were all built in. Not only did this improve quality and reduce time in the build but it also mean that aesthetically the platforms look fantastic and are free from design errors which occasionally occur when working around existing infrastructure. This also contributed to reducing waste and lower carbon emissions.

## END USER FEEDBACK (If available)

"Carillion successfully delivered the modular precast platform extension at Elstree & Borehamwood to programme and budget as part of our Outer Areas works on the Thameslink Programme. The method was further developed to include the piling system for delivery of the platform extension at Bedford Station. This innovative approach, the first of its type on this Network Rail Route, made a significant contribution to supporting our sustainability objectives; reducing materials usage and associated carbon emissions, reducing H&S risks and impacts to our lineside neighbours." Damien Gent, Network Rail, Senior Project Manager TLP Outer Areas.  
Carillion were awarded one of the TLP coveted Green Rivet Awards for their sustainable approach to this project.

## **THE PROCESS:**

The innovative approach to the platform extension was achieved using lessons learnt on a previous platform installation at the Elstree/Borehamwood project which was delivered as part of Thameslink KO1. This previous project also involved a modular build but on the design for Bedford Station we were able to incorporate improvements to the design which resulted in significant additional reductions in concrete and waste in addition to further cost savings than the previous project. Crucially the project overcame the challenge of poor ground conditions using the piling method and modular pre cast system to deliver within limited track access.

## **KEY LEARNING POINTS/ BEST PRACTICE**

This method of working was a first for Network Rail and overground stations in the UK but is now considered best practice. Precast platforms are now being considered on projects in Scotland, on the £2million platform project in Peterborough and for the multimillion pound development at London Bridge Station