

Luton DART, Luton

# Infrastructure formwork for a driverless rail link service

## Key Benefits:

Innovative formwork support

Efficient formwork design enabled reuse

Mobile shoring reduced weekly cycles

What's interesting about the tunnel is that its curved shape has been achieved by reusing straight formwork. The mobile solution for the pier table system has worked brilliantly and has reduced repositioning times, especially within the confined area.

Contract Manager, NJ Doyne  
**RICHARD FAHEY**

## The project at a glance

Luton DART is a driverless rail link service that will reduce journey times significantly between the airport terminals and Luton Airport Parkway station. At £200 million, it is a complex project involving a single bridge, a viaduct, tunnels and platforms, all of which is being delivered by Volker-Fitzpatrick Kier.

**PERI**<sup>®</sup>

**Customer:** NJ Doyne

**Main contractor:** VolkerFitzpatrick and Kier (VFK)

**Developer:** London Luton Airport Ltd (LLAL)

**Project type:** Infrastructure, Rail

**Products and Services:** VARIOKIT, VARIO GT 24 Girder Wall Formwork, SB Brace Frames, TRIO panel formwork, MULTIPROP shoring, PERI UP



#### **What did the customer need?**

The viaduct features seven piers, all requiring an F3 finish. Two of these piers are double-stem piers, which meant that special forms had to be designed to achieve the unique internal archways.

In addition, a 320 m-long double tunnel is being built further along the route, which required flexible formwork to achieve its curved geometry. For the tunnel roof, a faster repositioning solution was needed to reduce the cycle time on each 20m-long segment.

#### **What was the challenge?**

The challenge was the unique shape of the piers and changes in ground conditions. The final solution had to adapt to the geometry of each pier stem and head. Furthermore, the specified finish meant that the panels could not be tied together and so another form of support was required.

#### **How did we help?**

We provided formwork and scaffolding systems for almost all structures on the project; the main structures are included below:

##### **The viaduct**

As we could not tie panels together, our engineers rotated SB brace frames 90 degrees to create loading platform supports. Frames were installed horizontally around the pier stems to support pier table formwork and structure through the curing process.

Safe access to the pier heads, the highest being over 13 m above ground level, was facilitated by PERI UP scaffolding. We customised PERI UP working scaffolds so that the customer could crane lift the entire unit at once. The same unit was moved to the next pier to facilitate pier table construction, without any dismantling or reassembly required.

We formed the bespoke shapes of the pier head by designing a special form using components from our VARIOKIT range. Using these special components enabled the intricate internal archways on piers one and two to be formed.

##### **The tunnel**

For the tunnel roof, we used our GT 24 girders and a plywood overlay. This was supported by MULTIPROP shoring. To reduce repositioning time, we placed the formwork and shoring on wheels, enabling the whole system to move without any dismantling required. Due to this, a weekly cycle could be achieved.

The tunnel walls were built with our single-sided VARIO formwork panels that were connected with intermediate fillers to achieve a faceted structure that would form the curve.

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