

Case Study: Design and Pre-Construction of Platform canopies

London Bridge Station Redevelopment

Explanation of the methods used in construction of the main structures including the platform canopies during the station redevelopment

The aim

The old London Bridge station had a train shed housing nine terminating platforms and six through platforms. The project's aim was to reverse this to be six terminating and nine through platforms which would remove the bottleneck for train services.

The station footprint is sandwiched between Tooley Street and St Thomas Street and so there was no space available to add new platforms. The only solution was to untangle the crossing points, reduce the dead-end lines and hugely increase the throughput of trains.

A challenging programme

Work was carried out on the south terminating platforms, gradually moving two at a time towards the north. The first six platforms were re-covered with new steel canopies that ran the entire length of the platforms.

Working at a rate of approximately four platforms per year, each stage of the programme schedule was met on time allowed trains and passenger to start using the platforms again.

Fully integrated joint venture design team

The 50:50 Arcadis:WSP + Grimshaw Architects JV team took on a unique project identity so that all staff were taken outside their usual office traffic. This helped the team gain a vision of what they were aiming to achieve as a team which is illustrated in the visual flythrough animation.

<https://network-rail.wistia.com/medias/0p0cwo3hco>

The project team and the Network Rail team were co-located in Costain's project office which meant everyone had access to each other. This made it easy for engineers to find out the client's wishes and for the client to find out how the engineers would build things.

The JV received minimal DRN comments and there were good programme gains when the two criteria above were understood.

As is often the case, it was found that the original scheme plan was not buildable within the programme constraints. Programme deadlines were governed by major blockades of the station and so to achieve them, the following methods were introduced:

- Modular components would be used for the façade, platforms and canopies.
- Off-site fabrication would be necessary for the platforms and canopies / pile caps.

Platform canopies

The platform canopies were produced in prefabricated sections offsite. Each section was designed to be small enough to be transported by road and installed in sections that could be quickly and easily connected up on site.

A mock up canopy was built in north Yorkshire to test the design and construction methods in advance. The canopies were designed with several features to help with maintenance, aesthetics, access and ease of construction including:

- Walkable gutter integrated into canopy design

- Services containment pre-installed
- Support for Customer Information Screens (CIS) and signalling
- Drainage routes in column - hidden, but still accessible
- Connection design – temporary and permanent canopy conditions
- Replaceable glazed panels
- Mansafe system integrated into the cladding
- Recesses for speakers and lighting
- Accessible cladding hatches for steel inspection
- Movement joints designed into the steelwork



Above: This photo shows the canopies in cross section during construction. The walkable gutters, drainage columns, recesses for speakers and lights and glazed panels are visible.



Author

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Further information

For more information on this Learning Legacy case study please email contact@thameslinkprogramme.co.uk