

Case Study: Offsite manufacturing vital to the success of London Bridge

London Bridge Station Redevelopment

The main benefits achieved through offsite manufacturing of the building envelope

With the after effects of Mark Farmer's 2016 government review still rippling through the industry today, several main contractors are now making offsite fabrication a requirement on all large-scale projects – a trend that will undoubtedly become an ever-increasing focus in the future. This methodology is by no means new, however with construction output on the increase and clients looking to appoint project partners that can truly add value to the process – it comes as no great surprise that the use of offsite manufacturing is increasing.

Prater incorporated elements of offsite manufacturing across a number of their projects and are continuing to proactively invest in inhouse factory facilities to further develop their offsite solutions. A fantastic example of our use of this methodology was the development of London Bridge station. The station, which serves 125,000 commuters a day, underwent a major redevelopment programme – a multi-million, six-year-long upgrade that now offers an increased number of routes and destinations with a better travel experience for passengers.

1. Common challenge – lack of space

London Bridge faced a common challenge posed to developments in large, congested cities; lack of space onsite. On top of this, the station is the fourth busiest in the UK, meaning that speed of work onsite was essential, creating as minimal impact to the stations day to day running as possible. Offsite manufacturing played a crucial role in Prater's extensive scope of works on the development, where the complex structure of the canopies, tight timescales and restricted access meant that an onsite solution was not practical.

2. Effective collaboration

After early engagement with Prater's dedicated supply chain partners and detailed discussions with Network Rail, Costain and the architect Grimshaw, a decision was made to invest in building a full-scale constructability prototype of a 60m-long platform section in North Yorkshire. This was then dismantled and rebuilt, with the idea to challenge the buildability of the project in line with site restrictions and constraints, enhancing the end quality of the build and the confidence of all parties in the final result. This innovative methodology provided insight, not only into the aesthetic of the finished build but also the performance of the end solution – whilst still being able to check the accuracy of the build against the 3D model.

To assist collaborative working, Prater established an offsite manufacturing facility to house all its supply chain partners for the project. Severfield was responsible for steelwork and Prater worked on the roof cassettes, whilst the M&E contractor was responsible for installing the interfaces, incorporating lighting; public address (PA) equipment; passive infrared (PIR) sensors and security cameras. To ease the build process, the cassettes were built into adjustable transport frames – allowing the team to access the underneath sections of the structure.

Even with work being undertaken 24/7 by a number of teams onsite, the sheer scale of the project demanded the redevelopment be completed over five years. However, by manufacturing much of the roof canopies offsite, one lift with a power crane could raise multiple elements at a time, speeding up the overall installation and the

amount of time the machinery was needed on site. In addition, skilled workers who created the prototype offsite were present during the installation process of the cassettes – removing the learning curve and ensuring the installation was consistent. This guaranteed the highest quality of delivery and further saved time on installation.

3. Quality & Consistency

The prefabrication of the building components in an industrialised factory environment also ensured an increased level of consistency and the reduction of any defects. For larger, more complex infrastructure projects such as London Bridge, where bespoke designs are required, the ability to construct a test version is crucial to assessing strengths, weakness and potential issues on the project.

4. Safety

Perhaps the most significant benefit that arose from offsite manufacturing was that it allowed us to reduce risk, by taking work away from the site and in a controlled environment. As 90% of the cassette manufacture and build was taken offsite and only 10% of the installation and fitting of infill panels was carried out on site, most of the work was undertaken at ground level – significantly reducing risk across the entire project by reducing unnecessary work at height. In fact, over the 650,000 hours spent on the project there was not a single serious incident.

5. Setting New Benchmarks

Modernisation and progression are key to the future of the construction industry, and offsite manufacturing is an ideal technique for achieving this. Prater has seen a dramatic increase in the number of clients opting to utilise our offsite manufacturing capabilities, and the type of work being undertaken is setting new benchmarks for the construction industry – particularly when it comes to complex roofing projects. London Bridge provides a prestigious example of how offsite manufacturing can ensure the success of a project.

6. Supporting Videos

Roof canopy installation

<https://youtu.be/phGekmVEJ6E>

Roof Prototype Assembly

<https://youtu.be/JEh8w6oKpxo>

Delivering the London Bridge project

<https://youtu.be/hWkt4tWpEvY>



About the author

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Further information

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