

Case Study: Mock-Up

London Bridge Station Redevelopment

Mock-ups are a scale or full-size model of a design which are used to demonstrate to clients the functionality of the design, the aesthetics of a building or the materials being used on elements of the project. In this case study, James Elford, London Bridge Project Director, Costain talks about the mock-up variations created during the London Bridge Station Redevelopment and the benefits realised.

1. Benefit of Mock-Up

Carrying out a mock-up or doing a mock-up is something quite standard within the industry and Costain used this a number of different ways at London Bridge:

- With a project such as London Bridge, there are a number of planning conditions that have to be discharged and so the first type of mock-up is to create a prototype of the building which avoids designing and building something which on opening day, nobody is happy with.
- A second type of mock-up is for testing to prove how a certain element of the project works or demonstrates how you are going to build something.
- Finally, a mock-up can be used to demonstrate to the client or to the architect that a proposal to change something is acceptable. This means we can get agreement without going to a huge expense of doing the job and the client then being dissatisfied.

2. Example of Mock-Up

- One of the primary features of London Bridge is the platform canopies and the way they flow across the platforms up and down. They are all architecturally designed and quite complicated. The architectural impact on the station was extremely important to Southwark Council, the local authority and so, Costain were asked as part of the contract requirements to produce a planning mock-up of the canopies. This served a number of purposes:
 1. In full scale, it demonstrated what the canopy was going to look like. It also allowed us to demonstrate the quality that would be achieved during building which gave Network Rail, the architects Grimshaws, Southwark Council and ourselves, the confidence that the works being undertaken by the supply chain and Costain were going to hit the mark and be satisfactory. The mock-up was built off-site and we organised a visit to prove the quality and arrange sign-off for a planning consent.
 2. The other element of the canopies was to create a construction prototype which was very much like a mock-up, just by slightly a different name. This was important because we were able to prove that the programme the suppliers had committed to could be achieved. It also acted as a training tool. It was built up in Yorkshire in one of the supplier's yards and comprised a 20-25m section of the canopy with a number of the different columns, the roof, members etc and they put it together, dismantled it and rebuilt it continuously to prove how quick it could be built. It proved that the works we were planning to do during the possessions were going to be successful because when trains were not running, we knew the constraints of a possession and what needed to be achieved. It also allowed the teams working on the construction to learn how to undertake the work to the right quality, to the right programme and safely without learning that immediately on the job. Similar to how Prater undertook some of their work, Costain also undertook some work offsite to ensure that when it came to site, everything was as it should be.
 3. The original design for the façades both on Tooley Street and on St Thomas Street was to ensure the brickwork was in keeping with the existing station construction. However, Costain wanted to change the brickwork from traditional hand-laid brick to pre-cast brickwork panels. There was a concern that the pre-cast panels may not look authentic and not be in keeping with the integrity of the building. So, Costain did some work with a particular supplier to produce a mock-up of what it was going to look like and to show how similar it was to hand-laid brick. We also demonstrated the added quality benefits which included the brick work being accurately constructed, the mortar being very neatly completed and the added safety benefits of pre-cast which included not working at height or close to the railway.

Each of these examples demonstrate the benefits of mock-ups which contributed to the successful delivery at London Bridge station.

3. What happens to the mock-up on completion of a project?

On London Bridge, the canopy was eventually dismantled and incorporated into the works because it was the right size. Other mock-ups are generally retained by the company and used to demonstrate the work they have completed as they tender for future work.

Author

Case Study produced by James Elford, London Bridge Project Director, January 2019

Further information

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