The Green Construction Board

CASE STUDY: Thameslink Borough Viaduct

The Project

The Borough Viaduct Project for Thameslink is an excellent example of sustainability delivered at the heart of design and construction. The construction of a major civil and building project in a central London Conservation Area, including the launch of a 1080 tonne bridge superstructure, requiring 140 Party Wall Agreements, and in the Borough Market which attracts over 4.5 million visitors a year.

The construction method and programme was adapted to suit the needs of the community. Full height acoustic hoarding was erected on the border of the market, ensuring any emissions during construction did not adversely affect tourists, residents, business, and the food produce the market is famous for and the market remained open throughout.

To capture whole life value, early engagement with stakeholders and end users (Borough Market Trustees in particular) delivered their optimum solution. The project content was influenced through our value engineering, evaluating options with higher capital costs over the life cycle of the project to minimise future maintenance costs. The project enhanced the urban environment through engagement with the local community leaving a legacy for the future.
The Benefits

Total carbon was reduced by 19% per annum throughout the construction period. Diversion from landfill was 98% on average during the project. Rainwater was collected on site and used for site activities. Skanska operated a Green Travel Policy, no member of staff was allowed to drive to site.

A major milestone of our works was the ‘bridge launch’. We constructed the steel truss bridge within the market over the viaduct to minimise vehicle movements during construction (vehicle movements were reduced by 45% from the original construction method), and we ‘slid’ the bridge out across the main road over the course of a bank holiday weekend. The stakeholders were kept informed at all stages of the works through newsletters, stakeholder forums, and weekly emails, and we set up an information bus with free refreshments and staff on hand to answer any questions concerning the works.

Stakeholder management was key and we used the local facilities of Borough Market to regularly set up stalls to inform the public of our work, with interactive activities, such as an ‘archaeological dig’ with artifacts found on the project during the school holidays, and cycle safety awareness with free bike ‘MOTs’.

The Process

During design stages and throughout the project, Skanska optioneered various materials and methods to reduce the carbon. Using higher percentages of PFA and GGBS in the concrete mixes and simplifying the mixes produced 40% embodied carbon savings from the baseline. LCA was used in during the construction phase to make the team aware of the embodied carbon and to look at different materials and methods to reduce this. The resulting construction changes were reducing piling in the market, the reuse of materials throughout the site, especially the reuse of the piling mat and polystyrene blocks as fill.

We used an integrated design team and shared the project offices with the client to eradicate silo working. This ensured all information was collated within the team and helped value engineering to be achieved at the design stage rather than during construction where the cost implications are higher. During the detailed design stage the architectural, engineering and contractor teams held very frequent design reviews to monitor detailed design development. Workshops to design out waste through design and construction decisions were given to the whole project team, including site staff to ensure sustainability was integrated throughout the project.

Key Learning Points

Sustainability is more than reducing noise, carbon, and emissions. It is ensuring that we work within the local environment, keeping people informed and minimising disruption and working collaboratively with the client and designer to ensure every design and construction decision benefitted the local and wider community. Some of the decisions we made during this process were:

- Scheduling noisy works to avoid peak business periods.
- Co-locating the design team within the delivery team on site.
- Launching using the bridge on bridge technique.
- One delivery point, ensuring all our drivers were trained and road waiting times were minimized.
- Challenging the existing traffic management system to reduce vehicle movements around the busy market, improving safety and environmental issues.

End User Feedback

BBC website 20th Feb 2011

Maria’s original cafe was compulsorily purchased by Network Rail, only for her new site within the market to fall within the viaduct’s footprint, forcing her to relocate again.

But she is far from bitter, praising their responsiveness to “teething problems” such as the odd power cut.

“Considering the size of the job, it is surprisingly quiet,” she says. “They’re working now. Can you hear anything?”

The only din is from a train rumbling out of London Bridge.

Learn more

Watch the time-lapse video of the bridge launch here:
http://www.youtube.com/watch?v=Xk2g8RlBr1U

For more information on
The Green Construction Board
visit www.greenconstructionboard.org
or email green.board@bis.gsi.gov.uk