



Award

TOWER ENVIRONS SCHEME

Tower of London

Architect Stanton Williams **Structural Engineer** Arup **Steelwork Contractor** Bourne Steel Ltd
Main Contractor Wallis – Kier Ltd **Client** Historic Royal Palaces

The fundamental purpose of the Tower Environs Scheme is to improve the visitor experience of the Tower of London by enhancing its setting, legibility, accessibility and context.

A major feature of the design is a set of three boldly modern buildings that define and provide scale to a large, open, public space. The quality of the design and materials is of a standard in keeping with the iconic and regal significance of the Tower of London and its status as a World Heritage Site.

The Tower Environs Scheme creates one of the largest public spaces in the City of London and in doing so makes conspicuous use of modern design to reinforce the historic setting.

The use of high quality exposed structural steel for the three buildings was fundamental to that achievement. The buildings are:

- The Vaults Canopy. Providing a new roof over the Tower of London ticket kiosks, the entrance to the Tower Hill Vaults and a landmark at the top of Tower Hill. Overall dimensions 45m x 12m x 6.5m high.
- The West Pavilion. Providing a Welcome Centre for the Tower, a Group Ticketing facility and a refreshment kiosk. The Pavilion also defines the west side of Tower Hill and forms a transition from Tower Place to the Tower of London. Overall dimensions 45m x 9m x 6.2m high.
- The Pumphouse Shop. This replaces a 1930 extension to Salvin's Pumphouse (a Grade II listed building) and helps to clarify the relationship between Tower Hill and the River Thames. Overall dimensions 22.5m x 5.8m x 6.2m, with a mezzanine of plan dimensions 19.3m x 4.5m.

The apparent ease with which the Tower Environs Scheme presents itself was also the result of much care and effort in founding the buildings. The whole site is underlain by an extensive and rich archaeological resource and a very large number of major modern utility services, critical to the function of the City.

A fundamental architectural objective for the buildings was to achieve elegant simplicity using common detailing themes for all three buildings. The geometric relationship between the envelope and the structure was critical. The purity of the envelope planes and their junctions meant that the rules for locating the steelwork created an arrangement of relatively small but important offset dimensions – requiring great care and virulence by the Designer and Steelwork Contractor.

An important structural engineering aim was to design the steelwork to create the visual precision required without having to resort to workmanship and material standards beyond those of the National Structural Steelwork

Judges' Comment

This trio of neat pavilions form a backdrop to the Tower Environs improvement project. This has greatly improved the experience of visitors to the Tower of London.

There is an elegance about the design and detailing of the buildings, which belies the skills of the designers and the steelwork fabrication, to achieve a mature, precise and classically Miesian simplicity in the project.

Specification. To maintain these aspirations through design, fabrication and installation required a collaborative partnership between the Designer and the Steelwork Contractor.

The structural form of all three buildings is relatively simple, essentially arrangements of columns and beams.

In terms of structural exuberance the most challenging and impressive is the Vaults Canopy. It cantilevers over the Tower Hill Vaults and accommodates a large window opening in the granite wall facing Tower Hill. The simplest is the West Pavilion. The smallest and most complex is the Pumphouse Shop; incorporating a mezzanine floor hung from the roof structure.



Stability for all three structures is generally achieved by vertically cantilevering columns in conjunction with cross-braced roofs.

The architectural objective to have the same shallow structural depth for the roofs of all three buildings was a particular challenge in satisfying the requirements of stiffness, strength, dynamic response and economy.

For the Vaults Canopy the main construction challenge related to the positioning and alignment of the cantilevered roof. The dead load deflection was addressed by pre-cambering the beams but the presence of three potentially, interdependent, load paths meant that the pre-camber dimensions were influenced by small dimensional changes (fabrication and erection permitted deviations) and the erection sequencing. The nine-stage erection plan developed in close collaboration between the Designer and Steelwork Contractor incorporated multiple slots at five locations along the horizontal edge beams to facilitate a more exact final positioning. The calculated deflection for each construction stage was measured on site and the temporary conditions were "frozen" by high strength friction bolts in order to achieve the final levelled condition after completion of the roof.

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