High Orchard Lift Bridge

Gloucester Quays

The High Orchard Lift Bridge at Gloucester Quays provides a vital link to Gloucester's transport infrastructure by linking the inner relief road to the newly completed south-west bypass. The bridge, formerly known as the St Ann Way Bridge Link, will provide access to the massive Gloucester Quays £250 million re-development scheme, as well as a variety of other leisure, commercial and residential projects.

Bennett Associates were appointed by lead consultant WYG Engineering, to provide the exemplar design for the mechanical, electrical and hydraulic elements that would form the lifting mechanism for the road bridge.

The design brief was for a contemporary styled single span bridge, with an efficient and reliable electro-hydraulic lift deck, typical of a modern bascule design. The bridge not only serves a practical function in terms of integrating the development around Gloucester Quays, it is also a striking waterway gateway to the historic Gloucester Docks.

- Gravity 28 metres long and 15.7 metres wide.
- The structure rotates 69° about a horizontal axis to form a 12.5 metre wide, infinite height navigation channel.
- Sitting 6 metres above the Gloucester to Sharpness canal, most boats will be able to pass beneath without the bridge needing to be raised.
- The deck weighs approximately 200 tonnes with an additional 100 tonnes of counter-weight situated behind the pivot in the tail section of the bridge.
- The counter weight reduces the load on the two 420mm diameter bore, 200mm diameter rod lift cylinders which are extended to cause the deck to rotate.
- When in the lowered position, the tip of the bridge rests on the approach span and two tail locks engage at the back of the bridge to secure the deck in position.

Constructed from steel with white concrete abutments, the bridge was designed to be extremely low profile in order to preserve the existing views of the city. The main bridge deck was built in five separate sections and then welded together once on site. Once the concrete and steel counter weight was added, the whole deck was launched into place using special jacks and hydraulic pushing cylinders which slid the deck over the canal.

Bennett Associates involvement continued throughout the construction of the bridge in a supervisory capacity. They were on hand to ensure that the design was executed as intended and in accordance with the design drawings and specification documents that they produced.

The simple, minimalist design of the bridge also provides access to new cycle and pedestrian routes being constructed along the canal towpaths. The two canal banks were joined for the first time in mid-January 2008, as the final section of decking was put in position.

The £10 million project is a joint venture between English Partnerships, British Waterways and the developer, Peel Holdings. The bridge was officially opened to pedestrians, cyclists and traffic on 18th November 2008.

High Orchard Bridge - Gloucester Quays

The bridge in the fully raised position

Pivot and cylinder attachment

Pivot assembly and 75mm diameter holding down bolts

Bennett Associates (originally founded in 1984) was acquired in 2008 by Atkins; bringing their proven technical expertise to the UK's leading engineering consultancy.

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