

Engineering Solutions

Updating Brunel's Legacy



Entrance Lock Outer Gates

KGAL has been appointed by Arup to act as specialist sub-consultants on major modernisation of the Lock Gate and Swing Bridge operating systems at Cumberland Basin in Bristol, on behalf of Bristol City Council. Also known as "the floating harbour", Cumberland Basin was the site of Isambard Kingdom Brunel's first significant work in Bristol. As Dock Engineer, he was responsible for constructing the Underfall Yard Sluices, designed to control the water level and siltation in the harbour.

Although these works were, by comparison to later higher profile projects, relatively small, they are regarded as the catalyst for Brunel's long association with Bristol.

KGAL's scope of works includes inspection and evaluation of existing plant and equipment and preparation of technical specifications for refurbishment or renewal of;

- Operating systems for 2 pairs of Mitre Caisson Gates and associated sluices at the Entrance Lock
- Operating systems for Junction Lock Swing Bridge, Upper Lock Gates and associated sluices
- Junction Lock Upper Mitre Gates
- Underfall Yard sluices and operating gear
- Nova's Dam sluices and operating gear
- Brunel Lock Dam sluices and operating gear.

In addition, a feasibility study into reinstating the operating system to the original Brunel retracting footbridge over the Entrance Lock is being carried out. Replacement operating systems will mainly comprise of local high pressure hydraulic

power units and cylinders in place of the current low pressure water hydraulic systems which are powered from a vast ring main running around the site from a central pumping and accumulator plant. Much of the existing items of plant and pumping system are historically significant and, where practicable, will be retained for display, with English Heritage being consulted throughout the works. The first stage of the works is due to go out to tender before the end of 2007.



Junction Lock Swing Bridge

Prescott Channel

As part of the preparation for the London Olympics in 2012, significant investment is being put into transport infrastructure, not only to access the event but to facilitate a greener approach to construction. With funding from Olympic Delivery Authority, Department of Transport, London Thames Gateway Development Corporation, Transport for London and London Development Agency, British Waterways have awarded a "Design and Build" Contract to construct a river regulating structure comprising a variable weir and navigable lock at the lower reaches of the River Lee in East London. The principal benefit of the scheme is to provide an alternative water borne route for delivery of construction materials to the various Olympic construction projects in the area, thus reducing the impact of construction on the local road network. KGAL was appointed by Halcrow as specialist sub-consultant to prepare outline designs, technical specifications and works information pertaining to the variable weir gates, lock gates and associated control systems on the project. Currently KGAL are reviewing the Contractor's design prior to the start of manufacture. The scheme is scheduled for completion during 2008.

Tianjin Bridge - Update



Having been appointed by Waterman International, to provide technical support with regard to all aspects of the bridge operating machinery, KGAL recently attended the first in a series of design review sessions in China. This initial visit focused on the design criteria and major mechanical components within the operating system. Being mindful of the possible communication difficulties for our first meeting with the ultimate client, we were delighted to report back that all went well and our discussions were completed on time, without any major technical issues. Waterman's excellent local presence contributing enormously to this end.

News in Brief

- Following on from a number of recent Environment Agency projects, KGAL has been appointed by Black & Veatch to provide specialist technical support with respect to "High Head Control and Isolation Gates" on a prestigious flood alleviation project in Chicago, USA. The first stage of our commission included a brainstorming session with the project team in Chicago, further work will include advice on the arrangement and details of gates for incorporation into CFD modelling.
- KGAL has been selected by White Young Green, as a design partner, to develop the high profile Swansea SA1 Lock system. Likely to incorporate Sector Gates with state of the art lock controls and software, KGAL were chosen as leaders in the field of Lock system design.
- Cathedral Road Bridge, Derby – KGAL has recently completed a 3rd party check of all the M&E systems associated with a new moving bridge for Derby. It is a first time appointment for KGAL from Gifford Consulting Engineers.
- Having previously completed outline design for Jacobs, KGAL has subsequently been appointed by Halcrow to provide a fully detailed design of Sector gates and Mitre gates together with associated operating system and controls for a significant navigation link in Boston. As part of a long term initiative, the Environment Agency is opening up the South Forty-Foot Drain to navigation after a closure period of around 40 years.
- KGAL is pleased to announce our appointment by Buro-Happold, as specialist sub-consultants on a significant marina facility in Kuwait, to include a navigation lock and controlled release discharge flap gates to counter sedimentation in the approach waterways.
- With continued growth in our Wakefield office, we are delighted to announce the appointment of our first lady employee at this location. Jacqui O'Donnell will provide all round administrative support to our team in Wakefield and quite often the initial point of contact for all clients and callers to the office.