

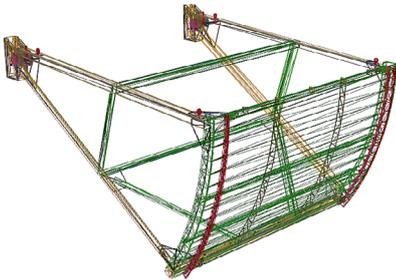
Windsor Radial Weir Gates: Survey, Design, Manufacture & supply

ECS manufacture 8 radial weir gates for EA refurbishment of Thames structure

ECS Engineering Services secured a contract to supply eight radial weir gates to the Environment Agency (EA) as part of a project to improve the Old Windsor Weir on the River Thames. Using the latest 3D survey equipment, ECS were able to develop precision drawings for the fabrication team in record time, ensuring the contract was delivered on time.

Case Study: 034

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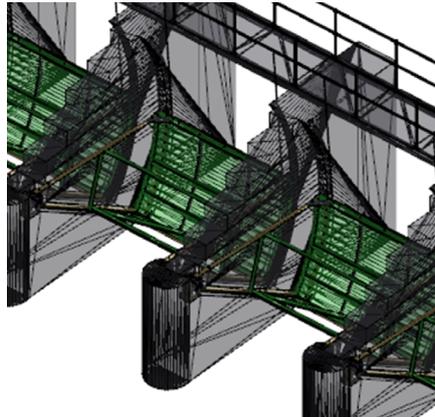
Weir gate section wireframe

Old Windsor Main Weir is a reinforced concrete river control structure. Flow through the structure is controlled via 8 large steel and 10 small radial gates. The project consisted of replacing the 8 large radial gates of the weir structure. The outline of the works required by the client was as follows:

- Undertake detailed survey of existing gates
- Obtain dimensions for new gate fabrication.
- Provide new gate design replicating existing design.
- Provide drawings of new gates (dwg and pdfs)
- Fabricate new gates
- Apply paint system
- Install seals
- Deliver two gates at a time to EA preferred location

In addition to the outline of works it was required that ECS was able to comply with a number of quality, materials and manufacture standards. These included that:

- All materials, workmanship, details of construction, and erection were to comply with the requirements of BS5400.



Radial gate wireframe

- Rolled steel plates used were to be structural steel to BSEN10025 grade S275JR. Hot formed hollow sections were to BSEN10210 grade S275J2H.
- Materials that were to come into contact with water could not impart to the water any effect known to be injurious to health or to the environment and was resistant to bacterial growth.

As a framework contractor for the EA, ECS has considerable experience in building and refurbishing large water control structures and is often called upon to deliver turnkey projects. ECS also has a distinguished history of steel fabrication and is certified to fabricate and install structures classed up to execution class 3 (EXC3), buildings and bridges, under the CE marking legislation. As expected it was a requirement of the contract supply that a statement of CE Compliance was provided in the form of a Declaration of Conformity that is applicable to the entire installation. Individual items of equipment were also required to also bear the CE Mark and conform to the latest European Directives.

In addition to its manufacture capability, a key factor for ECS being able to satisfactorily supply the required contract was the capability to deliver



Weir gate section and radial gate render

a sophisticated survey and design system that saved time at the drawing and development stage and ensured meeting the critical dimensional requirements. In this case, as soon as the go-ahead was given, ECS was able to survey the site in detail using its advanced surveying equipment, which enabled the design teams to start work almost immediately. Although the site appeared to use eight identical radial weir gates, the Robotic Total Station (RTS) survey equipment utilised by ECS was able to determine any dimensional differences, which ensured that every new gate fitted perfectly.

An RTS is an extremely accurate survey instrument that provides a sub-millimetre level of accuracy and can be used to collect sufficient data to create a 3D model as well as fabrication drawings. Using this advanced equipment allowed ECS to minimise any delays at the beginning of the project and also develop a full set of 3D visuals for the client as well as other interested parties.

Steve Crapper, Business Development Manager, commented: "In projects such as this, it is essential to get the initial data collected quickly and accurately. By using our RTS equipment and the data it collects, the design engineers are able to create the fabrication drawings more efficiently which helped to streamline the project as a whole."

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