

## Case Study—91m x 4m bespoke bridge, Finzels Reach, Bristol



**Client:** Dickson Powell

**Location:** Floating Harbour, Finzels Reach, Bristol

**Length:** 91m (5 spans of 7.0m, 24.5m, 24m, 29m & 6.5m)

**Width:** 4.0m

**Form:** Bespoke Steel beam bridge—curved in plan and elevation

### Project Description

Finzel's Reach is a new footbridge across Bristol's floating harbour, which will allow pedestrians and cyclists a route to the new Finzel's Reach development in the city. The 91 metre bridge twists its way gracefully across the Avon waterway linking the Finzel's Reach development with Castle Park.

The Client approached CTS directly to create a structural solution from their architectural aspirations, which gave earlier budget confidence and identified critical structural constraints at the outset.

CTS undertook all structural design of the scheme, its value engineering, manufacture and installation.

We partnered with vibration specialists, Full Scale Dynamics, to design, manufacture, install and commission a bespoke tuned mass damper to position in the longest, most eccentric span to ensure comfort performance parameters were met for walkers, joggers and crowds alike.

The complex geometry posed challenges for design with regards to both analysis and concept. The plan curvature generated a low frequency structure easily excited and onerous access constraints during road delivery to site and pontoon delivery down the river under historic arch bridges required the bridge to be assembled in progressive stages. The structure required a design that could be assembled from a kit of parts to create a weaving stiff torsion box spine beam, but also one which could be installed quickly over the river without extensive scaffolding or plant.

The bridge combined painted steelwork, hardwood decking with anti-slip inserts (Hi-Grip Excel by CTS Bridges) and handrail with stainless steel parapet infill; lighting and cladding encompassed the structure delivering a strikingly prestigious scheme.

Top Photograph: First two bridge spans installed onto piles

Second Photograph: Completed bridge

Third Photograph: Illuminated bridge at night

Fourth Photograph: View through bridge showing curved profile

