

Award

Kepax Bridge, Worcestershire

PROJECT TEAM

Architect:
Moxon Architects Ltd

Structural Engineer:
Jacobs

Main Contractor:
Alun Griffiths (Contractors) Ltd

Client:
Worcestershire County Council



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Kepax Bridge is a sculptural steel footbridge located in Worcester, spanning the River Sever to connect communities and promote sustainable travel. Designed to remain accessible year-round, even during floods, it provides a vital link between residential areas, green spaces, and the National Cycle Network. The bridge's elegant form and efficient structural configuration respond directly to the site's physical constraints which include limited access, sensitive ecology and uneven topography, while delivering a resilient and inclusive piece of infrastructure.

The bridge's slender deck is suspended from a dynamic steel pylon via stay cables, with supports spaced at 12m intervals over the park, river, piers and wooded bank.

The deck combines standard closed-section steel edge beams with profiled steel plate cross beams and a simple deck plate, creating a consistent cross section that balances lightness and strength. Along the edges of the painted carbon steel deck, stainless steel parapets run the full length, elevating the user experience and highlighting the bridge's form. The steel pylon itself is elegant and entirely efficient. The fully fabricated form combines these two simple elements into a dynamic composition that balances the forces at play, which anchors the structure visually and structurally.

The bridge's design responds to both environmental and social needs. It spans not only the river, but also a former landfill site and wooded banks, with landscaping and long

approach tracks integrated into the scheme. The alignment and elevation were carefully chosen to ensure year-round usability, avoiding the pitfalls of previous crossings that become inaccessible during floods. The bridge's presence is both understated and iconic, framing views from the park while serving as a visible waymarker from afar.

Engineering challenges were met with innovation and precision. The two asymmetric and perpendicular cable-supported spans required careful sequencing to maintain balance and geometry during erection. They also had to resolve the forces acting in the differing planes into an optimal plan position for the back-stay anchorage.

The pylon head, subject to out-of-plane forces due to its varying cross-section, was detailed for torsional robustness, as well as factoring in adequate access for fabrication. The inclusion of a 4m long machined node bar with enhanced through-thickness properties assisted with this.

Flood resilience was considered for every component of the structure, from holding-down bolts to bearings and anchorages, to ensure the structure would be safe from flood water, whilst maintaining an efficient but robust structural configuration.

Ensuring a satisfactory response of the bridge under pedestrian and wind induced vibrations proved to be a challenge. Wind tunnel testing confirmed aerodynamic stability and mitigation measures, including various baffle configurations, were also tested for future proofing in case anything was to change regarding the bridge's characteristics or the environment, so components can be retrofitted.

The voids in the deck edge beams were pumped full of grout with carefully selected density characteristics to supplement the available damping mass of the structure. Implementing this has negated the expense and future upkeep required for mass tuned dampers.

Delivery of the project required exceptional operational resilience. Frequent flooding, narrow residential access routes, and unexpected ground conditions were overcome through meticulous planning and community

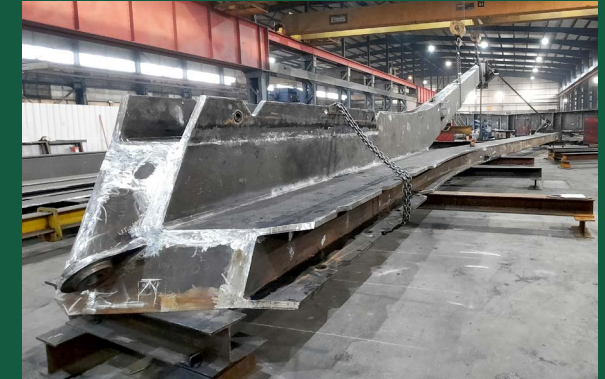
engagement. A 1,000 tonne crane was mobilised for the installation and prefabricated steelwork was delivered via narrow residential roads. This required meticulous planning, contingency allowances in movement orders and community engagement providing clear communications regarding temporary transportation re-routing and anticipated disruptions. Ecological constraints were respected throughout, preserving habitats for rare migratory fish and dense bat populations.

The bridge has already made a significant impact. Nearly 50,000 journeys were recorded in the first three months, with users praising its accessibility and scenic views. Worcester Snoezelen, a local charity supporting people with disabilities, described the bridge as a "game changer," enabling inclusive outdoor activity and launching a new Memorial Walk to celebrate its accessibility.

Environmental performance was a core objective. The bridge is designed for a 120-year lifespan, with minimal embodied carbon achieved through efficient use of steel and reinforced concrete supports. Its elevated structure avoids direct impact on the riverbed, and native species were replanted to offset the effects of construction. Integrated drainage and flood mitigation enhance resilience, while biodiversity net gain was achieved through new habitats for mammals, reptiles, and birds. Low-energy LED lighting is subtly embedded in the parapets, balancing safety with environmental sensitivity.

The bridge's primary steel components are designed for disassembly, allowing for future reuse or recycling. While not yet formally recognised by industry standards, the project exemplifies best practice in sustainable infrastructure and inclusive design.

Kepax Bridge is the result of strong collaboration between client, design, and construction teams, supported by active community involvement. Local running and cycling groups influenced the bridge's form and connections and were present at its celebratory opening. The project demonstrates how thoughtful design, engineering excellence, and stakeholder engagement can deliver infrastructure that is both beautiful and transformative.



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“Judges’ comment

The sweeping mast-supported deck structure for this foot and cycle bridge visibly demonstrates its clear load paths at a suitable scale in the landscape. It is clearly well-used in providing a new public crossing of the wide floodplain of the River Severn.