

Modern methods of construction: How innovation is transforming bridge build



M42 modular bridge, Midlands, UK

Our industry-leading modular building solutions are used in multiple applications, and bridges are a primary example. Using a combination of digital configuration, precast components and off-site manufacturing, we're revolutionising the way we engineer and build today, delivering reductions in embodied carbon, project timeframes and local disruption, and bringing benefits to workforce safety and productivity. Developed, tested and refined by our engineers and in collaboration with industry and academic partners, today our solutions are supporting our highways and rail networks, delivering reliably high quality products while minimising the impacts to local communities.

How it works

Our modular system comprises standard, pre-cast components that can be readily configured to specification, essentially, an engineered kit of parts. Our advanced digital modelling enables designs to be developed and refined quickly and easily, reducing the design period. Manufacture largely takes place off-site at our CEMC factory in Nottinghamshire, before being assembled quickly and with a far smaller workforce on-site.

“Our modular bridge solution epitomises the way in which we're taking a fresh approach to engineering and construction. By using a product-led, 'kit of parts' methodology, we're transforming the industry. Our digital bridge configurator tool allows for rapid optioneering and exploration of design, cost and carbon, so that clients can make informed decisions dynamically during the design process.”

Peter Lyons, Business Unit Leader Specialist Trading Business Group, Europe

Railway trace bridges

These 35m span bridges were built using the modular bridge kit of parts, having been designed and configured using our proprietary digital technology.

Outcomes achieved were:



Programme timeframe reduced by 50% – from 37 to 19 weeks



16% reduction in embodied carbon – a detailed comparison was created using traditionally designed, in-situ reinforced concrete abutment. The design of the modular approach delivered a 16% reduction in carbon. As low carbon concrete is used more widely, further reductions will be achieved.



84% reduction in on-site resource – with much of the work taking place off-site, the actual construction took 3 weeks with a 6-strong workforce. This, in turn, delivered benefits in terms of reduced safety risk through working from height.



Reduced disruption – a shorter programme meant a far shorter period of traffic management was required, with local roads handed back quickly.