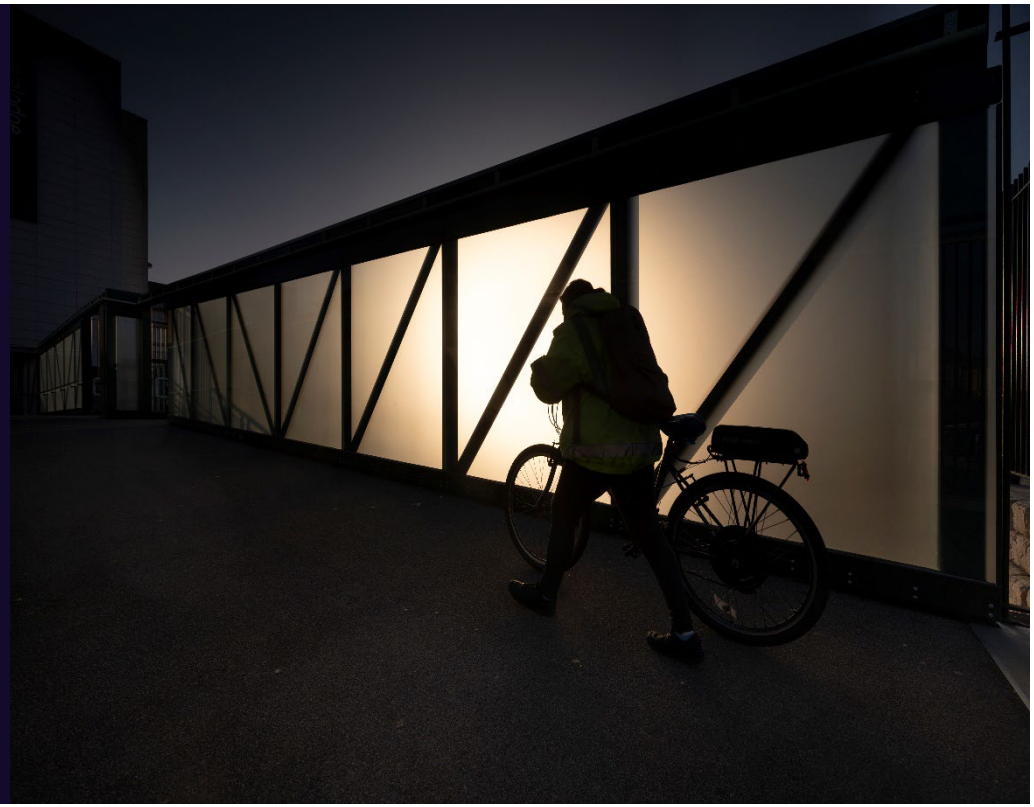
“As part of a value engineering exercise, Octavius proposed the opportunity to deliver an uncovered footbridge structure, to make the project more affordable in the face of increasing material costs and affordability challenges. Octavius and design partner Arcadis produced a proposal that was better value for money and saved on embodied carbon. These benefits helped Network Rail and the DfT make an informed decision on the derogation application and proceed with this solution betterment.”

Becky Gray
Network Rail
Project Manager

Case Study

Bentley Station AfA– Derogation - less carbon, less cost

PROJECT	Bentley Station AfA
CUSTOMER	Network Rail
LOCATION	Bentley, Hampshire
CONTRACT	SMD Framework, Wessex
COMPLETION	2022



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Need

Track level crossings are a feature of rural stations up and down the country. At Bentley near Alresford in Hampshire, misuse and accidents meant the crossing had to close. It would be replaced by an 'access for all' (AfA) footbridge with lifts, steps, and cycle gutters. A solution which would safeguard everyone.

We had to be creative. The footbridge and lifts had to merge into the landscape of the nearby conservation area and homes and all within the context of reducing cost and carbon.

Solution

On this Wessex route, the capital delivery framework is set up to encourage collaboration for beneficial outcomes. A collective mindset that supports the aims of Project SPEED to remove bureaucracy and build projects in half the time at half the cost.

From the outset, the wider delivery team have been integral to value engineering the design as part of the 'One Team Wessex'. This led them to consider a departure from the standard enclosed AfA footbridge. Their idea, to remove the roof covering on the link span and steps, has brought an immediate benefit as it greatly reduces the visual impact on nearby homes and the conservation area. This in turn has helped to allay public concerns and support the planning process.

Figure 1 - 3D visualisation of covered and uncovered proposals

The other significant benefit has been the carbon and cost reduction. With climate change and the pressure on the economy, we are all seeking ways to reduce our impact, and by eliminating the walkway cover it has **slashed the embodied carbon by 70.8T equating to a 20% reduction.** In turn, this has had a knock-on impact to the build cost with an **estimated saving of £350k which equates to a 10% reduction in cost**.

Saving on the Embodied Carbon

Previous Grip 4	
Bentley Station	$kgCO_2e$
Sub Structure	104,925
Super Structure	192,760
Total	297,685

Updated Grip 4	
Bentley Station	$kgCO_2e$
Sub Structure	92,366
Super Structure	134,471
Total	226,836
Savings	70,849 (<Approx. 20%)

Figure 2 - Saving on Embodied Carbon

Outcome

Network Rail applied to the DfT for a derogation for an uncovered 'AfA' footbridge in this rural location and it was approved.

Challenging the norm, has delivered a solution that resolves local concerns, is more affordable and addresses the wider issues of reducing embodied carbon.

The collective One Team Wessex mindset facilitated that challenge by applying clever thinking, to develop a safe sustainable design. A solution which saves 70.8T of carbon and £350k in cost supporting the ambitions of Project SPEED and keeping everyone safe.

Going forward, this low cost, low carbon solution can be confidently proposed in early development of similar schemes where level crossings must close.