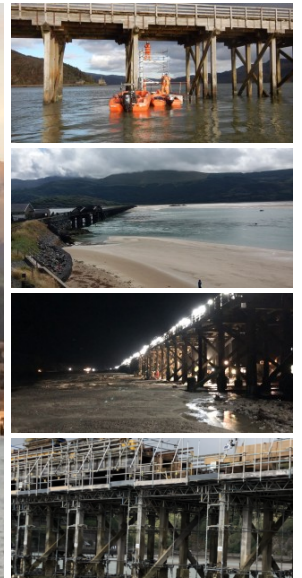


Barmouth Viaduct Refurbishment (2019 to 2022)



Client	Network Rail / Alun Griffiths
Project Description	<p>Network Rail's bridge stock in Mid Wales includes 9 remaining under-line bridges which were constructed in timber over rivers and estuaries on the Shrewsbury to Aberystwyth and Machynlleth to Pwllheli Coast routes.</p> <p>The largest bridge is Barmouth Viaduct with 113 spans generally similar in length at about 6m. Cass Hayward has been regularly engaged in consultancy commissions supporting the maintenance of this unique Grade II* listed asset since 1995 and now has a more direct role in the Network Rail timber viaduct asset management strategy.</p> <p>In 2008 Cass Hayward authored a feasibility study that addressed the major maintenance intervention that was required to both the timber spans and metallic truss spans that together comprise the complete viaduct. Commencing in 2015 we developed the Form F001s (AIPs) for repairs to the timber spans and replacement of the metallic spans. We also supported Network Rail in discussions with other stakeholders, particularly those with Planners and Conservation Officers.</p> <p>In 2019 we developed the AFC design which has been implemented in two phases. Phase 1 during 2020 incorporated a 16 day possession and Phase 2 in 2021 which included a 3 month blockade.</p>
Cass Hayward Role(s)	<ul style="list-style-type: none">• Site examination, inspection, sampling, testing and monitoring & Strength assessment• Design for maintenance interventions typically involving replacement of timbers and metallic straps and bolting• Temporary works and stability checks to support Contractor's method of works• Development of a structure stability decision 'matrix' that enabled the Contractor to manage the works around tides and high winds when the viaduct had spans removed.
Project Statistics	<ul style="list-style-type: none">• Contract Value for timber and metallic span works circa £30M equally split between deck types.• Approximately 3,000 individual pieces of timber replaced. Of which 2,394 were structural members including 226 main rail beams, 80 edge beams, and 50 trestle piles.
Special Features	<ul style="list-style-type: none">• 3d BIM model containing asset management information.• Studies and testing carried out to investigate and contain damage from infestation by ship worm.• Consideration of stability of 'island' formed due to construction method operating on two fronts working out from the centre of the viaduct towards the ends.