DigiSig Rail
SIGNALLING DESIGN EXPERTS

Works Delivery Signalling
East Coast, North & East, East Midlands
Renewals & Enhancements

Mosaic Rail

CHRISTON BANK LEVEL CROSSING TIMING REPORTS & ALTERATIONS & SSI DATA/CONTROL TABLE DESIGN

ENGINEERING STAGES 4&5 SIGNALLING DESIGN

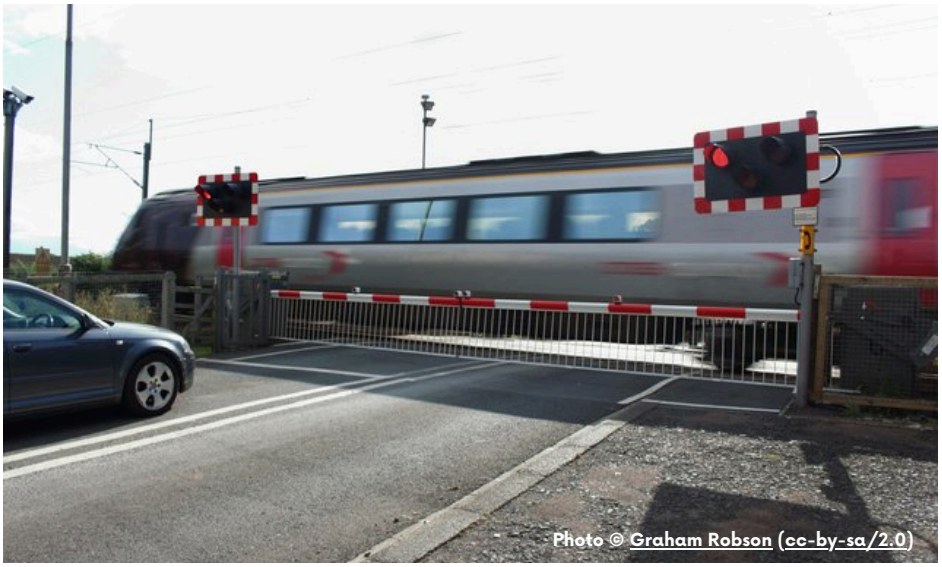
Photo © Graham Robson (cc-by-sa/2.0)

Client: Mosaic Rail

DigiSig have produced both ES4 and ES5 designs for the Christon Bank Project to a high standard and met with all the the specific programme requirements.

Alison Rawson
Principle Project Manager Mosaic Rail

OVERVIEW

Christon Bank Level Crossing is located on the East Coast Main Line in the Northeast of England. The crossing which is controlled by Alnmouth Signal Box had been experiencing timing implications with LNER Class 80X trains on the Down Main Line.

Signalling issues being experienced at Christon Bank Level Crossing were due to LNER Class 80X trains being displayed with a yellow aspect at signal A145 (the level crossing distant signal) on the approach to Christon Bank Level Crossing. This resulted in an impact on operational train performance. i.e. trains were reaching the level crossing distant signal before the level crossing barriers were detected down. This issue was therefore preventing the protecting signal from clearing and allowing unrestricted aspects for approaching trains, with the crossing safely closed to the public.

DigiSig Rail Group were instructed by Mosaic Rail to undertake the Engineering Stages 4 & 5 Signalling Design, timing reports & alterations & SSI Data Control Table Design for Christon Bank Level Crossing in Northumberland.

Our work entailed reviewing & repositioning the existing level crossing strike-in points allowing time for the Auto Lower of the crossing barriers to take place and the protecting signal to clear, giving an unrestricted aspect on level crossing distant signal A145. The design works were carried out over a number of months from November 2023 to March 2024.

CASE STUDY

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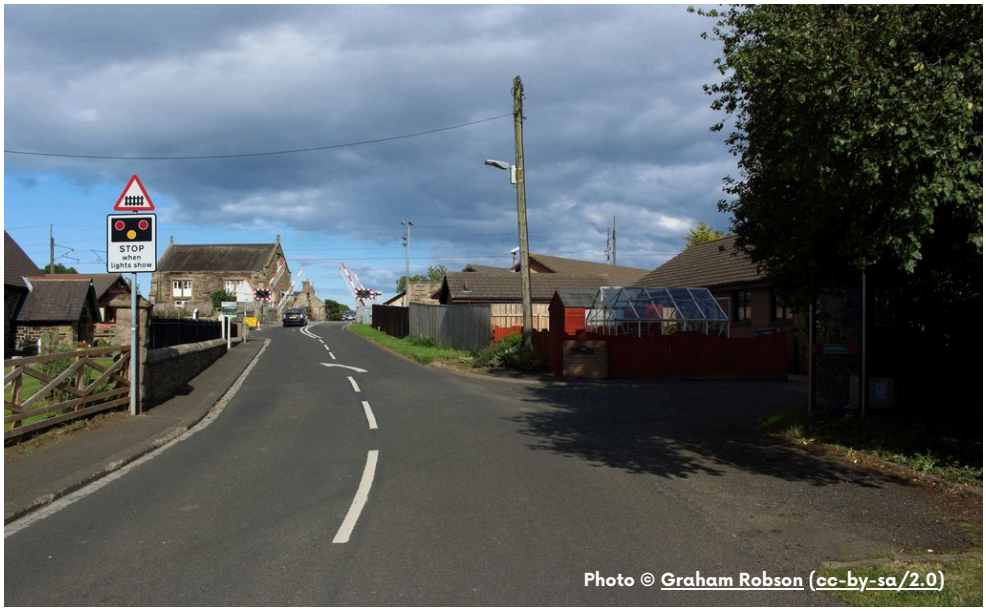

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Testimonial

After completion of the new SSI re-programming at Christon Bank Level Crossing trains which in the past often saw a yellow signal, should now see a green signal. On green signals, by utilising the line speed, conservative calculations state that every Northbound LNER train will save at least 25 seconds (Lumo and TPE should also see similar benefits) at Christon Bank. I have also estimated this rises to 35-40 seconds when we take acceleration and deceleration curves into account.

Trains can now pass through the section much quicker and road users will also benefit by seeing less barrier downtime.

Thankfully, I am now witnessing the trickle of smiling drivers popping into the office all saying that they have safely passed through a green signal at speeds of 125mph for the first time.

Steven Rudland
Performance Hub Manager LNER

OUR ROLE

Following a Timing Investigation Report at Christon Bank MCB-CCTV, it was believed that the track circuit occupied timer for the level crossing strike-in point was the root cause. The timer duration was too long which caused a knock-on effect resulting in signal A145 showing a yellow aspect rather than a green aspect.

As part of our Engineering Stage 4 works we carried out base plan surveys of the affected area to confirm positions of relevant signal positions and strike-in point track joints. Our team also wrote a series of specifications including a Timing Report to support the proposed solution and also a Reasonable Opportunity Report to assess whether a similar problem existed in the opposite direction on the Up Main line.

Following completion of the Engineering Stage 4 design and receipt of Approval In Principle (AIP) for the scheme, our team then undertook the Engineering Stage 5 works which consisted of Control Table Design and associated SSI data alterations to rectify this existing operational issue.

Engineering Stage 4

- Correlation
- Signalling Design Specification
- Scheme Plan and Design Log
- Interlocking Timing Report
- E810 – Reasonable Opportunity Report
- Interlocking Data Development Plan

Engineering Stage 5

- Alnmouth SB Control Tables
- Alnmouth ER (ALNM 3 SSI Version Wiring)
- Alnmouth ALNMTH3(08) SSI Data

The project was a success and all works were commissioned on the 18th August 2024 within the allotted time frame and to budget.