

Professional Profile

Bob Paterson is a licensed Signalling Principles Designer, specialising in GRIP 1 through 4 signalling development work, CRE Duties and Design Management from commencement through to Approval in Principle. He has experience in a range of early GRIP projects from minor upgrades and renewals through to major re-signalling and multi-discipline projects. Deliverables on these projects include signalling scheme plans, sketches, project specifications including assessments of existing signalling systems, site surveys, production of design logs, initial signal sighting reports, signal spacing, headway and TPWS effectiveness calculations.

Bob's project experience within the railway environment allow him to ensure that signalling work is delivered safely, efficiently and to programme. He has CEM, CRE, Design Manager and Lead Signalling Engineer experience, responsible for the engineering activities and deliverables. He is able to interact with other disciplines and provide a co-ordinated and efficient approach as demonstrated in projects where he has delivered concept designs for new depots, new and upgraded stations, replacement of life expired equipment, new electrification, high speed railway including the interfaces with conventional signalling.

Career Summary

RP Signalling Ltd	Director	May 2021 to Present
WSP	Signalling Design Manager	Feb 2013 to May 2021
Atkins	Signalling Development Engineer	Feb 2010 to Feb 2013
Network Rail	Assistant Signalling Design Engineer	Jan 2006 to Feb 2010
AWE	Warhead Engineering Training Manager	Nov 2005 to Jan 2006
Royal Air Force	Aircraft Avionics Engineer	Oct 1981 to Nov 2005

Professional Experience (selected)**Bridlington 200 Points Remodelling****Grip 4 Signalling CRE**

Bob was the signalling CRE for the Grip 4 stage of the project, to remodel 200 points at Bridlington Station. Due to compressed timescales, parallel working of the Grip 4 and 5 phases of work was required. Bob was responsible for the production of a scheme Plan, SDS, Parallel Design Risk Assessment, ORS, Braking & TPWS Calculations, panel design and signal sighting were carried out along with SORAT and driveability workshops. The project was successful in achieving MSRP Approval in Principle and was commissioned in February 2024.

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Registered in England and Wales

Registered Office; 8 Wrockwardine Road, Wellington, Telford, Shropshire, TF1 3DB April 2024

East Midlands VaMoS installation**Signalling CRE**

Acting as signalling CRE for this project to upgrade five level crossings to the VaMoS type. Initially all five crossings were subject to the completion of Grip 3 scheme sketches and associated G22 design submission forms. Two crossings were removed from scope as suitable cost effective power supply solutions were not available. Following IDC with stakeholders, including the Route Level Crossing Manager, three crossings were moved to the Grip 4 stage of design. Design updates were progressed along with Sign Sighting, driveability and further IDC's before a successful submission to MSRP for Approval in Principle.

Grip 5 design was undertaken which included individual location design, axle counter siting forms, power calculations, location plans, cable schematics and panel updates. All three level crossings were commissioned at the end of March 2024.

Kettering to Wigston (K2W) Electrification- ES3, 4 & 5**Lead Signalling Engineer**

Bob was the Lead Signalling Engineer on the project acting as the liaison between Mosaic Rail and Amey Consulting. The ES3 project initially required analysis of the existing railway infrastructure between Market Harborough to Wigston Junction (RS1) and Syston North & South Junction to Sheet Stores Junction & Trent sidings (RS3), to determine the requirements for the signalling system to be immunised for the proposed electrification of the line. This involved the desktop review of all location cases, relay rooms, track circuits, signals, AWS, TPWS and POE throughout the route against applicable standards. Requirements and recommendations were detailed for alterations to signalling equipment, earthing arrangements and track circuits. The provision of Neutral Sections within the area required analysis of exclusion zones and provision of Controlled (Intermediate) signals. Scheme sketches were initially produced in line with the findings of the Immunisation Report for submission to MSRP.

The ES4 part of the project extended the remit south of RS1 to include the area north of Kettering, while removing the RS3 section of work. The project was renamed as Kettering to Wigston (K2W). All documents were updated to align with the updated boundaries, providing more detailed updates to the initial work following receipt of correlation from site, reports were updated and signalling scheme plans were successfully submitted to MSRP for AiP.

At ES5, the SDS was updated, stage scheme, location area and bonding plans were produced, following this control tables and location detailed design activities were completed. All signalling works have been installed and commissioned.

Kettering to Wigston Electrification Power Change-Over Engineer**Lead Signalling**

There are also four sites, London Gateway, Cricklewood, Kilby Bridge and Corby Station, which require the provision of Power Change-Over (PCO) infrastructure. The four sites will be MPCO+, that is a manual change-over with signage provided to drivers for the appropriate change-over, the Electric to Diesel change-over is further protected by the provision of Zero Balises which use Packet 44 data to communicate with the train.

Following successful completion of the ES3 Feasibility Stage, design progressed to ES4. Signalling scheme plans, a combined SDS for all four sites and signal sighting forms were produced. Following Hazid meetings, IDC and stakeholder consultation, the deliverables were successfully submitted to MSRP.

The project has now moved to the ES5 stage. AFC scheme plans and an updated SDS have been produced. Bob applied for NID_C and NID_BG values and has produced balise siting forms and associated Packet 44 balise data variables as per RGS and NR standards with guidance from European Union Agency for Railways Subset 026 documentation.

Winsford to Weaver Re-Signalling and ETCS PACE 1**Senior Signalling Engineer**

Bob was the senior signalling engineer on this project to re-signal the Winsford Signal Box area including the provision of an ETCS L2 overlay. This project is also an enabler to the HS2 Crewe Construction Sidings Project which requires transportation of arisings from the HS2 tunnel to Basford Hall. The project objective is to produce deliverables to allow an option to be selected, Bob produced an E810 Signalling Assessment Report, including existing signal spacing and TPWS calculations, an Asset Condition Report, a Signal Structure Appraisal Report and a Re-Signalling Lite Impact Assessment Report all of which support the production of an Option Selection Report and the selection of a preferred option to be taken forward to the next PACE stage.

Home Farm User Worked Level Crossing**Signalling CRE**

Bob was the CRE for this project which investigated the upgrade of Home Farm User Worked Crossing (UWC) to an Overlay Miniature Stop Light (OMSL) crossing. This will provide a higher level of safety at this crossing which had a collision between a delivery van and a train in February 2023.

As CRE, he was responsible for the delivery of a Cable Route Survey, a Correlation and Asset Condition Report, Power Calculations, a G22 Assessment and associated Signalling Sketch, he also attended the HAZID and IDC's. Home Farm was identified as not suitable for the provision of an OMSL, therefore the project is being taken forward as an iOMSL as part of the Alsager Re-Signalling project.

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Crewe Programme Options**Senior Signalling Designer**

The original Crewe programme envisaged that Crewe Core Signalling Area (CCSA) would be commissioned first and Winsford to Weaver re-signalling, including ETCS Overlay, would then follow on. It was realised that the proposed delivery strategy may not be sustainable due to perceived delays in the CCSA programme, which may subsequently delay the Winsford to Weaver re-signalling.

Bob undertook an engineering study that considered the whole Crewe Programme area. This detailed analysis provided the Crewe Programme team with additional information to make an informed judgement as to the best way to take the programme forward. The purpose of the engineering study was to understand if there is an opportunity to commission parts of Winsford to Weaver, Crewe Coal Yard and Crewe Steelworks before CCSA. This considered the options around Winsford and the associated potential risks and benefits this course of action may have to CCSA and the wider Crewe Programme area. Bob undertook consultations with stakeholders to understand their perspective and to capture associated risks and benefits of options he identified. The scope included CCSA, Crewe Coal Yard, Crewe Steelworks, Winsford to Weaver and fringe areas with particular emphasis on asset condition, castellated interlocking boundaries and the delivery dates of other dependant projects.

Following those consultations, Bob produced an Option Selection Report and presented the findings at a Network Rail internal stakeholder meeting.

WCML Conditional Double Red Investigations**Signalling Design Checker**

The West Coast Main Line (WCML) in the LNW(N) territory has a number of Conditional Double Red (CDR) controls imposed in the signalling system as mitigation for insufficient Safe Overrun Distances following the introduction of high speed running, namely 110mph and 125mph Enhanced Permissible Speed. As a consequence of these controls, and due to the location of such protecting signals, there are areas where multiple CDR controls are imposed.

Bob was the signalling checker for three Feasibility Reports produced for the Warrington, Preston and Carlisle areas to investigate and subsequently exclude or recommend signals for further development at the GRIP 4 stage.

The reports considered if a compliant TPWS solution was possible for 12%g braked trains and hence what effective speed a 9%g braked train would be compliant for, dependant on results, to determine which signals would be taken forward for a driveability review and SORAT assessment to determine if changes to the CDR fitments are feasible.

Darlington Station Remodelling (GRIP 3)**Senior Signalling Designer**

Bob was the senior signalling designer on this GRIP 3 project to remodel Darlington Station. The project was to provide additional platforms to the east of the East Coast Main Line (ECML) allowing southbound trains access to platforms without crossing the ECML. Additional platforms were also provided for the branch line to deconflict with the ECML. He produced the signalling scheme plan, signal spacing & TPWS calculations and initial signal sighting reports required for submission to MSRP. The project successfully gained PAiP.

HS2 Phase 2A and 2B**Lead Signalling Engineer**

Bob was the lead signalling engineer for both the conventional and high-speed signalling work packages between Birmingham to Crewe, Crewe to Manchester and Birmingham to York. Responsible for the engineering activities, programme, resources and budget to allow the production of signalling deliverables, including signalling design statements and signalling sketches for every intervention with Network Rail infrastructure, transitions between ETCS Level 2 and conventional lineside signalling, ETCS design for the high-speed route and signalling architecture diagrams. Bob ensured that all designs were coordinated and integrated, along with identifying risks, opportunities and assumptions. He checked all signalling deliverables prior to submission and provided responses to subsequent client comments.

Calvert Depot Concept Design**Lead Signalling Engineer**

Bob was lead signalling engineer for the signalling concept design for the new Infrastructure Maintenance Base at Calvert. Responsible for the integrated delivery of a signalling design technical note with associated signalling sketch which included transitions with the high speed network, East West Rail, the depot protection system, architectural, operations, maintenance and highway interfaces.

Westbury and Exeter NR CP6 Life Extensions – GRIP 3 – 4**CEM**

Bob was the CEM for this life extension project which was to replace life expired signalling assets. These included replacing banner repeater heads with LED types, the replacement of 70/30 axle counters, the upgrade of analogue TI21 and Aster track circuits to digital equivalents, the replacement of paired cables and the replacement of signal structures which had been corroded by the coastal environment.

ADDITIONAL QUALIFICATIONS and TRAINING

Health and Safety for Home Workers	2024
Signalling Principles Designer 1.1.550	2023
Signal Sighting Committee Member	2023
Sharepoint Training	2023
BIM4NR Training	2022
EviFile Initial Training	2021
Site Activity Risk Assessments	2019
Environmental Risk Assessments	2019
GDPR	2019
ETCS Operational/Tactical Details and Concepts	2018
CDM 2015	Refresher 2018
Rail Safe by Design	2018
Signalling Design Verifier 1.1.160 (expired)	