

Level crossing problems solved

There's nothing particularly special about the level crossing at Ashwell, just north of Oakham in the county of Rutland. Adjacent to Ashwell signal box, this MCB (Manually Controlled Barriers) crossing takes the Whissendine road across the twin-track railway that forms the diversionary route off the Midland main line at Syston through Melton Mowbray and Oakham to Corby. A picturesque line, it can add an hour to a journey to London when the MML is closed for work on a Sunday.



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But back to the crossing itself. It has two full-length barriers with the usual flashing lights, and a mixed road surface of Polysafe concrete and rubber Strail panels that span the tracks.

The Polysafe system consists of a row of steel-framed concrete panels that fit into the four-foot, along with similar, yet narrower, panels which cover the cess. The panels are held in place in the direction of road travel by concrete cill beams which are set into the road surface. In the case of a twin-track railway, as at Ashwell, two sets of cess panels are retained in the six-foot by two cill beams, with the space in between filled with asphalt. This allows the system to cope with variations in actual width of the six-foot – the basic construction is the same but the width of the asphalt strip varies.

Once the crossing is complete, the panels are retained by rubber wedges and end brackets which prevent lateral movement along the railway.

Collapsing cills

Having been in place for many years, the Ashwell crossing had developed two problems. The concrete cill beams were deteriorating and needed replacing, and, at some time in the past, the cess and six-foot panels of the crossing had been replaced by a row of Strail panels

within the existing cill beams with a tarmac overlay.

Strail panels are alternatives to Polysafe, but are made from vulcanised rubber rather than steel-framed concrete. Both types of crossing construction are approved but, to comply, the entire crossing must be made from one system – hybrids are not allowed.

So Network Rail approached level crossing specialist Premier Rail to both renew the cill beams and replace the Strail panels with new Polysafe ones.

Premier Rail, based in Doncaster, is an approved and recommended installer of all types of crossing systems. It also has a large hire stock, claimed to be the broadest in the UK, which it uses to provide temporary crossings and road-rail access points (RRAPs) to projects and work sites around the country.

Having surveyed the site, the work seemed fairly routine. New Polysafe panels for the cess and six-foots were ordered – all of the ones in the four-foots could be reused.

Water water everywhere

Work commenced at the time for a weekend possession of the line. The installation team from Premier Rail removed the existing panels, broke out the damaged cill beams and started to excavate the mortar substrates so they could be replaced, giving a firm, fresh base for the new cills.

However, in the middle of the six-foot, the excavators struck water. Not just dampness, but a mini-lake that filled the space where the new cills would rest. There was no way that the semi-dry mortar bed could go down in the middle of all that water.

All of Premier Rail's staff are employed by the company full-time. They are multi skilled – they have to be, as they need both Network Rail and Highways Agency approvals due to the 'crossover' nature of their job. They are also trained in fencing, vegetation control and the other skills needed around a level crossing installation.

So, faced with this problem, the team had the skill set to come up with a solution. There was no easy



way to drain off the water, so the ballast was excavated deeper to give a firm base. A bed of concrete was poured with its top surface proud of the water level. Despite being underwater, the concrete would set – given time.

Meanwhile, a lorry was despatched back to Doncaster to go and raid the RRAP hire stock. It returned three hours later with a load of rubber Strail cess panels.

A temporary arrangement was put together for the six-foot whereby the fresh concrete was protected by a sheet of Visqueen waterproof membrane. This was then covered with a type 1 aggregate infill, compacted in layers, and then the rubber panels were placed over that with a temporary infill of Instarmac Ultracrete cold lay asphalt behind the temporary Strail panels.

The rest of the crossing was replaced and made good, and then left for four weeks.

Ashwell crossing - part two

When the team returned for a second weekend, and stripped the rubber panels and temporary asphalt out of the six-foot, the concrete was "rock solid", to quote Premier Rail director David Claridge.

A fresh semi-dry mortar bed was laid and a total of twelve new cill beams were bedded into position. Once they were in place, the void between them was filled with concrete and topped up with 60-70mm of new Instarmac Ultracrete coldlay tarmac. This was a temporary measure until the carriageway was planed and resurfaced along with white lining.



By now, all of the other work had been completed. The crossing was now a Polysafe crossing system throughout. New wooden anti-ingress panels had also been installed to stop pedestrians and animals from accessing the running lines from the crossing.

Although an extra shift had to be worked because of the water-in-the-cess problem, it had all been carried out within the allotted possession time so no trains or passengers were delayed by the extra work.

David Claridge explained: "At Ashwell, our difficulties were caused by the fact that the ground conditions had changed. Fortunately, because we have such a large hire stock of panels and accessories, we could come up with a temporary fix on the night, which got both the road and the railway back in service, and then we came back with a permanent solution a few weeks later.

"Other installations have other problems, such as a recent one at Moat Hills. There, we had to change all of the panels."

Various track combinations

The job which David referred to was one which Premier Rail had worked on with Carillion, just north of Doncaster station. The existing crossing was lifted to allow for track remodelling but then, with the track combinations changing, the existing level crossing would no longer suit and the original panels wouldn't fit any more.

The solution was for Carillion to renew one track, with the crossing reinstated using a temporary crossing made up from Premier Rail's hire stock of various panels. On a second occasion the other track was reworked, with another temporary crossing going down.

Once everything was complete, a survey was made and an order placed for a new set of permanent panels which would replace the temporary arrangement.

"Our large stock of panels for temporary crossings and RRAPs gives us a great advantage," David explained. "We stock panels from all three major manufacturers, so we can usually come up with a suitable solution should the need arise. And we are used to making temporary installations, so they are always perfectly safe and properly put together. Then we can take it all back up again and put in the permanent crossing when it is ready."

So it seems that, even though level crossings are all modular these days, the railway still needs a specialist installer with the flexibility to get the job done.

