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Multiplex rail team passes the Whitecity viaduct test in style

To minimise disruption at a busy Tube intersection, Multiplex planned a viaduct demolition and bridge slide to the last minute. Alasdair Reisner reports

TO GET a good measure of how important Multiplex rail director Philip Todd's job is you only need to look at an announcement made to the Australian stock exchange on August 2.

Multiplex's statement confirmed that work on a railway viaduct, part of the firm's epic Whitecity shopping centre development in west London, had been completed successfully.

Such announcements are certainly a departure from the norm. Fortunately for exchanges around the world contractors do not normally feel the need to flag up the fact that they have finished every small part of each job they are working on and clog up analysts' inboxes.

But then the viaduct works were no ordinary job. Analysts were certainly interested that the works had been completed without a hitch because the fallout if there had been any problems did not even bear thinking about.

This is because the viaduct in question carries

the Hammersmith & City Tube line and runs over the top of the Central Line. With nearly 230 million people using the two lines each year any disruption would hit commuters, and therefore Multiplex's bottom line, hard.

"For London Underground this is one of the largest private sector projects ever seen on the Tube. The rail element may only be a relatively small part of the Whitecity scheme but as an engineer it was technically challenging, although it was something we were comfortable with," says Mr Todd.

The job is the first major test for Multiplex's rail team and Costain, which acted as subcontractor for the London Underground works. Mr Todd was hired in April to head the firm's rail projects. He brought familiarity with the Tube network after a near 20-year career working for London Underground and later PPP firm Metronet, having overseen the upgrade of the Victoria Line and improvement of Central Line rolling stock.

Despite his experience, London Underground is a stickler for the performance of contractors working on the network and Multiplex had to prove its 50-strong rail team on site was up to the job.

"Because we are a new contractor to London Underground we had to demonstrate that we can carry out every process we might be asked to do with the correct controls in place. They can interrogate every method statement and look to make sure all our materials are being used to their standards and procedures," he says.

The rail works at Whitecity fall into three parts. The first involves covering the Central Line, which

currently runs on the surface through the site, to provide space to build above it. The second part involves moving the train sidings on the site. A 300 m concrete box is being built to replace the sidings, which need to be demolished. The depot has to be built in a box, as the shopping centre will be built on top of it.

The third part of the job had the potential to create the most headaches. Once the box was built a new track had to be placed to run from White City Underground station. The problem was that there was no space to put the line as the route is crossed by the Hammersmith & City Line.

"The Hammersmith & City line sits on a Victorian brick viaduct and the work involves creating a space under it. We are going to demolish a section of the viaduct and slide a bridge in," says Mr Todd.

To do this the team had booked in a four-day possession of the Hammersmith & City Line. With little margin for error – the team could not run late as the Tube needed to be up and running again immediately after the possession – planning every element of the job was of critical importance.

"Wherever possible we carried out trials to make sure everything would go as expected. We did a trial push of the bridge, moving it back and forward 0.5 m so that the team was familiar with the procedure," he says.

Before the works the team had looked at everything that could go wrong and built these into their timetable as contingencies. The job was preplanned on a minute-by-minute basis to ensure nothing unexpected disrupted the works.

Taking possession of the tracks on a Thursday

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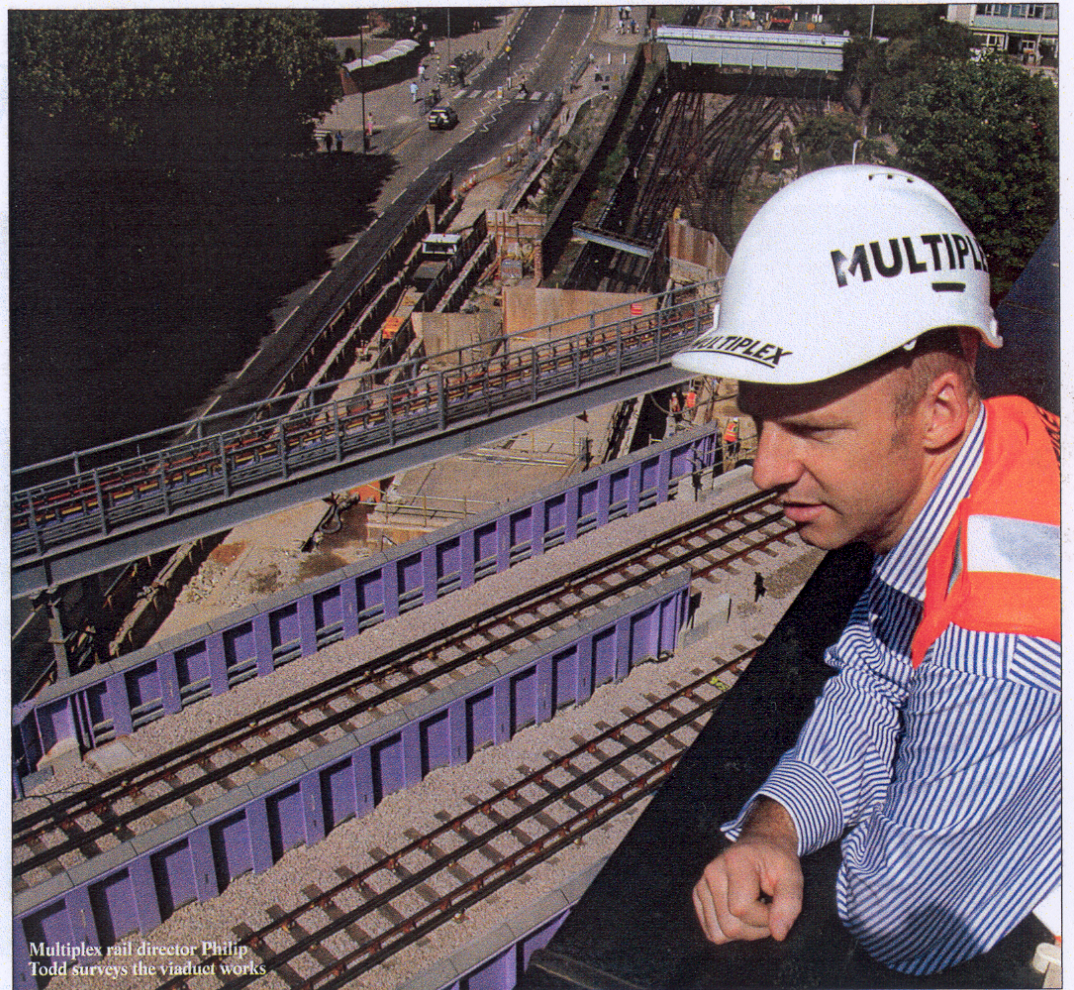
night the team first removed all of the track panels and ballast on the viaduct. An existing bridge had to be cut short as one of its piers sat across the area where the new line would run, so the team had to build a new pier and jack the bridge load onto it to allow this cutting to take place. They could proceed with demolition of the section of viaduct.

The works were done while the Central Line was still in operation even though it is as little as 2 m away. For this reason the demolition had to be carried out in a very controlled manner. All of the Central Line assets were monitored back to computers that had set trigger levels. The designer, Waterman, had gone to great lengths to ensure the tunnels were not affected. There was a huge amount of temporary works offering support so there was no crash loading on the Central Line.

With space created by the demolition, heavy lifting firm Mammoet slid the steel bridge, fabricated by Rowecord Engineering, 25 m into place. To minimise extra works at this point the 900-tonne bridge had been prefabricated as far as possible offline so it just needed to be connected up once in place. Even the ballast had been laid so the team just had to reinstate the track, signalling and traction power.

"It was a superb credit to the whole team and Paul Snelson, Costain's project manager, has done an exemplary job in managing the works, as has Keltbray with the demolition," Mr Todd says.

With works planned at both Stratford City and Cricklewood this almost certainly will not be the last time Multiplex will have some proud announcements to make.



Multiplex rail director Philip Todd surveys the viaduct works