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All change for roof at Marylebone station

The combination of an innovative scaffolding system and closely integrated trades is ensuring a Network Rail project arrives on time



PROJECT REPORT

JAMES BOLEY

Client Network Rail/Chiltern Railways

Main contractor Morgan Sindall

Main contract value £4m

Scaffolding contractor PHD Modular Access Services

Scaffolding supplier Layher

Start on site March 2010

Project completion January 2011

Marylebone Station is one of Britain's most well-known rail destinations, and so replacing the 150 m-long roof on the Grade II-listed building has been a very public challenge for main contractor Morgan Sindall.

The old roof consisted of around 780 sq m of glazing and 3,900 sq m of asbestos cement sheeting, which is being replaced with 2,160 sq m of new glazing and 2,520 sq m of profiled sheeting. This will transform what could previously have been described as a rather dark and dingy station into a light and airy space.

However, working on what is believed to be London's fastest growing passenger rail terminal by percentage of commuters poses several challenges. Given the station needs to remain operational while construction takes place, careful planning of the scaffolding and the integration of the various trades has been crucial to keeping the programme on track.

PHD Modular Access Services is providing a temporary mobile

roofing and crash deck on the project, and managing director Gary Peacock says close collaboration between all parties has been essential.

"At the start, we were having almost weekly integrated design meetings between ourselves, Morgan Sindall and the deck and scaffolding supplier Layher," he says. "By having all three of us together, that helped us develop practical solutions to resolve issues such as how we would erect the system in a live rail environment and co-ordinate the transitions in work between days and nights."

Crucial crash decks

Key to making the programme work has been the use of two crash decks in conjunction with the temporary roof, supplied by Layher. The decks span 12 m and 15 m and sit above four of the six platforms. The decks and the roof can be moved together, creating an 800 sq m work area that provides enough space for a week's worth of construction, which can then be moved at the weekend to the next segment of the roof replacement.

"These provide protection for the station below while also acting as support for a rolling birdcage structure giving access

"Having all three of us together helped us develop practical solutions to resolve issues"

GARY PEACOCK,
PHD MODULAR ACCESS SERVICES

to the roof repair work above," says Mr Peacock.

Mr Peacock says the pace of the programme could not have been maintained if a traditional scaffold system had been used. "Using tube and fitting scaffolding would have added at least six months to the contract, and you'd have had to tube and fit the whole deck rather than have moving crash decks. That would have had a large impact on the speed of erection," he says. "With tube and fitting, you can't slide the deck. I also think that the support columns coming down onto the platform would have needed to have been larger."

PHD has found that part of the benefit of using the system is the light weight of the roof and decks. Mr Peacock says that they can be moved by just six people. The mobile decks are moved each Saturday, the longest working shift.

Morgan Sindall project director David Woodcock says: "We move the deck 10 m every week. We've scheduled the programme so that on weekends we do all the dirty works such as stripping the asbestos. It's best done in a contained environment, and working on weekends minimises the risk to the public. Then we have the follow-on trades doing the metal stripping, painting and glass during the weekdays."

The project has seen 11 movements of the deck and the roof, each taking no more than an average of 40 minutes. "The work began with the installation of a loading gantry at the north gable end of the station," says Layher MD Sean Pike. "This was then used as a start point for the decking and roof construction, as well



The scaffolding system, crash deck and cassette roof give workers a safe environment to operate in

as acting as an access point for both personnel and hoisted materials throughout the programme.

"Additionally, similar tower structures - each of which has had access provision designed in - were built at key points along the length of the platforms to act as support for the rails for both the platform and the roof structure.

"The latter also benefited from a four-way castor that has allowed roof movement to accommodate any minor deviations in direction, which may have been encountered with a historical building of this type," he continues.

Good neighbours

The station's location also means that particular consideration has to be given to residents. Boston Place, which runs adjacent to building, contains both residents and local businesses.

In some cases, houses are less

than 10 m away from the site, with noise restrictions in place as a result. Therefore, various practical approaches are taken to work, such as using quieter rubber hammers. The constricted space also means that using a scaffolding system rather than tube and fitting has been beneficial.

According to Mr Peacock, Layher developed a system whereby the scaffolding is cantilevered on brackets from the station wall, keeping the pavements clear. The residents in the area are also rather protective of several large fruit trees that grow alongside the station, so PHD has erected the scaffolding in such a way that the trees aren't damaged or obstructed.

Residents have been constantly updated on the work taking place so there are no surprises. "We've had cases where residents have been asking us what we're doing

so we've always taken the time to explain to them," says Mr Peacock. "We hold monthly meetings to keep them updated."

Teamwork and communication

Ensuring all parties involved in the project remain in constant communication with each other has been a crucial part of delivering the project on time. "The handovers between trades have

worked really well," says Mr Peacock. "Everyone works together so that when it's their turn to take action on site, the area is ready for them to start."

In addition to weekly coordination meetings between trades, Mr Woodcock says that a daily meeting is also held at 4pm to discuss whether work is on programme for that week, and if not, what can be done to alleviate the situation.

TOP 10 NETWORK RAIL PROJECTS OPEN FOR TENDER

Project	Location	Value (£m)
Railway station (redevelopment)	Birmingham	600
Railway station (redevelopment)	Reading	400
ERTMS National Deployment	London	200
Railway station redevelopment	Northampton	100
Railway station (alterations)	London	90
Railway station (redevelopment)	Nottingham	60
New railway Chord	Doncaster	54
Railway station (Upgrade)	Gatwick	53
Commercial/residential/station	Glasgow	50
Station redevelopment (viaducts)	Reading	50

ASBESTOS MANAGEMENT

One important challenge has been managing the asbestos risk. With the roof supported with asbestos cement sheeting, Morgan Sindall has had to carefully remove the material as the programme progresses.

Project director David Woodcock says the actual risk on site is very low, but all precautions have to be taken by law. "We conducted surveys to identify the type and location of the asbestos. As it's asbestos cement, it's defined as non-hazardous in terms of being carcinogenic. However, you still need to treat the material as if it was a carcinogen," he says.

Work is conducted on weekends when the working shift is longer. The deck and work area are completely shrouded in polythene to prevent material spreading from the work area.

Workers in the area also shower down immediately on exiting the work area, which is then vacuumed until free from any asbestos cement. "We then have an inspection and the site is signed over to us on Monday morning, so we've no risk of our staff starting work for the week and finding asbestos," says Mr Woodcock.

"The trades we've had here have communicated very well," he says. "They're not protecting their own disciplines; they're asking what they can do to help each other. They learnt early on that fighting each other wasn't going to get the project done and they needed to work as a team."

Mr Peacock says having that level of collaboration right from the start has been vital. "We could not have developed the project between just ourselves and Layher without the input from Morgan Sindall, particularly where programme issues are concerned," he says.

The result is a programme that is on target for completion this month. Mr Woodcock says: "Network Rail hasn't had many roofing projects that have hit programme, so I think everyone is very pleased about how this is turning out."