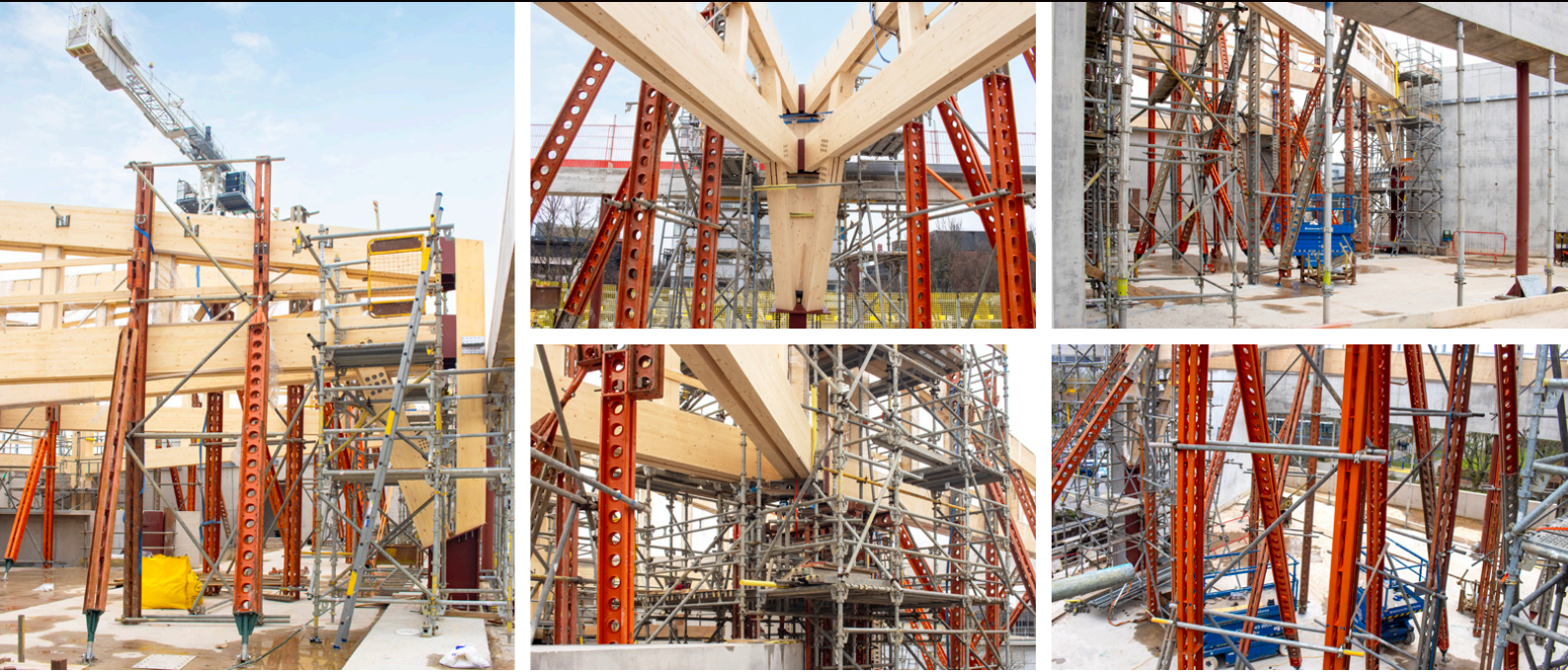


University of Liverpool - School of Architecture Extension

Provision of temporary access incorporating specialist RMD formwork solutions to support ULCCO Special Projects Ltd. with refurbishing the existing Leverhulme building and constructing the new contemporary extension.

Location: **Liverpool**



Multiple temporary access solutions for refurbishing the existing School of Architecture building and constructing the new modern extension.

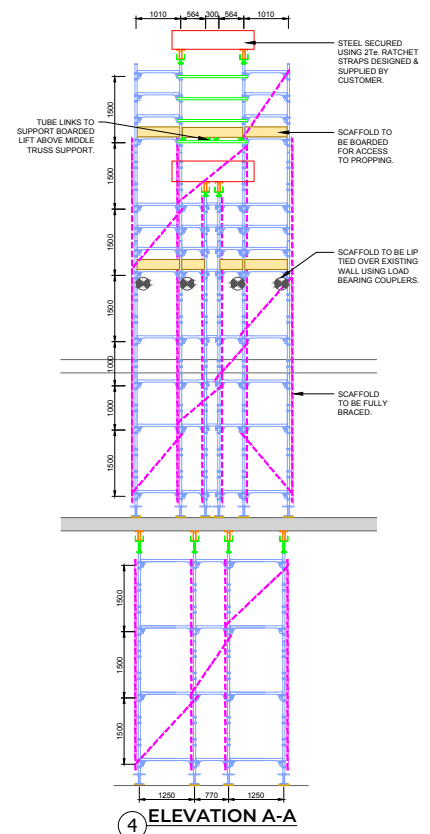
University of Liverpool - School of Architecture, founded in 1894, was the first university in the UK to award a RIBA (Royal Institute of British Architects) accredited degree in architecture. Since 1933, the school has been based at 25 Abercromby Square, occupying a grand historic Georgian-fronted terrace that connects to the purpose-built Budden extension at the rear. This extension, constructed when the school opened, was designed by former Head of School Sir Charles Reilly, in collaboration with Lionel Budden and James Ernest Marshall. Collectively, they are known as the Leverhulme Building, and the school has produced many influential architects who have earned the establishment an international reputation for excellence in education and research. Among its graduates and former staff are six RIBA Gold Medal winners.

To build on this legacy, the University of Liverpool launched an international design competition in 2019, inviting proposals for a new extension to expand the Liverpool School of Architecture. The winning design, by award-winning architects O'Donnell & Tuomey, will be constructed by ULCCO Special Projects Ltd., a subsidiary of the University of Liverpool.

The new three-story extension will be linked to the Leverhulme Building and constructed adjacent to an existing car park on Peach Street. Spanning over 27,000 square feet, the extension will house research spaces, studios, an exhibition area, and a café. The extension will be further complemented with the future development of green open park space to the north and west of the central campus. The main entrance will be relocated into this building on Bedford Street as the focal point of the development, with an additional entrance to the extension on Peach Street.

Structural and civil engineers AKT II are supporting the project, alongside principal design advisors IM2 and access appraisers E3Cube.

Scaffold Tower



Information reference sources include:
<https://www.liverpool.ac.uk/architecture/about-us/polish/>
<https://www.placenorthwest.co.uk/autumn-start-for-23m-liverpool-university-school-of-architecture-extension/>
<https://investliverpool.com/news/23-million-liverpool-school-of-architecture-extension-to-soon-begin-construction/>
<https://odonnell-tuomey.ie/liverpool-university-school-of-architecture>



Project Summary

Enigma has provided a range of external and internal scaffolds and RMD formwork propping solutions to aid refurbishment works on the existing building and support ULCCO Special Projects Ltd. in constructing the new extension.

Existing Building Refurbishment

A fully boarded 3-5 lifts high, 12-metre-long independent tube and fitting scaffold fitted with brick guards and debris netting has been erected around the existing building to provide rooftop access and enable cladding replacement works on the East and West elevations. Enigma's in-house design and engineering team had to be mindful of parapet capping for the maximum working height and install bridged ladder beams across temporary doors to allow continued access/egress to the joiner's workshop inside the building. At the same time, an integrated HAKI staircase enabled safe access/egress for tradespeople to their designated levels to carry out scheduled work.

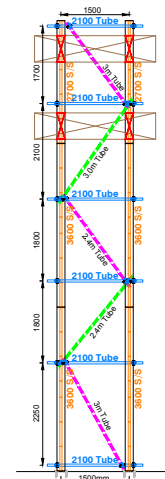
New Extension Construction

To support the new extension, a series of internal birdcage scaffolds were progressively erected from the ground floor within the atrium void area to a height of 7-metres to provide propping for platform areas. The largest 'main floor' platform is fully boarded with plywood decking and covers approximately 50 sqm². This area is specially designed to withstand the weight of multiple Scissor Lift MEWP (Mobile Elevated Work Platform) vehicles operating within the space.

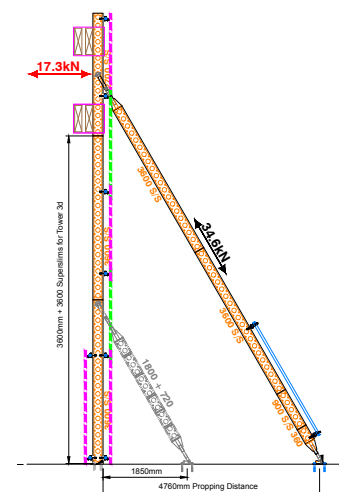
A series of scaffold towers integrated with RMD formwork were then erected around the 'main floor' platform area to support the inner roof structure during the build phase, while 16-metre long interlocking wooden beam trusses were hoisted into position by a crane to form the overall integrity of the building. During the installation process, Scissor Lift MEWPs were utilised to give extra mobility for specialist operatives working throughout the expansive floor space.

Edge protection was installed around the perimeter, and additional scaffolds were erected to enable internal works when Scissor Lift MEWPs couldn't access areas within the new building extension. Throughout the project, no scaffold ties could be drilled into the building's extension high-quality concrete walls because it forms the building's interior wallpaper.

Scaffold and RMD Formwork Towers



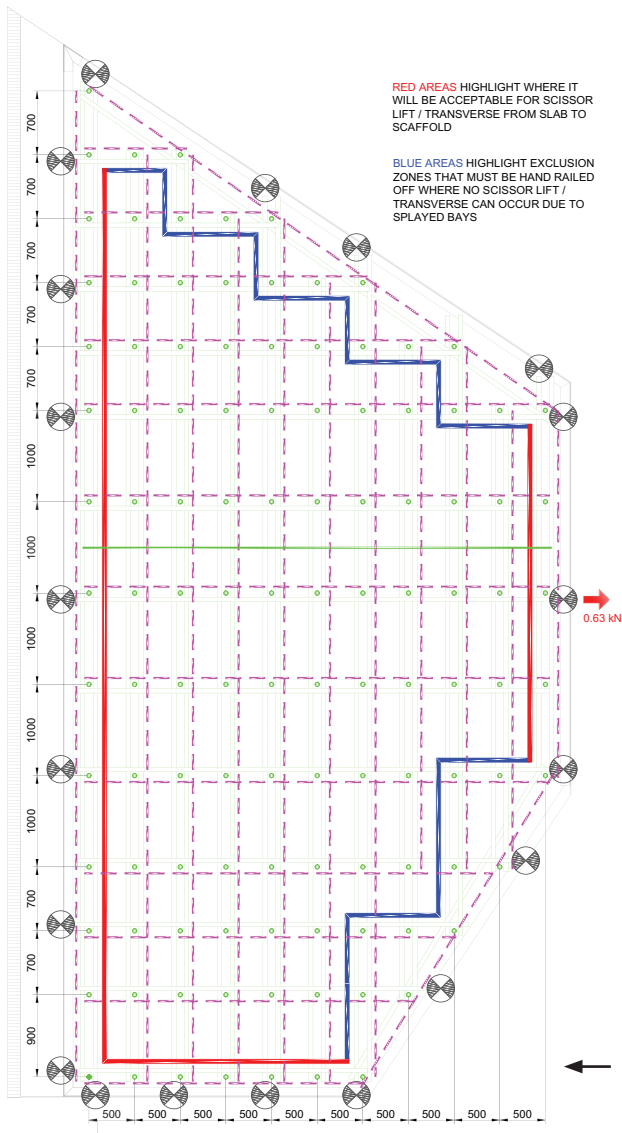
TOWER 3d - ELEVATION H



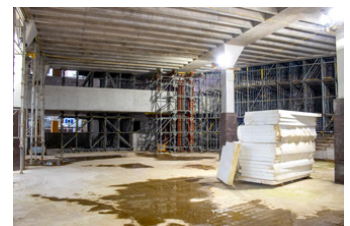
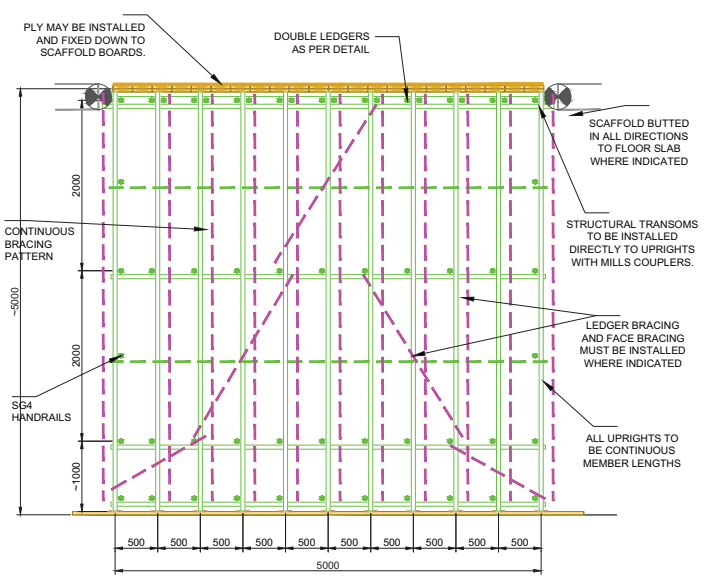
TOWER 3d - SECTION G



Main Floor Platform Area - Plan View

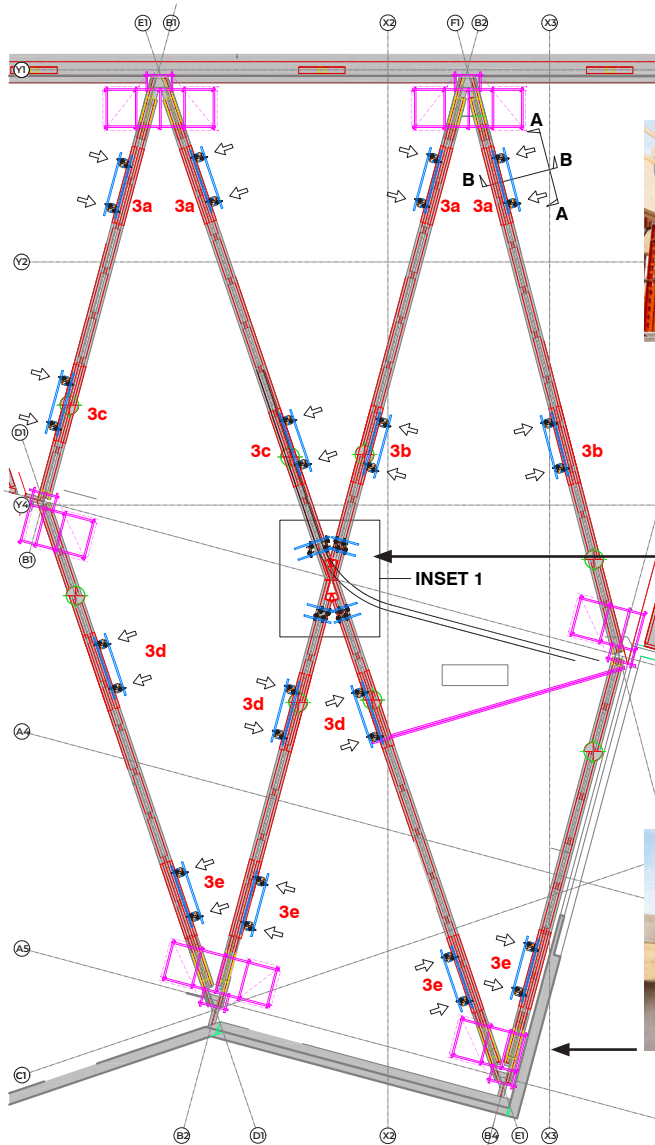


Propping Birdcage Scaffold

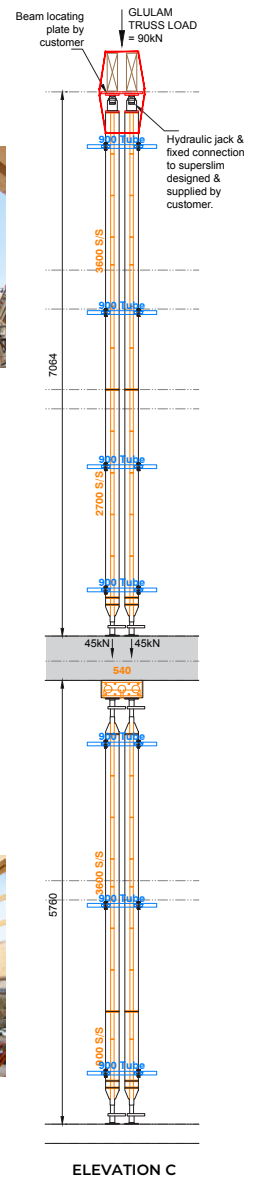




Main Area - Plan View
(Wooden Beam Trusses)



Central Tower RMD Formwork





Value Engineering

Enigma's in-house Design & Engineering team collaborated with specialist temporary works engineers, P&S Consulting Engineers Limited, who acted on behalf of the main contractor and have the necessary expertise for undertaking this type of roof installation work utilising RMD formwork.

When the wooden beams were guided into position, a series of small hydraulic jacks installed by roof de-jacking specialists, Maybe Hire Jacks, were deployed underneath the truss sections to pump them upwards into their final resting places, ready for interlocking. Due to this precision work, all scaffold towers had to be positioned precisely around the main floor so operatives could easily secure the beams without obstruction. A total of 8 wooden beam trusses have been incorporated to form the overall roof structure.

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