



Fast track build for world-class five-storey university building

Project overview >

The construction of a new landmark development is transforming a disused three and a half acre site in Liverpool. Copperas Hill, a strategically important site located close to Lime Street Station, was formerly occupied by the Royal Mail Sorting Office. The Sorting Office closed in 2010 and it was demolished in 2017, paving the way for Liverpool John Moores University's exciting new development. The new development will be a five-storey building housing a range of student services, including advice and wellbeing services, careers advice, international exchanges, areas for individual and group study, general teaching spaces and the John Moores Students' Union (JMSU). The £64 million development will transform Copperas Hill into a vibrant, attractive place. Construction work is scheduled for completion in 2020.

ArcelorMittal Fibres solution >

- TAB®Deck

Project partners >

- ArcelorMittal Fibres Sheffield Ltd. – Reinforced concrete solutions providers.
- Morgan Sindall Construction – Construction services provider.
- Raised Floor Solutions Ltd – Specialist installers of suspended concrete floors on metal decking.
- SMD Ltd. – Suppliers of metal decking and roofing systems.
- Cemex – Specialist concrete suppliers.

“The use of ArcelorMittal Fibres' reinforced concrete solutions has enabled us to fast track large pour construction at minimal floor depths, saving the project time, materials, preliminaries, programme costs and CO₂ emissions without compromise to the quality of the five-storey elevated slab structure.”

David Chester
Raised Floor Solutions Ltd.

The challenge >

The challenge faced by ArcelorMittal Fibres engineers was to design a solution that enabled the fast, efficient and safe construction of the new university facility. Aside from fulfilling the requirement for high quality construction and safety standards, minimising disruption to the local neighbourhood during construction was also of paramount importance.

Maximising available space is always an important consideration in any construction project. ArcelorMittal and SMD engineers offered a steel fibre reinforced concrete solution that integrated the elevated slabs as part of the overall supporting structure. The design specification reduced the number of supporting columns that would otherwise be necessary and gave extra square meterage to the internal flooring layout.

The result >

A high quality, five-storey elevated structural slab, which maximises internal square meterage, is on target for completion in 2020.

The reinforced concrete solution that has been designed and specified by SMD Ltd and ArcelorMittal Fibres' has provided construction partners and stakeholders with:

- An accelerated construction program with earlier interim project completion times.
- Enhanced levels of safety through the replacement of steel mesh.
- Inventory management benefits - no on-site storage of steel mesh and related equipment.
- A smaller workforce requirement and related cost savings.
- Reduced dependency on crane machinery.
- Consistent distribution of the steel fibres within the concrete matrix and the elimination of rebar or mesh.
- A fire rated flooring system which combines SMD's metal decking system and ArcelorMittal's steel fibre reinforced concrete, to give a minimum of 60 to 240 minutes of safety protection.



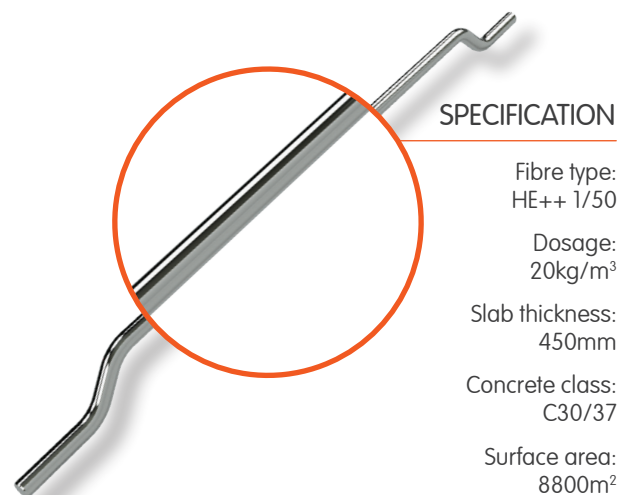
The solution >

The five-storey elevated jointless slab structure used 20Kg/m³ of ArcelorMittal HE++ 1/50 fibres.

Due to the high tensile strength of the fibres, only a small dosage of fibres was required for integration within the concrete matrix.

The HE++ 1/50 steel fibres were delivered pre-mixed in the concrete matrix directly from the Cemex Readymix operation nearby at Luton Street, Liverpool. Concrete was pumped to each level directly onto the metal decking. Raised Floor Solutions Ltd were able to lay and float the concrete surface quickly without the use of a fibre suppressant.

The elimination of steel mesh meant that the project has saved considerable time and labour cost and that safety levels were enhanced significantly during construction.



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