Project case study

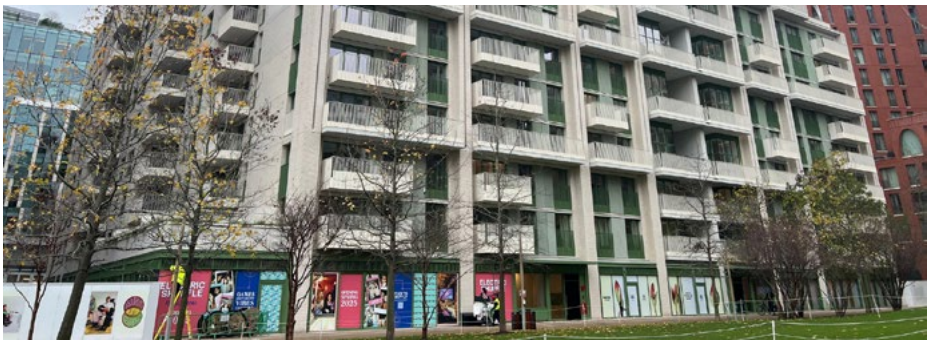
SmartRock used by Laing O'Rourke at King's Cross development

Product
A bespoke blend of low carbon concrete using SmartRock digital concrete maturity monitoring system

Client
King's Cross Central Limited Partnership

Main Contractor
Laing O'Rourke

Overview
SmartRock concrete maturity sensors proved the strength gain of a slab for a new railway bridge allowing it to reopen for trains on time.



Project description

Capella is a residential-led mixed-use development in King's Cross, London, that includes 120 new homes for private sale and 56 for social rented units, within a 13-storey building designed by Allies and Morrison.

King's Cross is an exceptionally busy and congested area requiring the main contractor, Laing O'Rourke, to have an exceptional level of efficiency to be able to achieve the ambitious project deadlines.

Low carbon bespoke concrete mixes were developed to enable the fast-paced programme to be met and cube samples were taken from each pour to show the early age strength gain. Only once the concrete had achieved the required strength could the next stage of construction begin.

The Heidelberg Materials technical team provided a demonstration of its SmartRock wireless concrete maturity sensors and the Giatec 360™ web platform, which Laing O'Rourke then implemented to collect real-time data for its in situ concrete.

SmartRock sensors give real-time measurement of the in situ strength development of concrete. This assessment of in situ strengths – as opposed to cube strengths – accelerated the striking time and shutter turnaround, enabling the construction team to move on to the next steps at the earliest opportunity.

In this case, not only was Laing O'Rourke able to meet the tight deadlines of the project, it was also able to take advantage of the enhanced data available, which showed it was significantly exceeding the required concrete strengths.

This allowed a change to the concrete design to be made, reducing the total cement content by replacing it with additional evoBuild low carbon GGBS (Ground Granulated Blastfurnace Slag), which lowered the embodied carbon content of the concrete by 10kg/m^3. This approach is expected to save more than 34 tonnes of CO_2e, the equivalent to planting 1,700 trees, throughout the life of the contract.

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