Smart products for modern construction challenges

From telescopic connectors to made-to-measure reinforcement continuity systems, Invisible Connections supports modern construction at scale.

Member: Invisible Connections
Contractor: Keltbray
Project: 50 Fenchurch Street
Location: City of London, EC3M

Fig 1. Construction progress at 50 Fenchurch Street (May 2026)

50 Fenchurch Street comprises a new four-level basement and 37-storey tower as well as preservation of the Grade I-listed All Hallows Staining tower. Designed by Eric Parry Architects, with structural engineering by Arup, Multiplex appointed Keltbray for the extensive concrete works. Invisible Connections' full suite of specialist products have been used throughout.

Design intent to desired outcomes, delivered.

Innovative design and engineering, modern methods of construction and careful material selection are intrinsic to achieve the development's sustainability aspirations, meet commercial objectives and to solve complex engineering challenges.

In the superstructure, composite precast planks supported on widely spaced steel beams form the floor structure. For speed and efficiency, core walls are slipformed at the rate of a 3.5 metre floor every two days, while offsite fabrication of the precast floor planks and stair elements reduces embodied carbon, designs in space flexibility, and improves quality and safety.

Speed. Safety. Strength.

Chosen for commercial benefits, speed and ease of installation, and visual appeal, RVK telescopic connectors and REDiBOX provide the hidden means of support for the precast half landings off core walls in both staircases in the central core and throughout the lower floors.

Keltbray's senior engineer Florin Rotariu explains: "Using telescopic connectors is 2-3 times faster than casting in situ landings. You take it off the lorry, set it down, extend the telescope and that's it. You don't have to wait for the landing to cure before setting the next one, and the next. You're just stacking decks quickly and efficiently."

Telescopic connectors minimise site risks too. Keltbray engineer Laurence Willson adds: "All you have to do is install the shims. No drilling, no lifting, no dust, no hand vibration tools. It's that simple."

Extending possibilities for reinforcement continuity.

Inside the core, CARES certified made-to-measure FERBOX® and Invisible Connections' new TERWA COUPLER CADDi® provide reinforcement continuity for in situ slabs in the lobbies, full landings, tank walls and lift pits. External connections throughout the core utilise TERWA COUPLER CADDi cast into the slipform walls, to provide reinforcement continuity for lower floors and precast planks throughout.

Intended where engineering design cannot be achieved by pull-out bars, TERWA COUPLER CADDi houses multiple made-to-measure CARES certified couplers in a dimpled casing, delivered ready for installation. Product variants are manufactured to suit different applications.

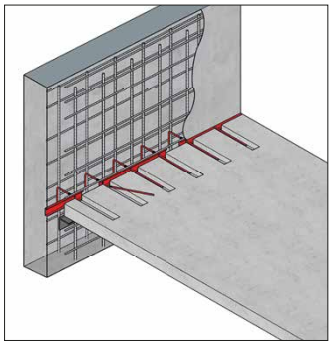


Fig 2. Application example: Terwa Coupler Caddi provides reinforcement continuity into pockets formed within the precast planks

Choosing coupler boxes was motivated by physical constraints of the precast plank detail (Fig. 2), which meant pull-out bars weren't an option, and their suitability for slipform construction. Keltbray senior engineer Ali Tayfun explains: "An issue with slipform is 'dragging'. We always try to find solutions for fixing the cast-in elements robustly.

"Singular couplers are flimsy by comparison (just tied individually to the wall reinforcement), but coupler boxes are more robust and can resist that drag."

Less waste, more speed.

Since both reinforcement continuity systems are made to application requirements, remedial works are unnecessary. Labour and material costs are reduced, plus there's fewer site health and safety risks. Florin remarks: "There's no drilling, which of course involves manpower. And every drilling detail comes with resin, which is not cheap. The safety hazard of silica dust is an important consideration. Eliminating all of this gives the contractor a great advantage."

Wastage will be reduced by about 20 per cent (compared to stock lengths), and less material (and associated CO_2 for manufacture and transportation) contributes to the project's sustainability objectives.

Smart solutions. Built in.

For this new iconic landmark, modern methods of construction and smart product selection have satisfied design intent, reduced embodied carbon, accelerated programme and improved health and safety on site. Made-to-measure reinforcement continuity systems and telescopic connectors enabled structural and material efficiencies, resolved engineering challenges, and contributed to the construction scheme's commercial and sustainability objectives.

Product Innovation. Core Benefits.

Introducing TERWA COUPLER CADDi®

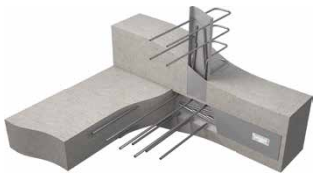
Extending possibilities for reinforcement continuity.

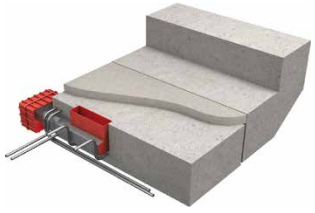
Invisible Connections are the specialists in hidden structural connections for precast and in situ concrete construction. As well as our range of 'unseen' telescopic connection systems for stair landings, beams and columns, we are specialist manufacturers of versatile reinforcement continuity systems: FERBOX® and new TERWA COUPLER CADDi® to application requirements.

Quality, reliability and efficiency, built in: All our products are designed to meet and exceed the highest industry demands for improved safety and construction efficiency, whilst reducing material usage and ensuring cost effectiveness.

Used where engineering design cannot be achieved by pull-out bars, made-to-measure TERWA COUPLER CADDi houses multiple couplers in a dimpled casing, delivered ready for installation. When the formwork is struck, the casing is easily located and no remedial work is required. All of which simplifies installation, reduces labour and material costs, accelerates programme and contributes to sustainability targets.

Speed. Safety. Strength.





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