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Sheartech Rails

The use of flat slab construction has become increasingly popular in the construction of concrete frame buildings. A flat slab design increases the speed of the construction process by simplifying the formwork system used.



Floor heights can also be reduced offering greater space within the building and leading to more floors for a given building height. Material savings are also seen as less concrete and associated materials are used.

Flat slab design brings many benefits, however, localised high shear stresses around column heads can be seen in these designs and if additional measures are not taken the weight of the slab can result in the column punching through the slab. In the past punching shear has been relieved by adding further concrete to the building such as the use of downstand beams or localised thickening around column heads; however these measures require complex formwork and significantly reduce the benefits of the flat slab.



Adding further reinforcement in the form of loose shear links around column heads has been used as a measure to resist punching shear but these links are time consuming and labour-intensive to install and design.

The Sheartech system offers a CARES Approved method of providing punching shear reinforcement. The system is fast to install with all component parts prefabricated to allow simple and accurate placement.

The Sheartech system has been independently tested, approved and certified by CARES to be fully compliant with the EC2 design code whilst being fully compatible with the outgoing BS8110 design code.

The Sheartech system comprises of double-headed studs formed from ribbed reinforcing bar; grade B500C to BS4449, with a characteristic yield strength of 500 N/mm².

The ends are enlarged by a hot forging process to three times the diameter of the shaft, giving a cross-sectional area ratio of 9:1 between head and shaft, to securely anchor the stud in the slab. Due to the hot forging process the studs retain the inherent strength of the reinforcing steel.

RFA-TECH manufacture the double-headed studs in diameters from 10mm to 25mm. A full range of shear stud lengths are available, in 5mm increments to ensure the correct placement of studs and cover in the slab is respected.

The Sheartech double-headed studs are supplied to site factory welded to carrier rails at predetermined spacing's in

accordance with the relevant EC2 or BS8110 design standard under a BS EN ISO 9001:2008 Quality Management System.

The carrier rails do not carry out any structural function but are used to ensure the correct and accurate placement of the studs.

The Sheartech rails are arranged around the column in a calculated and predetermined radial pattern to meet the particular design code specification, the number of studs and rails used being determined by calculations based on the effective depth of the slab.

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