

MONSTER distribution warehouse near Bristol

Project overview >

Project title: New distribution warehouse for expanding home garden and leisure retailer

Client: The Range

Construction partners: ArcelorMittal Fibres, Konfloor Ltd, Maclaren Construction Group, GHW Consulting Ltd.

Location: Bristol, United Kingdom.

Working environment: Brownfield site requiring a 255mm jointless floor slab on 900mm pile caps

Area: 107,000m²

Fibre type: HE 1/60

Dosage: 45Kg/m³

Project duration: 107,000m² of high quality, low maintenance floor was laid in less than 60 days.

“The exploitation of the use of Steel Fibre Reinforced Concrete has enabled fast track large pour construction at minimal floor depths saving time, materials, CO₂, preliminaries, programme and cost, yet still delivering the required flatness tolerance and minimum joints to give the end user a high quality low maintenance floor slab.”

The challenge >

The Range are a large retailer who supply interior and exterior products from domestic kitchenware to garden furniture.

Throughout the last recession, The Range expanded the number of outlets year on year and a new warehouse was required with good transport links on the M4 corridor to either London or the South East.

The Range is creating over 1,000 new jobs at this site, and will deliver long-term service contracts for local suppliers. The Range will also inject millions of pounds into the Bristol economy every year whilst it supports local firms during the £100m construction.

Design considerations >

- To install 107,000m² of high quality, low maintenance suspended concrete floor in less than 60 days, and all in accordance with Concrete Society Technical Report No. 34 4th Edition
- Concrete Slab – Suspended Raft on Piles
- Bespoke design by GHW Consulting, to be able to design the slab for ultimate “buildability”
- Jointless floor slab 35 x 35 grids on 900mm pile caps
- Dock Leveller and Stanchion bases are bespoke design.

The solution >

- Konfloor Ltd laid 27,000m³ of SFRC in less than 60 days to FM2 tolerance, Maclaren Construction Group assisted with the construction and compaction of the sub base layer
- GHW Consulting developed their own Excel based software to efficiently carry out the design checks to TR34 4th Edition for all design cases including serviceability and punching shear. Critical within any SFRC TR34 4th edition design is the availability of Fr1 and Fr4 results from notched beam tests to BS. EN 14651. Beam test results are specific to the choice of steel fibre, dosage and concrete mix. Test results from different manufactures cannot be used, results extrapolated, but only interpreted between dosage rates of 10kg/m³

The initial design was undertaken on historic results although this was verified during construction with site material being taken to the testing laboratory and independent tests carried out

- Grade C35/45 was adopted based on the experience and use of SFRC
- 255mm thick suspended slab on piles
- Steel fibre design using 45kg/m³ of ArcelorMittal HE 1/60 fibres, that are manufactured at the Sheffield production unit in the UK
- Fibre suppressant and curing aids used to control any early age shrinkage cracks.



The result >

The Range’s “Monster” new warehouse near Bristol, UK is the size of 26 football pitches at 1.2 million square feet (107,000m²) and includes an international training hub.

The Range is now the fastest growing retailer in the UK with over 3000 employees and 140 stores nationwide. The Range stocks more than 65,000 products across 16 different departments and is expanding across Europe.

The world is building on our expertise.

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