

STANTON BONNA Internal Power Floated Floor Slab

Ilkestone, Derbyshire, United Kingdom

Stanton Bonna are a leading UK manufacturer of precast pipes, railway products and specialist precast concrete elements. As part of the ongoing development of their Ilkestone Manufacturing Facility, there was a requirement to install a heavy duty powerfloated industrial floor to allow handling and storage of their products. The Client had a standing specification detailing multiple layers of conventional steel mesh reinforcement, but the Contractor requested a composite solution, using both steel mesh and macro synthetic fibres, in order to reduce the amount of steel.



Project owner
Stanton Bonna

Product
DURUS S400 Synthetic Macro Fibre

Function
S400 synthetic macro fibres were used to reduce the amount of structural steel mesh reinforcement in the original floor slab specification to allow for heavy industrial use.

Contractor
TG Beighton Ltd

Volume
600m³ C32/40 Concrete
2400kg DURUS S400

Challenge

This project required an original specification for a ground bearing power floated internal reinforced concrete floor containing a large amount of steel mesh reinforcement to be redesigned to incorporate polypropylene macro fibres. The primary challenge was to reduce the amount of steel fabric for ease of installation and reduced construction time.

The specification of the floor slab needed to be suitable for heavy industrial use due to the movement and storage of pre-cast elements by high capacity MHE.

Solution

- ADFIL advised a combination slab solution containing DURUS S400 Macro Fibre and a single layer of A193 steel fabric after consultation with the Contractor.
- The capacity of the internal floor to accommodate heavy industrial use was maintained by a combination of the appropriate dosage of macro synthetic fibres and the single layer of steel mesh .
- Technical support was given to the Readymix Supplier to ensure the concrete was of the correct specification with consistent fibre distribution.



A laser screed could be used continuously without the need for breaks in installation to fix a top layer of conventional steel mesh reinforcement.

Installation benefits

- The use of DURUS S400 polypropylene macro fibres, to produce a combination reinforcement solution, eliminated the need for multiple layers of steel mesh, and therefore significantly reduced the need for handling, cutting and fixing steel mesh.
- Only needing a single layer of lighter grade steel mesh allowed use of a laser screed resulting in an easier, more efficient installation.
- Power Floating can be carried out as normal.
- Saw cut contraction joints were made the day after placement and finishing.

Products used DURUS S400 Macro Synthetic Fibres



Used to reduce the quantity of conventional steel mesh reinforcement in order to reduce construction time and make installation more efficient.



Large areas of pavement could be poured and power floated. Saw cut contraction joints were then made the following day.

Result

- A very high quality power float finished floor was achieved.
- By using DURUS S400 in conjunction with a lighter grade steel mesh to maintain structural performance, a reduction in embedded CO₂ has been achieved.
- Construction time was reduced by eliminating the need for multiple layers of steel mesh to be placed and fixed, this reduced Health & Safety risks during installation.
- A more efficient installation resulted from the use of a laser screed unit, which would have been hindered if multiple layers of steel mesh had been used.



A high quality power float finish was achieved using DURUS S400 Synthetic Macro Fibres.