

Flemingate Shopping Centre, Beverley - Multi Storey Car Park

Beverley, East Yorkshire

Flemingate Shopping Centre is a new development in the historic town of Beverley, East Yorkshire. The £70 million, 16 acre site comprises of Commercial and Leisure Facilities with a 500 space multi-storey car park. Adfil was called upon to provide an alternative method of reinforcement to replace the originally proposed traditional steel mesh fabric.



Project owner
Wilmott Dixon

Product
**DURUS S400 Synthetic
Macro Fibre**

Function
**Macro Synthetic Fibre
Reinforcement to replace
conventional steel fabric
in a Screed Topping cast
on Precast Planks.**

Contractor
**Technic Concrete Flooring
Ltd**

Volume
2,400m³

Challenge

The challenge presented by the Project Owner, Wilmott Dixon, was to find an alternative method of reinforcement to replace steel mesh reinforcement in a 50mm screed topping.

The 50mm screed topping was to act as wearing course and needed significant reinforcement to provide crack control.

The Screed Topping was not of sufficient thickness to provide nominal cover for the traditional steel mesh fabric originally specified, therefore the client needed an alternative

method of reinforcement to control cracking stresses within the topping as the concrete hardened to full strength.

Solution

The Adfil Design Team proposed a Synthetic Macro Fibre Solution using 5kg/m³ of DURUS S400.

This solution also allowed bay sizes to be maintained as per the original specification.

Adfil also worked with the Concrete Supplier and Flooring Contractor to ensure the concrete mix was of the correct consistence to pump, place and finish.



Entrance to the 5-storey Multi-Storey Car Park in Beverley historic town centre.



A brush finish was given to the Screed Topping. The Client was very happy with the aesthetics and consistency of the finished surface.

Benefits of the solution

- The replacement of the steel mesh reinforcement with DURUS S400 polypropylene macro fibres has eliminated the high risk of corrosion from exposure to deicing salts. Consequently, the service life of the screed topping has been prolonged.
- There was no need to handle, cut and place steel mesh, resulting in a more efficient installation. This has resulted in a time and cost saving.
- No cranes were required to move the steel from ground level to the top of the structure. This eliminated significant Health & Safety hazards during construction and giving a significant cost saving.
- A reduction in embedded carbon of approximately 56 % was achieved, when compared to the original steel mesh solution.

- Macro synthetic fibres enhance the abrasion & impact resistance of the hardened concrete, which will prolong the working life of the screed topping.

Installation benefits

- Over 2000m³ of reinforced structural screed was placed directly without the need for steel mesh fixing, vastly reducing the construction time.
- There was no possibility of misplacing the reinforcement as it is uniformly distributed throughout the concrete when delivered to site.

Result

The Client was delighted with the concrete finish and the speed of construction.

The Multi Storey Car Park was completed several weeks ahead of schedule.

Products used: DURUS S400



Macro Synthetic Fibre DURUS S400

Dosage of 5kg/m³ to provide protection from shrinkage cracking and enhance the durability of the 50mm screed topping.