

# REGIONAL BUS DEPOT Stage Coach

Herne Bay, Kent, United Kingdom

As part of a national reorganisation, Stage Coach Bus Operators are centralising a number of smaller area bus depots into larger regional operations hubs. The external reinforced concrete pavements have historically used 2 layers of conventional steel mesh to provide the necessary post crack structural performance and reduce the occurrence of plastic shrinkage cracking caused by contraction as the concrete hardens.



Project owner  
**STAGE COACH**

Product  
**DURUS S400**  
**Fibrin XT**

Function  
Replace conventional steel mesh reinforcement to reduce construction time and eliminate reduced service life due to steel corrosion.

Contractor  
**WW Martin Civil Engineering**

Volume  
**8000kg DURUS S400**  
**1820kg Fibrin XT**

## Challenge

A historical specification using welded steel mesh reinforcement had been used for similar projects to this by the Client and Installation Contractor. The challenge, was to promote the benefits of macro fibre reinforcement over steel mesh so that the Client had the confidence to use the DURUS S400 alternative.

ADFIL were asked to provide an equivalent Synthetic Macro Fibre reinforced solution by the Project Consultant Structural Engineers to allow them to give a safer, quicker and greener alternative to conventional steel mesh for the Client.

## Solution

- A professionally indemnified Macro Fibre Solution, using DURUS S400, was provided by one of ADFIL's Consulting Engineers.
- The solution also included Fibrin XT micro fibre to improve the durability of the concrete and give freeze/thaw protection in lieu of AEA.
- The solution was accepted by the Client, Contractor and Consulting Engineer.
- The concrete supplier was also given Technical Support to ensure the mix design was correct.
- Site support was also given to WW Martin during installation to enable a high quality end product for the Client.



The use of DURUS S400 macro synthetic fibres means larger areas can be placed and finished without the risk of disturbing fixed steel mesh. Saw cut contraction joints can then be made the following day if required.

#### Benefits of the solution

The Contractor was able to show a significant cost saving and reduction in construction time by eliminating the need for steel placement and fixing in the construction schedule.

Air Entrainment was not required due to the addition of Fibrin XT to give the concrete frost protection and improve durability.

The use of synthetic macro fibre to replace conventional steel mesh reinforcement gives an embedded carbon saving of around 56%, allowing the project to improve its sustainability credentials.

The risk of shortened service life associated with steel mesh corrosion has been eliminated. This type of pavement is subject to exposure to aggressive deicing salts from constant PSV movements.

A high quality, highly durable surface finish is easily achieved with a combination of DURUS S400 synthetic macro fibre and Fibrin XT monofilament micro fibre. The Fibrin XT will enhance durability by around 30%, providing resistance to tyre scrub in this heavily trafficked application

#### Installation benefits

The concrete could be poured directly into the formwork in larger volumes, with saw cut joints being made the following day.

There was no requirement for heavy steel mesh to be handled, cut and placed, which eliminated significant Health & Safety hazards and reduced construction time.

#### Result

The external concrete works were completed inline with a challenging construction schedule, to the satisfaction of the Client.

The use of Synthetic Macro Fibres has maintained structural performance and maintained service life, while reducing construction time, cost and embedded carbon.

The use of Fibrin XT has improved the durability of the concrete pavement and given frost protection in lieu of AEA.

#### Products used



**DURUS S400 Synthetic Macro Fibre**  
 Replaces conventional steel mesh reinforcement



**Fibrin XT Monofilament Micro Fibre**  
 Improves the durability of the concrete and gives frost protection in lieu of AEA