ADFIL Construction Fibres

CASE STUDY

Geopost Distribution Depot Exeter International Airport - Skypark

Exeter, United Kingdom

Skypark will be the most significant Business Park development in the South West of England. It will cost £210M and be constructed over the coming 20 years. One of the first units to be built as part of the development is the Geopost Parcel Handling Facility, requiring approximately 13,000m² of external concrete to handle high volumes of HGV traffic.

Project owner
GEOPOST

Product
DURUS S400
Fibrin XT

Function
- **Replace conventional steel mesh reinforcement to reduce construction time.**
- **Reduce embedded CO_2**
- **Eliminate H&S hazards during installation**

Contractor
DAWNUS CONSTRUCTION
NATIONWIDE CONCRETING

Volume
10000kg DURUS S400
2300kg Fibrin XT

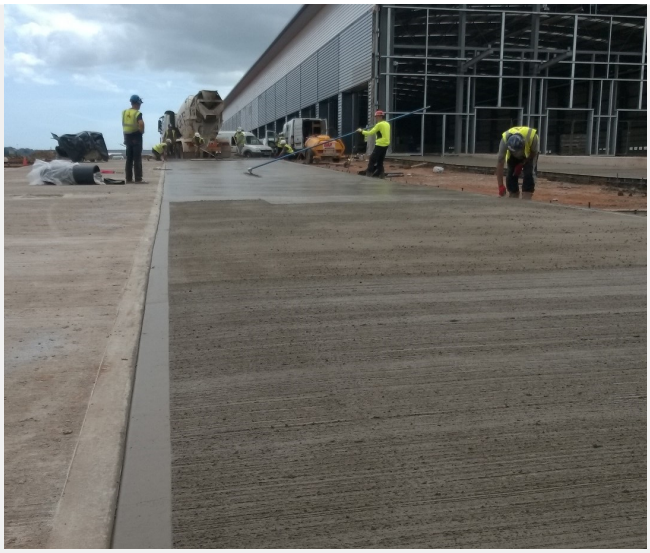
Challenge

Due to the high profile of the project and heavy use, the initial specification for the external concrete pavement included Air Entrainment and heavy grade conventional steel mesh reinforcement.

Bonar were asked to provide an equivalent solution in Synthetic Macro Fibre by Nationwide Concreting to allow them to tender for the contract to supply and install the external concrete.

Solution

- A professionally indemnified Macro Fibre Solution, using DURUS S400, was provided by one of Bonar'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 Main Contractor.
- The concrete supplier was given Technical Support to ensure the mix design was correct.
- Site support was also given to Nationwide Concreting.



By eliminating steel mesh, large areas can be poured/finished, with saw cut contraction joints being made the following day.

As the reinforcement is dosed into the concrete during batching, the mixer truck can discharge directly into the formwork.

Benefits of the solution

The Contractor was able to show a significant reduction in construction time by eliminating the need for steel placement and fixing in the construction schedule. This also presented an overall cost saving due to reduced man hours.

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 give an embedded carbon saving of arounf 60%, allowing the project to improve its sustainability credentials.

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 Main Contractor.

The use of Synthetic Macro Fibres has maintained structural performance, while reducing construction time, overall 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

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