

Hucknall Waste Recycling Centre

Nottingham, United Kingdom

Oakfield Recycling needed to update and upgrade their materials recycling centre in Hucknall Nottinghamshire. The site recycles all types of materials from concrete to reclaimed soil. The facility has heavy crushing machinery, loading shovels and articulated vehicles using the site.



Project owner
Oakfield Recycling

Product
Durus S400 & Fibrin XT

Function
Used in the ground bearing concrete slab for the impact & abrasion values.

Contractor
Oakfield Construction

Volume
600m³ of concrete

Challenge

The challenge at the Hucknall Waste Recycling Centre was to produce a concrete slab that would meet the demands of constant use by heavy machinery, whilst also replacing the steel mesh in the original design, which in time would corrode and lead to further problems such as spalling and eventual failure of the concrete.

Solution

- The use of Durus macro synthetic fibres allowed the removal of the welded steel mesh which eliminated any risk of corrosion and associated problems
- The use of Fibrin XT monofilament fibres increased the impact and abrasion resistance of the concrete slabs to extend durability of slab surfaces
- The use of Durus macro synthetic fibres also improved post failure serviceability of the slabs and as such increased the working life of the facility



Continuous work during the construction of the slab



Brushed finish with saw cuts at 6 meter spacings

Benefits of the solution

- High risk of accelerated failure and spalling due to corrosion of steel reinforcement over time has been eliminated
- Design loading requirements have been maintained by the use of Durus S400 macro fibres
- The use of Fibrin XT has resulted in enhanced durability and frost protection
- Embedded carbon has been reduced, promoting sustainability
- Health & Safety hazards associated with steel fixing, handling and placement have been eliminated

Installation benefits

Construction time has been reduced as no steel fixing was required. Concrete could be poured directly into formwork, without the need for pumping due to in-situ steel fabric. Larger areas of pavement could be poured; contraction joints made after initial set (12-24 hours).

Result

Structural requirements for traffic and loadings have been maintained whilst eliminating the risk of accelerated failure due to steel reinforcement corroding.

Construction time and Health & Safety hazards have been reduced. Sustainability has been improved due to the reduction in embedded carbon from using synthetic macro fibres in place of traditional steel mesh.

Products used



Durus S400
 BS EN 14889 Class 2 Embossed Macro Fibre
 at 4 kg/m³ of concrete



Fibrin XT
 BS EN 14889 Class 1a Micro Monofilament
 Fibre at 0.910 kg/m³ of concrete