

Southwick Groynes Sea Defence Improvement

Sussex, United Kingdom

Sussex Council wanted to improve the sea defences at Southwick Groynes. This section was to replace corroded step access to the beach. The area is prone to very high tides and storms which means continuous debris and stone abrasion on the concrete.



Project owner
Sussex Council

Product
Durus S400 & Fibrin XT

Function
Used in the defence and step concrete slab for the impact & abrasion values.

Contractor
J T Mackley

Volume
600m³ of Concrete

Challenge

With the heavy abrasion of debris and stone from the volatile sea, traditional steel mesh reinforced concrete would have been susceptible to eventual corrosion. Also as the contractor was at the mercy of the tides the construction work window was limited to around 4 hours per day.

Solution

4Kg Durus S400 Macro Fibre & 0.910Kg Fibrin XT. The inclusion of this fibre in the concrete has given it double the impact value & around 60% better abrasion resistance, due to the Macro reinforcement being evenly distributed throughout the concrete. With the improvement of the concrete and Polypropylene fibre not being susceptible to corrosion from sea water the structure will maintain its use for many more years.



A view of the ferocity of the sea on this coastline & the new steps

Benefits of the solution

By having Durus Macro fibres in the concrete on this project the concrete surface will have the benefit of double the impact resistance & 60% better abrasion. Durus Macro fibre is ridged and embossed so that the brushed step surface was easily achieved. The Fibrin XT Micro fibre helped with the plastic shrinkage, plastic settlement, and will increase the slabs resistance to freeze thaw. Also polypropylene fibres are not susceptible to sea water corrosion.

Installation benefits

The construction of each set of steps was quicker due to not having to fix steel mesh. The complexity of building the correct steel framed reinforcement adds additional time to the construction. By eliminating the steel it also adds better health & safety to the site.

Result

- The concrete slab will now have a 3D reinforcement throughout the structure.
- Construction time was saved by not having to fix steel.
- The concrete will have additional impact and abrasion properties, protecting the structure from the sea.
- The reinforcement is not susceptible to corrosion.
- The structure will last longer.
- The environmental credentials of the project will have been improved.
- The health and safety of the site will have been improved.

Products used



Durus S400 BS EN 14889 Class 2 Embossed Macro Fibre at 4Kg per Cubic metre of concrete



Fibrin XT BS EN 14889 Class 1a Micro Monofilament Fibre at 0.910 Kg per Cubic metre of concrete