

# MAMHEAD SLIPWAY

## East Devon District Council

Exmouth, Devon, United Kingdom

As part of the ongoing regeneration of facilities in Exmouth, Devon, there was a requirement to demolish and replace the existing Mamhead Slipway and adjacent boat trailer maneuvering area. The original slipway was in a poor state of repair due to tidal movement causing a reduction in bed levels which had undermined the piled foundations leaving voids beneath the concrete slipway slab. These voids made the structure unserviceable and potentially dangerous.



Project owner  
**EAST DEVON DISTRICT COUNCIL**

Product  
**DURUS S400 Synthetic Macro Fibre**

Function  
**DURUS S400 - Replace conventional steel mesh reinforcement to reduce construction time and eliminate reduced service life due to steel corrosion in a marine environment.**

Contractor  
**Raymond Brown Construction**

### Challenge

The Environment Agency guidance for marine and coastal concrete requires elimination of as much traditional steel fabric as practicable.

Owing to challenging tidal conditions and wave action, the engineering solution for this project needed to provide a stable foundation to prevent the migration of fill material from beneath the slipway. This was overcome by placing a self compacting aggregate (6A material) overlain by compacted graded fill material.

This foundation allowed the reinforced concrete slipway to be fully ground bearing and therefore utilise Synthetic Macro Fibre reinforcement as an effective alternative to steel mesh.

Due to the water level and tidal fluctuations, works for the slipway had to take place behind a cofferdam provided by interlocking sheet piles. This resulted in a highly restricted working area with mobile plant operating along side site operatives.

The engineering solution required a reinforced concrete slab on a 1 in 6 gradient within a confined working area, making the placement and fixing of traditional steel fabric difficult and potentially dangerous.



The use of welded steel mesh in this environment would lead to a shortened service life due to corrosion after sustained contact with sea water.

#### Solution

- A ground bearing DURUS S400 solution was proposed and accepted by the Client, Contractor and Consulting Engineer.
- The Synthetic Macro Fibre reinforcement can not be placed incorrectly and will therefore maintain structural performance requirements for both the slipway and adjacent hardstanding area.

#### Benefits of the solution

The risk of shortened service life associated with steel mesh corrosion has been eliminated.

In this type of environment the reinforced concrete pavement is subject to constant exposure to aggressive sea water, making steel corrosion a certainty.



The confined nature of the site would make it difficult and dangerous to handle, cut and fix welded steel fabric. The DURUS S400 Macro Synthetic Fibre Reinforcement is contained within the concrete on delivery, so cannot be placed incorrectly or disturbed during installation.

The Macro synthetic fibre reinforced concrete can be placed directly into the formwork without the risk of misplacing welded steel mesh, potentially leading to insufficient cover and reducing performance.

#### Installation benefits

The Contractor was able to pour the slipway without the need for handling, cutting and placement of welded steel mesh in this challenging environment. Significant Health & Safety Hazards were eliminated for the workforce .

Welded steel mesh would have to be craned into position on the site which would have an impact on traffic movements leading to disruption. This has the potential to cause a negative effect on the local community and tourism.

The required reinforcement is contained within the delivered concrete resulting in a more efficient installation and reduced construction time.

#### Products used: DURUS S400 Synthetic Macro Fibre



Effective replacement of conventional steel mesh reinforcement in marine concrete applications.