

PROVEN PERFORMANCE

*RIVERSIDE QUAY, PORT OF TYNE
THE OPTIMUM FIBRE-REINFORCED CONCRETE
FOR MAXIMUM STRENGTH AND EASE OF APPLICATION.*

TOPFORCE
MF



Product TOPFORCE MF
Client PORT OF TYNE
Location RIVERSIDE QUAY, PORT OF TYNE
Date of completion LATE 2001

Topforce brings added concrete strength without the need for steel fabric reinforcement, reducing materials, labour and equipment costs.

THE CHALLENGE

The external slab pavements at the Port of Tyne's Riverside Quay site were used for loading scrap metal into container ships for export. Towards the end of 2001 the decision was made to replace large areas of the hard-working surface. Cracking damage, severe abrasion and protruding steel fibres were evident. So an even harder-working replacement concrete was needed.

OUR SOLUTION

The Tarmac team carried out several trials to perfect the optimum mix. Test beams (150x150x750mm) were cast for a full-scale comparative trial. These were tested to Japanese Standard JSCE-SF4. Results showed a flexural strength ratio of 53% for the steel fibre reinforced concrete, and 78% flexural strength ratio for the synthetic fibre concrete. So synthetic fibres won the day. To reduce the high abrasion rate at Riverside Quay, a silica fume was included in a 60MPa concrete mix designed by the Tarmac team (see table 1.). The high concentration of fibres shown in table 2 were added to deliver the flexural strength needed - yet without compromising the excellent cohesion and 'placeability' of the the mix itself.

RESULTS AND BENEFITS

18 months after the pavements at Riverside Quay were replaced, they were inspected and found to be in excellent condition. Despite the heaviest traffic imaginable - track-laying vehicles and front-loading shovels loading thousands of tonnes of scrap metal, the fibre-reinforced pavements of Topforce were performing well. These quayside pavements still undergo close inspection and are showing no signs of cracking, delamination or excessive joint opening.

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For more details contact your topforce@tarmac.com or call **0800 1 218 218**

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