

## BRIDGETOWN PORT, BARBADOS, BWI

### MS-D1 SYNTHETIC FIBER SHOTCRETE

<b>PROJECT:</b>	Reform and Expansion of Bridgetown Port, Bridgetown, Barbados, BWI
<b>SPECIFIER:</b>	Delcan International Vancouver, BC
<b>CONTRACTOR:</b>	Lagan Holdings, Belfast, Northern Ireland
<b>PRODUCT:</b>	MS-D1 Synthetic Fiber Shotcrete
<b>QUANTITY:</b>	1500 m <sup>3</sup> (53000 ft <sup>3</sup> )
<b>COMPLETION:</b>	Fall, 2006

The Port of Bridgetown on the island of Barbados was originally constructed in the early 1960's and expanded in the mid 1970's to allow for increased growth in traffic from cruise ships and cargo ships. Further increases in forecasted growth required that the Port again upgrade the existing berths and also upgrade and expand the cruise terminal facilities. Continuous exposure to salt water had caused corrosion of the reinforcing steel and resulted in severe deterioration of the concrete throughout the facility. Concrete removal, in many areas exceeded 15 cm (6 inches) in depth.

Delcan International elected to specify King MS-D1 Synthetic Fiber Shotcrete to replace the deteriorated concrete that was removed from berths, wharf and concrete dolphins. The gradation specified met ACI 506, "Guide to Shotcrete", Table 1.1, Gradation No. 2. This gradation was selected based on the application thickness and concerns with drying shrinkage. The micro-synthetic fibers, pre-blended with the other shotcrete mix components addressed concerns about shrinkage cracking. The shotcrete material was supplied in special 700 kg (1550 lb.) bulk tote bags. These bags were lined with polyethylene to prevent moisture from coming in contact with the cementitious material. All material was loaded into 6 m (20 ft) sea containers and shipped by sea freight to Port of Bridgetown, Barbados.

During the project, King Packaged Materials technical staff provided on-site technical assistance which provided an opportunity to exchange views with the European nozzle man, comparing the differences between the North American and European approach to dry mix shotcreting. By the time the shotcrete portion of the project was completed, representatives of Delcan International and Barbados Port Inc. were in agreement that the quality of the shotcrete repairs exceeded all expectations.

This project was recognized at the 2007 American Shotcrete Association Awards Banquet where King, Lagan and Delcan were presented with The Outstanding Shotcrete Project Award in the International Project Category.

