



Overview of the project



Partially prepared surface

EXPOSED AGGREGATE SHOTCRETE: New Shotcrete Finish Improves Aesthetics

by Denis Beaupré

Quebec city possesses a historic area in which many concrete structures need repair. For economic as well as practical reasons, since some of these structures are curved, shotcrete is the logical solution when repair is considered. In order to provide attractive looking finishes for the repaired structures, it was decided to see if it was possible to obtain a better finish appearance than the usual wood trowel shotcrete finish.

The work started with a small research project undertaken by the Industrial Chair on Shotcrete and Concrete Repair at Laval University (Quebec, Canada) to verify the feasibility of producing exposed aggregate wet-mix shotcrete. After promising research results, an experimental demonstra-

tion project was proposed to the City of Quebec by the Service d'Expertise en Matériaux S.F.M. Inc. This demonstration project, and consequently the technology transfer, was financed through a grant from the Quebec Ministry of Municipal Affairs.

The exposed aggregate finish was obtained by preparing and shooting a wet-mix shotcrete containing 800 kg/m³ (1350 lb./yd.³) of granitic concrete coarse aggregates (10 mm max size) as batched. A retarding admixture was then applied to the fresh wet-mix shotcrete immediately after the finishing operation. The shotcrete surface was washed sixteen hours after finishing with a high pressure water jet to expose the coarse aggregate and obtain the final surface. The appearance of the repair is excellent: the aggregates are well distributed on the exposed surface.

The Quebec City Engineering Division considers this prototype project to be extremely successful and is now looking to repair many other structures with exposed aggregate wet-mix shotcrete.

This project is a good example of a joint effort to implement a new technol-

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Removal of set retarder using pressure washer

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