

- M. Control joints shall be provided at a maximum spacing of at least 3 meters or as directed by the engineer.

### **13.3.16 Application of Grout**

- A. Prior to start the repairs and in view of prequalifying the proposed grout system, the Contractor shall apply this method over two representative areas selected by the Engineer:

1. cubes from each area shall be prepared and crushed for determination of their compressive strength (BS 1881/BS 4550).
2. samples for water penetration to be tested in accordance with DIN 1048
3. pull out tests from each area shall be performed by the Contractor to determine the bonding strength between the old concrete and the grout.

The rehabilitation works cannot start unless the above prequalification tests are successful and to the satisfaction of the Engineer.

- B. The grout material is subject to the approval of the Engineer prior to any related site works.
- C. Curing shall be conducted according to the manufacturer's recommendations, or as may be directed by the Engineer.
- D. The Contractor shall apply a bonding agent between existing concrete and the grout in case the bond strength fails to meet the specified value of 1.5 N/mm<sup>2</sup>. The bonding layer should be stable when exposed to water, and should form a waterproof screen between the old concrete and the grout.

### **13.3.17 Quality control**

- A. In addition to the tests specified in previous paragraphs, The Contractor shall perform the following laboratory tests and submit it to the Engineer for approval prior to any site works; then The Contractor shall perform it during the work with the specified frequency. These tests and frequency are given as a minimum requirement. The Contractor is responsible for increasing the frequency and/or performing other tests at his cost as deemed necessary by him to satisfy himself with the quality of the repairs and materials.
- B. Surface tolerances for all repairs shall comply with Section 03300, unless otherwise approved by the Engineer.
- C. Minimum pull-off values for any repairs with any materials shall be 2.0 N/mm<sup>2</sup>.
1. One pull-off test shall be conducted for every 30 m<sup>2</sup> of repairs.