

- A. A detailed study of the condition of the structures shall be carried out by the Contractor under the direction and supervision of the Engineer. The detailed condition survey shall be carried out to the satisfaction of the Engineer.
- B. The condition survey shall include testing to assess the quality and mechanical properties of the concrete and reinforcing steel in a structure.
- C. Test samples shall be obtained by core sampling using diamond studded bits and by random sampling of broken concrete.
  - a. The number, size and location of core samples shall be selected to permit all necessary laboratory tests and be agreed with the Engineer.
  - b. The core diameter for strength properties shall have a minimum diameter of three times the maximum aggregate size, or 50mm, whichever is the greater.
  - c. The core length for testing of strength property shall be a minimum of twice the diameter. Allowance shall be made for possible break off damage at the base of the core where the core does not completely penetrate the structure. Reinforcement shall not be included in a core that is to be tested for strength. A minimum of three cores shall be removed at each location to determine strength. The average value shall be used.
  - d. Small bore core samples may be used for chemical sampling.
  - e. Samples of broken concrete shall not be used to determine the strength of the concrete. Random samples of broken concrete shall only be used to determine the chemical properties of the deteriorated concrete.
- D. The following properties of aggregates shall be determined by petrographic evaluation of concrete samples as agreed with the Engineer.
  - a. Particle shape, size distribution and composition.
  - b. The extent to which particles are coated, and the nature of the coating substance.
  - c. The potential for deleterious reactions between the aggregate and cement alkalis, sulphates and sulphides.
  - d. Presence of unsound aggregate (fractured, porous and degree of weathering).
- E. The following properties of the concrete shall be determined by petrographic analysis as agreed with the Engineer.
  - a. The density of the paste and colour of the cement.