

**Cementitious or Polymer Based Grouted Bolts/Dowels/Reinforcing Bars Works  
Cast-in Bolts/Dowels/Reinforcing Bars Works  
Through Bolts Works**

In giving this approval of plans, I hereby impose the following conditions under item 6 in section 17(1) of the Buildings Ordinance (BO):

- (a) Qualified site supervision of the grouted bolts/dowels/reinforcing bars works / cast-in bolts/dowels/reinforcing bars works / through bolts works, by experienced and competent persons as defined in (b) and (c), should be provided to ensure that the works are carried out in accordance with the plans approved and that the required standards are complied with and in such a manner as not to render inadequate the margin of safety of, or impair the stability of, or cause danger to any building, structure, land, street or services.
- (b) The registered structural engineer (RSE) should assign a quality control supervisor to supervise the works, determine the necessary frequency of inspection by the quality control supervisor which should not be less than once a week, and devise inspection check lists. The minimum qualifications and experience of the quality control supervisor is to be the same as the technically competent person (TCP) of grade T3 under the RSE's stream, as stipulated in the Code of Practice for Site Supervision 2009 (Code).
- (c) The registered general building contractor (RGBC)/registered specialist contractor (RSC) should assign a quality control co-ordinator to provide full time on site supervision of the works and devise inspection check lists. The minimum qualifications and experience of the quality control co-ordinator is to be the same as the TCP of grade T1 under the RGBC's/RSC's stream, as stipulated in the Code.
- (d) The names and qualifications of the supervisory personnel representing the RSE and the RGBC/RSC respectively should be recorded in an inspection log book. The date, time, items inspected and inspection results should be clearly recorded in the log book. The log book should be kept on site for inspection by representatives of the Buildings Department (BD).

2. Where cementitious or polymer based grouted bolts/dowels/reinforcing bars are used, the following condition is imposed under item 6 in section 17(1) of the BO:

- (a) Strength tests on a representative number of the grouted bolts/dowels/reinforcing bars should be carried out as directed by the RSE to verify the performance and workmanship of the grouted bolts/dowels/reinforcing bars. Sampling rate should be at least 1% or 5 numbers, whichever is more, of each type, size and embedment of the grouted bolts/dowels/reinforcing bars installed. The strength tests should be carried out by a recognised laboratory independent of the contractor.
- (b) Each representative grouted bolts/dowel/reinforcing bar should be tested for tensile load by pull out test and/or shear load by shear load test as appropriate to demonstrate that its load carrying capacity is not less than 1.5 times the recommended load as specified by the manufacturer. The tested grouted

bolts/dowels/reinforcing bars should not show any signs of separation, plastic deformation or deleterious effect. The reports of the strength tests should be submitted within 21 days upon completion of the tests and appended with a statement signed by the RSE to confirm the following matters:

- (i) All bolts/dowels/reinforcing bars used for the construction and the test specimens covered by the test reports are in accordance with the types and grades of bolts/dowels/reinforcing bars shown in the approved plans.
  - (ii) The acceptance criteria appropriate to each type and grade of bolts/dowels/reinforcing bars used have been complied with.
  - (iii) Tests for all bolts/dowels/reinforcing bars have been carried out by a recognised laboratory independent of the contractor.
- (c) A method statement on the tests of grouted bolts/dowels/reinforcing bars mentioned above is required to be submitted at least one week prior to the actual commencement of the grouted bolts/dowels/reinforcing bars works.
- (d) Reference may be made to British Standard 5080: Parts 1 & 2 for general testing procedures for grouted bolts/dowels/reinforcing bars including apparatus set-up, load application and results presentation.

3. Where cast-in reinforcing bars are used, the following condition in respect of qualified supervision of works is imposed under item 6 in section 17(1) of the BO:

- (a) Sampling and testing of steel reinforcing bars should be carried out in accordance with CS2:2012. Testing should be carried out by a laboratory\* accredited under the Hong Kong Laboratory Accreditation Scheme (HOKLAS) for the particular test concerned. Test results@ should be submitted within 60 days of the delivery of the steel reinforcing bars to the site. The test reports should be appended with a statement signed by the RSE to confirm the following:
- (i) All steel reinforcing bars used for the construction and the test specimens covered by the test reports are in accordance with the types and grades of steel shown in the approved plans.
  - (ii) Sampling and testing of steel reinforcing bars used have been carried out in accordance with CS2:2012.
  - (iii) The acceptance criteria appropriate to each type and grade of steel reinforcing bars used have been complied with.
  - (iv) All steel reinforcing bars tests have been carried out by a laboratory\* accredited under the HOKLAS.

4. Under regulation 10 of the Building (Administration) Regulations, a copy of mill certificates of the bolts/dowels/reinforcing bars used, is required to be submitted within 60 days of the delivery of the bolts/dowels/reinforcing bars to the site and appended with a statement signed by the RSE to confirm that the requirements of chemical composition and mechanical properties appropriate to the type and grade of steel have been complied with.

5. Where steel reinforcing bar products such as cut and bent reinforcing bar, reinforcement cages and the like are fabricated off-site in a prefabrication yard, the following conditions in respect of qualified supervision of off-site reinforcing bar prefabrication works (Prefabrication Works<sup>+</sup>) are imposed under item 6 in section 17(1) of the BO:

- (a) Qualified site supervision of the Prefabrication Works, including sampling of steel reinforcing bars, by experienced and competent persons as defined in 1(b) and 1(c), should be provided to ensure that the works are carried out in accordance with the plans approved and that the required standards are complied with.
- (b) The names and qualifications of the supervisory personnel representing the RSE and the RGBC/RSC respectively should be recorded in an inspection log book. The date, time, items inspected and inspection results should be clearly recorded in the log book. The log book should be kept in the prefabrication yard and a copy of it should be kept on site for inspection by representatives of the BD.

\* A Directory of Accredited Laboratories in Hong Kong is obtainable from the Hong Kong Accreditation Service (HKAS) Executive, Innovation and Technology Commission.

A laboratory's accreditation for an individual test or calibration may be granted, modified or withdrawn at any time. Up-to-date information on accredited laboratories and their scopes of accreditation are available on the internet at the HKAS website at <http://www.itc.gov.hk/hkas/>.

@ The test carried out by an accredited laboratory should be within its scope of accreditation. To ensure this, test results should be reported on a HOKLAS Endorsed Certificate or equivalent Certificate/Report issued from other laboratory accreditation bodies which have reached mutual recognition agreements/arrangements with the HOKLAS.

+ Prefabrication Works refer to the fabrication works of steel reinforcing bar products, such as cut and bent reinforcing bars, reinforcement cages and the like, covered by this approval of plans carried out in the prefabrication yard.