

Tensile Fabric/ Wire Rope and Terminations/ Keder Fixing Device Works

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

- (a) Qualified site supervision of the *[please refer to approval letter for details e.g. Tensile Fabric/ Wire Rope and terminations/ keder fixing device]* works, including fabrication, erection and examination of the structural elements/fixings, 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.
- (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 of grade T3 under the RSE's stream, as stipulated in the Code of Practice (CoP) for Site Supervision 2009.
- (c) The Registered General Building Contractor (RGBC) 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 Technically Competent Person of grade T1 under the RGBC's/Registered Specialist Contractor's stream, as stipulated in the CoP for Site Supervision 2009.
- (d) The names and qualifications of the supervisory personnel representing the RSE and the Technically Competent Person 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.

2. Also, where fabric membrane material is used, under regulation 10 of the Building (Administration) Regulations (B(A)R), the following document(s) issued by the manufacturer(s) or supplier(s) and endorsed by the RSE are required to be submitted prior to the application of occupation permit or the submission of Form BA14 as appropriate:

- (a) Test report showing the ultimate tensile strength at break for both weft and warp directions before and after ageing achieve the design strength as specified, when the fabric is tested in accordance with appropriate international standard, such as BS EN ISO 1421, compatible with the design approach. Ageing process shall make reference to relevant international standard, such as BS EN 15619.

/(b) ...

- (b) Where seam is introduced for the fabrication of the fabric membrane, test report showing the ultimate tensile strength of any seam to be not less than that of the parent fabric, when the seam is tested in accordance with appropriate international standard, such as BS EN 13935-2 for sewn seam or BS EN 15619 for welded seam.
- (c) An acceptable quality assurance and control scheme adopted by the fabric supplier or manufacturer as well as the membrane fabricator in ensuring the quality of production complying with the provisions of the BO as well as the approved plan. Relevant compliance certificate shall be appended with, where appropriate.
- (d) Fire test report* or fire assessment report* showing the fabric membrane material fulfill the fire performance requirement in compliance with the Building (Construction) Regulations or the CoP for Fire Safety in Buildings 2011.

3. Under regulation 10 of the B(A)R, where flexible edging using the wire ropes and terminations components is adopted for supporting the fabric membrane, the following documents shall be submitted prior to the application of occupation permit or the submission of Form BA14 as appropriate :

- (a) Type testing report* by the manufacturer or purchaser test report* to justify the minimum breaking force of the wire rope. Testing of wire ropes shall make reference to relevant international standard compatible with the design principle, such as BS EN 12385-1.
- (b) Type testing report* by the manufacturer or purchaser test report* to confirm the structural integrity of the terminations with respect to the acceptance criteria as specified in the corresponding standard compatible to the design, such as BS EN 13411, of the terminations.
- (c) Material certificate of the wire rope produced by the supplier including information, such as certificate number and date of issue, name of manufacturer or his authorized representative, quantity and length of rope, standard to which the rope conforms, rope designation and minimum breaking force etc.
- (d) A quality assurance and control plan from the fabricator of the terminations for record purpose. The quality plan shall include sufficient information related to the entire fabrication process, such as manufacturer's details, fabrication method statement and procedures, adopted conforming standards, type testing and material used, etc.

4. The following conditions are imposed under item 6 in section 17(1) of the BO for the stiff edging using keders fixing device (e.g., metal clamping or keders rail) for supporting the fabric membrane:

/(a) ...

- (a) A performance test shall be carried out to demonstrate the structural integrity of the connection and the test reports shall be submitted prior to the application of occupation permit or the submission of Form BA14 as appropriate. The fixing details of the test specimen, which could be a typical module, shall be identical to the proposal submitted. The test may either be a cyclic load test or static load test.
- (b) In lieu of the performance test as mentioned in (a) above, proof load test shall be acceptable to demonstrate the structural integrity of the connection. The test set up shall simulate the proposed design. If different clamping details are used for location where stress concentration is anticipated, like corner, separate proof load test shall be conducted. A minimum of 3 specimens for each type of clamping details shall be tested. The test reports shall be submitted prior to the application of occupation permit or the submission of Form BA14 as appropriate.
- (c) A quality assurance and control plan from the manufacturer or fabricator of the fixing device shall be submitted prior to the application of occupation permit or the submission of Form BA14 as appropriate for record. The quality plan shall include sufficient information related to the entire fabrication process.

* 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/>.