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2 Feb 2012

See **Distribution List**

Dear Sir/Madam

**ROLE OF QUALIFIED SITE SUPERVISORS (QSSs) IN THE SUPERVISION OF STRUCTURAL STEELWORKS**

There have been instances of failures of structural steelworks both abroad and locally due to poor workmanship and inadequate supervision of these works. In addition to having a safe and robust design, the safety of erected structural steelwork depends to a great extent on proper execution of such works. This includes ensuring the steel grades and dimensional compliance of steel materials with the design intent and the satisfactory fabrication and erection processes being carried out within acceptable tolerances. Shortcomings in any of these processes could give rise to potential compromises in structural safety.

2 BCA's advisory on "Measures to Enhance the Safety of Structural Steelwork" dated 14 Jul 2008 has highlighted various measures Qualified Persons for Structural Works (QPs) could take in ensuring quality steel construction such as engaging of accredited steel fabricators, appointing of Independent Testing Agencies (ITA) and the engaging of QSSs who are trained and experienced in the supervision of structural steelwork.

3 QPs supervising major structural steelwork should ensure that the QSSs they appoint are experienced or suitably trained in supervising such works. The BCA Academy and the Singapore Structural Steel Society (SSSS) are jointly conducting the Steel Supervisors (StS) Course<sup>a</sup> that QSSs could attend to gain an in-depth knowledge and competency in this specialised field. QPs could look up the list of SSSS Registered Steelwork Supervisors to see if their QSSs have attended the StS Course at this link at the SSSS's web-page:

[http://www.ssss.org.sg/index.php?option=com\\_wrapper&view=wrapper&Itemid=64](http://www.ssss.org.sg/index.php?option=com_wrapper&view=wrapper&Itemid=64)

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<sup>a</sup> Details of the StS Course can be found at this link :

[http://www.bca.gov.sg/academy/courses\\_tests.aspx?txtCourseTestCode=steel+supervisors](http://www.bca.gov.sg/academy/courses_tests.aspx?txtCourseTestCode=steel+supervisors)

Those who pass the StS Course which comprises a 30-hour course with a written examination will be put on the SSSS's Registered Steelwork Supervisors register. These SSSS Registered Steelwork Supervisors would also need to meet the continuous professional development requirements to ensure continued and updated competence in this specialised field.

4 QSSs are reminded of the critical role they play in the supervision of structural steelwork in ascertaining and verifying that these structures are fabricated and erected according to the design intent (refer Annex A for the key roles of QSSs in the supervision of structural steelworks). QPs should brief the QSSs on their roles in supervising these works and may give additional guidance on any special requirements unique to their respective projects when appointing the QSSs.

5 I would appreciate it if you could disseminate the contents of this letter to your members. Please contact Senior Executive Engineer/Mr Ng Hee Yang at Tel: 6325 2103 or email: [ng\\_hee\\_yang@bca.gov.sg](mailto:ng_hee_yang@bca.gov.sg) if you need further clarification.

Thank you.

Yours faithfully

A handwritten signature in black ink, appearing to be 'K THANABAL', written in a cursive style.

K THANABAL  
DEPUTY DIRECTOR, BUILDING ENGINEERING DIVISION  
for COMMISSIONER OF BUILDING CONTROL  
BUILDING AND CONSTRUCTION AUTHORITY

## **Annex A**

### Role of QSSs in supervision of structural steelworks<sup>b</sup>

#### **I. Material inspection and testing**

- Check that Material Test Certificates (MTCs) are submitted by the builder for all structural steel products;
- Check that valid Factory Production Control (FPC) Certificates are submitted by the builder for all structural steel materials and products designed as "Class 1" to BC1 as indicated on BCA approved structural drawings;
- Countercheck that tag/printing on raw material tally with heat numbers indicated on MTC;
- Check material standard and grade for all structural steel products including bolts, shear studs, welding consumables etc comply with material standards and steel grades specified in approved plans (steel material standards and grades from Certified List in Appendix A of BC1);
- Check dimensions and thickness of members to tally with approved plans;
- Check physical defects for any heavy rusting, pitting, warping and bending;
- Check that steel material designed as "Class 2" are tested by at least batch/lot in accordance with BC1 and
- Select in consultation with the QP(Supervision), representative samples of structural steel members, bolts etc for testing at a laboratory accredited under the Singapore Accreditation Council Lab Accreditation Scheme (SAC-SINGLAS)

#### **II. Fabrication and erection**

- welding works  
Carry out fit-up inspections (edge preparations eg. bevelling, gaps between welded components within tolerances, provision of proper backing for welding, etc);  
Ensure correct welding electrodes according to approved structural plans are used and check that they are handled and stored properly to avoid deterioration (eg. through moisture effects etc) and  
Supervise the welding works
- post welding inspection and non-destructive testing (NDT) of welds  
Inspect after welding works are completed to ensure correct weld type, length & size (eg. throat thickness for fillet welds) and inform QP(Supervision) if there are any visual signs of welding defects and  
Witness NDT tests carried out by accredited labs and ensure QP(Supervision) is informed of any weld failure and remedial actions taken
- bolting works  
Ensure correct type, size & grade (certified grade to "Appendix A" of BC1) of bolt, ensure holes drilled within tolerances, supervise installation and tightening (eg. high strength friction grip bolts to be tightened using appropriate method and tightened to correct torque)
- shear studs for composite construction  
Ensure correct size, steel grade (certified to BC1) and spacing according to approved structural plans
- structural configuration and setting out  
Inspect the steel frame for compliance with approved structural drawings like overall length, overall height, spacing between members & angle, including bracing, member configuration and connection details and  
Check correct positioning of holding down or anchor bolts and inform QP(Supervision) if they are out of tolerance and based on QP's instructions, ensure remedial actions are taken and  
Where insitu concrete toppings are required on steel frames, check the thickness of the concrete is in accordance with approved plans to ensure no over-cast

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<sup>b</sup> Refers to works included in the structural plans approved by BCA.

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