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## See Distribution

Dear Sir/Madam

### **BC 4: 2015 “DESIGN GUIDE FOR CONCRETE FILLED TUBULAR MEMBERS WITH HIGH STRENGTH MATERIALS TO EUROCODE 4”**

As part of BCA’s efforts to promote construction productivity and sustainability, a number of advanced construction technologies have been introduced to the industry. One of these technologies is Concrete Filled Tubular (CFT) steel sections which can be used in many applications, especially as composite columns in high-rise buildings and bridge piers.

2 The use of high strength concrete and steel are already allowed in Eurocode 2 (EC2) and Eurocode 3 (EC3) for the design of concrete and steel structures respectively. However, Eurocode 4 (EC4) for the design of concrete-steel composite structures such as CFT covers only normal strength concrete (up to grade C50/60) and steel (up to grade S460). To facilitate the use of high-strength concrete and CFT members, the Building and Construction Authority (BCA), National University of Singapore (NUS) and the Singapore Structural Steel Society (SSSS) have jointly published a “Design Guide for Concrete Filled Tubular Members with High Strength Materials to Eurocode 4” (the “Design Guide”) allowing the use of CFT members with concrete cylinder strength of up to 90MPa and steel yield strength of up to 550MPa. The Design Guide has been reviewed by renowned local and international experts with established knowledge of international design codes.

3 A concise codified version of the Design Guide entitled **BC 4: 2015 “Design Guide for Concrete Filled Tubular Members with High Strength Materials to Eurocode 4”** as well as sample calculations are now available for download from BCA website at the following links.

<http://www.bca.gov.sg/StructuralPlan/others/BC4-2015.pdf>

[http://www.bca.gov.sg/StructuralPlan/others/BC4-2015\\_cal.pdf](http://www.bca.gov.sg/StructuralPlan/others/BC4-2015_cal.pdf)

4 The BC 4: 2015 design guide will be incorporated in the next update of the Approved Document. However, the industry may wish to adopt the design guide immediately as an alternative solution to tap into the benefits of using high strength materials for the design of CFT members.

5 When adopting the BC 4: 2015 design guide, Qualified Persons should pay attention to the special considerations in the use of high strength materials given in Chapter Six, e.g. fabrication of high tensile steel or preparation of high strength concrete, etc. QPs should also pre-qualify the Welding Procedure Specification (WPS) for high tensile steel (above grade 355MPa) to assure its compliance with EN 1090-2 and EN 1011-1 & 2 or equivalent codes of practice. For high tensile steel materials (above grade 355MPa), plates produced by thermo-mechanical rolling processes conforming to EN 10025-4 should be specified for improving structural safety and construction productivity.

6 I would appreciate it if you could bring to the attention of your members the contents of this circular. Please contact Er. Dr Tran Chi Trung at Tel. 6804 4642 or email: [tran\\_chi\\_trung@bca.gov.sg](mailto:tran_chi_trung@bca.gov.sg) if you need further clarification.

Thank you.

Yours faithfully



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