GENERAL SPECIFICATION FOR CIVIL ENGINEERING WORKS

1992 Edition (Hong Kong Government)

CORRIGENDUM No. 2/96 (October)

VOLUME 1

SECTION 1 GENERAL

(a) Appendix 1.1, Clause 1.1.1, Page 67

Delete:

BS 4449 : 1988 (The determination of fatigue properties in Clause 11 of BS 4449 : 1988 is not mandatory.)	**Specification for carbon steel bars for the reinforcement of concrete**

(b) Appendix 1.1, Clause 1.1.5

Insert the following standard after CS1 : 1990:

CS2 : 1995	**Carbon Steel Bars for the Reinforcement of Concrete**

SECTION 7 GEOTECHNICAL WORKS

(a) Clause 7.53(1), 2nd line

Replace BS 4449 by CS2

(b) Clause 7.55, 1st line

Replace BS 4449 by CS2

VOLUME 2

SECTION 10 CONCRETE CARRIAGEWAYS

(a) Clause 10.07(2), 2nd line

Replace BS 4449 by CS2

SECTION 15 STEEL REINFORCEMENT

(a) Clause 15.02, 1st and 2nd lines

Delete the following:

or cold worked steel bar or cold reduced wire

(b) Clause 15.03, 3rd and 4th lines

Replace the following:

Hot rolled steel bars	**: BS 4449**
Cold worked steel bars	**: BS 4449**

by:

Hot rolled steel bars	**: CS2**

(c) Clause 15.11

Replace sub-clause (1) by the following:

(1) The following particulars of the proposed bar reinforcement and fabric reinforcement shall be submitted to the Engineer:

- **(a) for Class 1 bar reinforcement, a certificate from the quality assured stockist in accordance with CS2 Cl. 4.1.3 and a copy of the manufacturer's third party certificate**
- **(b) for Class 2 bar reinforcement, a certificate from the quality assured stockist in accordance with CS2 Cl. 4.1.4 and a copy of the manufacturer's third party certificate**
- **(c) for Class 3 bar reinforcement, a certificate from the supplier in accordance with CS2 Cl. 4.2**
- **(d) Upon delivery of bar reinforcement the contractor shall submit a test report containing the details specified in CS2 Cl. 3.3.3 and Cl. 3.3.5.**
- **(e) for fabric reinforcement, a certificate from the manufacturer showing the manufacturer's name, the date and place of manufacture and showing that the reinforcement complies with the requirements stated in the Contract and including details of:**
  - **bond classification**
  - **cast analysis**
  - **carbon equivalent value**
  - **results of tensile, bend and rebend tests, including the effective cross-sectional area for tensile tests**
  - **results of bond performance tests**
  - **results of weld tests**

(d) Clause 15.29

Replace the clause by the following:

(1) For the purpose of testing, the steel bar reinforcement arriving on site is to be subdivided into batches. Each batch shall consist of reinforcement of the same steel grade, the same nominal diameter, same cast number, batch number or lot number.

(2) A batch of fabric reinforcement or reinforcement connectors for tension joints is any quantity of fabric reinforcement or reinforcement connectors for tension joints of the same type, size and grade, manufactured by the same mill, covered by the same mill and testing certificates and delivered to the Site at any one time. In addition, for epoxy coated reinforcement and galvanized reinforcement, the coatings shall have been applied at the same coating factory and shall

be covered by the same test certificates.

(e) Clause 15.30(2)

Replace sub-clauses (a) & (b) by the following:

(a)	**bar reinforcement (without epoxy coating or galvanized coating)**	**:**	**In accordance with CS2 Table 9**
(b)	**epoxy coated bar reinforcement and galvanized bar reinforcement**	**:**	**2 additional specimen to those specified in CS2 Table 9 for bar reinforcement**

(f) Page 165, Table 15.1

Replace Table 15.1 by the following:

Table 15.1 : Rate of

Table 15.1 : Rate of sampling of reinforcement

Description	Size of batch	No. of samples per batch
Bar reinforcement	All sizes	1
Fabric reinforcement	0 - 50 tonnes	1
	exceeding 50 tonnes	1 for each 50 tonnes or part thereof
Reinforcement connectors for tension joints	less than 100 No.	1
	100 - 500 No.	2
	exceeding 500 No.	3

(g) Clause 15.31(4), 2nd and 3rd lines

Replace the following:

Hot rolled steel bars : BS 4449

Cold worked steel bars : BS 4449

by:

Hot rolled steel bars : CS2

(h) Page 167
Table 15.2

Replace Table 15.2 by the following:

Table 15.2 : Number of tests on each sample of reinforcement

Description	Type and number of tests							
	Tensile	Bend	Rebend	Unit Mass	Weld Shear Stress	Thickness, Adhesion and Continuity	Weight and Uniformity of Galvanized Coating	Pitch, Dimension
Bar reinforcement	No. of tensile, bend and rebend tests in accordance with CS2 Table 9 and one unit mass test accompanied with each tensile test				-	-	-	-
Steel fabric								
-fabric sheet	-	-	-	3	1	-	-	-
-longitudinal wire	3	-	1	-	-	-	-	1
-transverse wire	3	-	1	-	-	-	-	1
Epoxy coating	-	-	-	-	-	2	-	-
Galvanized coating	-	-	-	-	-	-	2	-
Reinforcement connectors for tension joints	3	-	-	-	-	-	-	-

(i) Clause 15.34

Replace sub-clauses (1), (2), (3), (4) and (5) by the following:

(1) A batch of bar reinforcement shall be considered as not complying with the specified requirements for characteristic strength if the tensile tests results cannot meet the requirements stated in CS 2 Cl. 5.1.2(a).

(2) A batch of fabric reinforcement shall be considered as not complying with the specified requirements for characteristic strength if the yield stress in any tensile test carried out on any sample taken from the batch is less than 93% of the specified characteristic strength.

(3) If the yield stress of fabric reinforcement in any tensile test is less than the specified characteristic strength but equal to or greater than 93% of the specified characteristic strength, additional samples shall be provided from the same batch and additional tests for yield stress shall be carried out. The number of additional samples shall be as stated in Table 15.1. The number of fabric reinforcement specimens in each additional sample shall be seven. The

number of tests on the longitudinal wires and on the transverse wires of each additional sample of fabric reinforcement shall be seven. The batch shall be considered as not complying with the specified requirements for characteristic strength if the yield stress in any additional test is less than 93% of the specified characteristic strength.

(j) Clause 15.35(2) **Replace sub-clauses (a) and (b) by the following:**

(a)	**bar reinforcement (test to determine the elongation, tensile strength or mass)**	**: 2 additional test specimens for each test failed**
(b)	**bar reinforcement (test to determine the bending or rebending properties)**	**: 2 additional test specimens for each test failed**

(k) Clause 15.35(3) **Replace sub-clauses (a) and (d) by the following:**

(a)	**tensile test**	
	- bar reinforcement	**: 1 for each specimen**
	- reinforcement connectors for tension joints	**: 6**
	- fabric reinforcement	
	- longitudinal wires	**: 6**
	- transverse wires	**: 6**
(d)	**unit mass**	**: 1 for each specimen**

Standards Unit
Civil Engineering Department
October 1996