

# GENERAL SPECIFICATION FOR CIVIL ENGINEERING WORKS

2006 Edition

AMENDMENT No. 1/2007 (July)

## VOLUME 1

### FOREWORD

(a) Foreword

**Replace paragraph 2 with the following:**

The 2006 Edition of the General Specification comprises considerable greening of the Eighth Reprint of the 1992 Edition (October 2002) according to the current green practices of the construction industry. The text relating to "green measures" is printed in green colour in this Edition with a view to making it easier for reader's reference. It was produced over a 15-month period from March 2005 under the guidance of a Steering Committee comprising members from the main Government departments involved in civil engineering works. The greening of each section was undertaken by a works department with the appropriate expertise. The Standards Unit of Civil Engineering and Development Department (CEDD) was responsible for the overall co-ordination of comments received from departmental circulation, editing and production of the document.

### SECTION 1

#### GENERAL

(b) Clause 1.11(4)

**Delete Clause 1.11(4).**

(c) Clause 1.13(1)

**Replace Clause 1.13(1) with the following:**

(1) The Contractor shall keep on the Site a set of the current Construction Site Safety Manual (CSSM) issued by the Environment, Transport and Works Bureau (ETWB) of the Government of the Hong Kong Special Administrative Region (HKSAR). Attention of the Contractor is drawn to Appendix III of Chapter 3 of the CSSM about the need to keep one set of the legislation, regulations and/or codes of practice on the Site.

- (d) Clause 1.18 (4) **Replace Clause 1.18(4) with the following:**

(4) Any vehicular access across excavations in roads shall be provided with steel covers. The covers shall be designed to BS 449: Part 2 and shall be capable of withstanding the full load of traffic permitted to use the road. The covers shall be secured in position and shall have anti-skid coating so that the skid resistance values of the covers measured in accordance with BS 3262 shall be not less than 45. Sufficient steel covers shall be kept on the Site adjacent to excavations in roads to permit access for vehicles across the excavations in case of emergency. When installed, the steel covers shall be set to match the road surface smoothly so as to avoid/minimize any noise nuisance by rocking under the action of traffic.

- (e) Clause 1.18 (6) **Replace Clause 1.18(6) with the following:**

(6) In respect of works covered by the excavation permits issued by Highways Department and/or Lands Department as appropriate pursuant to the Land (Miscellaneous Provisions) Ordinance Cap 28 where the Contractor is the Nominated Permittee and the Employer is the Permittee, the Contractor shall comply with all conditions imposed on him as stated in the excavation permits.

**1.1.2 of Appendix 1.1 AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM) STANDARDS**

- (f) 35. ASTM D6307-98 **Replace item 35 with the following:**

ASTM D6307-05 Standard test method for asphalt content of hot-mix asphalt by ignition method

**SECTION 3 LANDSCAPE SOFTWORKS AND ESTABLISHMENT WORKS**

- (g) Clause 3.72(3) **Replace Clause 3.72(3) with the following:**

(3) At the time of spraying, fertilizer shall be applied at a minimum rate of 60 g/m<sup>3</sup>. Mulch shall be applied at a minimum rate of 200 g/m<sup>2</sup>. Soil binders shall be applied at the rate recommended by the manufacturer, modified as necessary to suit conditions in Hong Kong.

Dye shall be used to demonstrate that adequate cover has been achieved, unless in the opinion of the Engineer runoff or water-courses will be coloured to an unacceptable level. Where used, dye shall be applied at a maximum rate of 0.05 g/m<sup>2</sup>.

## SECTION 7

### GEOTECHNICAL WORKS

(h) Clause 7.33(4)

**Replace Clause 7.33(4) with the following:**

(4) Notwithstanding sub-clause (1) above and Clause 6.09, for a trial pit or trial trench carried out under an Excavation Permit, the excavation works including backfilling and reinstatement shall comply with the Conditions of the Excavation Permit. Satisfactory compaction of backfill shall be demonstrated by testing for relative compaction instead of by dynamic probing. Relative compaction testing shall be carried out for every metre depth of backfill in each trial pit and trial trench, at locations instructed by the Engineer. The more stringent requirement shall prevail in case of any ambiguities or discrepancies between this General Specification and the Conditions of an Excavation Permit.

## SECTION 8

### PILING WORKS

(i) Clause 8.39

**Replace Clause 8.39 with the following:**

All ground investigation for piles founded on rock, including pre-drilling and proof-drilling as well as any core-drilling on the constructed piles, shall be carried out by an independent Specialist Contractor for Public Works registered under the Work Category of "Ground Investigation Field Work", who is required to make a declaration that it is not a holding company, a subsidiary company, an associated company or a related party of the Contractor or any of his sub-contractors responsible for the piles for which the ground investigation is carried out, and that it has no financial interests in the piling works to be tested.

(j) Clause 8.53(1)

**Replace Clause 8.53(1) with the following:**

(1) Except as stated in Clause 8.54, excavation for cast-in-situ concrete piles shall be carried out by mechanical methods. Blasting and compressed air shall not be used unless permitted by the Engineer. Large-diameter bored piles shall be formed by boring, chiseling or

grabbing and filled with concrete. Piles with enlarged bases shall not be used unless specified otherwise. Where so permitted, the enlarged base shall only be formed by under-reaming with a reverse circulation drill. The relevant technique shall have been approved by the Engineer.

(k) Clause 8.54(1)

**Replace Clause 8.54(1) with the following:**

(1) The Contractor shall adopt a method of construction that will only cause minimum settlement or disturbance of any kind to adjacent structures, pavements, public or private services. The Contractor shall establish an approved monitoring system and take regular readings and prepare and submit reports to the Engineer in the format and quantity as requested. The Contractor shall modify the method of construction if the effects of ground movement are detected in any such structures, pavements and services.

## **SECTION 9**

### **CARRIAGEWAYS : SUB-BASE MATERIAL AND BITUMINOUS MATERIALS**

(l) Clause 9.10(2)

**Replace Clause 9.10(2) with the following:**

(2) Subject to the Engineer's approval, the Contractor may use bituminous wearing course and base course materials incorporating reclaimed asphalt pavement (RAP) for carriageway works. The RAP shall comply with the requirements specified in Clause 9.09(3). Wearing course and base course materials incorporating RAP shall be designed, manufactured, laid and tested in accordance with the requirements for these materials using non-recycled materials or otherwise specified by the Engineer.

(m) Clause 9.10(4) **Replace Clause 9.10(4) with the following:**

(4) Bituminous materials of all aggregate sizes, other than bituminous roadbase material, shall be designed in accordance with the Marshall Method of Mix Design stated in The Asphalt Institute Handbook 'MS-2 Mix Design Methods for Asphalt Concrete and other Hot-mix Types, Sixth Edition (1997)' with modifications only if agreed by the Engineer. The compaction standard shall be 75 blows per side. The maximum amount of RAP allowable in the bituminous wearing course and base course materials shall be 15% by mass of the total mix. Separate mix designs shall be required for these materials incorporating RAP.

## **SECTION 12**

## **TRAFFIC SIGNS, ROAD MARKINGS AND ROAD STUDS**

(n) Clause 12.15(6) **Replace Clause 12.15(6) with the following:**

(6) The Volatile Organic Compound (VOC) content of all paint applied on surfaces of traffic signs shall comply with the VOC limits stipulated in the Air Pollution Control (Volatile Organic Compounds) Regulation.

## **VOLUME 2**

## **FOREWORD**

(o) Foreword **Replace paragraph 2 with the following:**

The 2006 Edition of the General Specification comprises considerable greening of the Eighth Reprint of the 1992 Edition (October 2002) according to the current green practices of the construction industry. The text relating to "green measures" is printed in green colour in this Edition with a view to making it easier for reader's reference. It was produced over a 15-month period from March 2005 under the guidance of a Steering Committee comprising members from the main Government departments involved in civil engineering works. The greening of each section was undertaken by a works department with the appropriate expertise. The Standards Unit of Civil Engineering and Development Department (CEDD) was

responsible for the overall co-ordination of comments received from departmental circulation, editing and production of the document.

**SECTION 16****CONCRETE AND JOINTS IN CONCRETE**

(p) Clause 16.07

**Replace Clause 16.07 with the following:**

PFA shall comply with BS 3892: Part 1 with the following modifications:

- (a) Use Portland cement BS EN 197-1: CEM I (52.5N) to determine water requirement, strength factor at 28 days, soundness and initial setting time.
- (b) The criteria for water requirement and strength factor at 28 days shall not apply, but the values of water requirement and strength factor at 28 days shall be reported on certificates as required in Clause 16.17(1)(b).
- (c) PFA of total lime content over 10% but not over 20% and with soundness value not more than 10 mm is acceptable as “high-lime PFA”. When “high-lime PFA” is used, it shall be reported in certificates as required in Clause 16.17(1)(c).

(q) Clause 16.17(1)(b)

**Replace Clause 16.17(1)(b) with the following:**

- (b) A certificate not older than 6 months for PFA showing the source of the PFA and showing that the PFA complies with the requirements stated in the Contract and including results of tests required in Clause 14.1 of BS 3892: Part 1.

(r) Clause 16.17(1)(c)

**Renumber Clause 16.17(1)(c) as 16.17(1)(d)**(s) New Clause  
16.17(1)(c)**Add the following new Clause 16.17(1)(c):**

- (c) If “high-lime PFA” as stated in Clause 16.07 is used, the certificates that accompany delivery of “high-lime PFA” shall mention that the PFA is high-lime.

(t) Table 16.6

**Replace**

PFA 20 kg BS 4550: Part 1

**with**

PFA 20 kg BS EN 196-7

(u) Table 16.7

**Replace**

PFA Chemical composition By BS 3892: Part 1

Fineness BS 3892: Part 1

Moisture content

**with**PFA Chemical composition BS EN 196-2 and  
BS EN 196-21

Physical tests BS 3892: Part 1

**SECTION 18****STEELWORK**

(v) Clause 18.16(3)

**Replace Clause 18.16(3) with the following:**

(3) The Volatile Organic Compound (VOC) content of all paint applied on surfaces of steelwork shall comply with the VOC limits stipulated in the Air Pollution Control (Volatile Organic Compounds) Regulation.

**SECTION 24****BUILDING WORKS**

(w) Clause 24.146

**Replace Clause 24.146 with the following:**

The Volatile Organic Compound (VOC) content of all paint applied on surfaces of building fabrics, building elements and any installations/equipment inside semi-enclosed/enclosed areas of the building shall comply with the VOC limits stipulated in the Air Pollution Control (Volatile Organic Compounds) Regulation.

**Standards Unit  
Civil Engineering and Development Department  
9 July 2007**