

GENERAL SPECIFICATION FOR CIVIL ENGINEERING WORKS

1992 Edition

CORRIGENDUM No. 1/2003 (March)

VOLUME 1

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SECTION 1

(a) SECTION 1

Add the following after Clause 1.1.6 under APPENDIX 1.1:

1.1.7 American Public Health Association (APHA) Standard

SECTION 1

GENERAL

(b) Clause 1.02(1)

Insert the following abbreviation:

APHA : American Public Health Association

(c) Appendix 1.1,
New Clause 1.1.7

Add the following new clause after Clause 1.1.6:

1.1.7 AMERICAN PUBLIC HEALTH ASSOCIATION (APHA) STANDARD

APHA 3500-K-C, 18th Edition (1992)	Potassium, inductively coupled plasma method
APHA 3500-Na-C, 18th Edition (1992)	Sodium, inductively coupled plasma method
APHA 4500-Cl-B, 18th Edition (1992)	Chloride, Argentometric method
APHA 4500-SO42-C 18th Edition (1992)	Sulphate, gravimetric method with ignition of residue

VOLUME 2

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SECTION 16

(d) SECTION 16, Clause
16.49 to 16.51,
Heading

**Replace by TESTING: CEMENT, PFA, AGGREGATE, ADMIXTURE, CURING
COMPOUND, RECYCLED WATER**

- (e) SECTION 16,
Clause 16.51

Replace the title by the following:

Testing: cement, PFA, aggregate, admixture, curing compound, recycled water

SECTION 16

CONCRETE AND JOINTS IN CONCRETE

- (f) Clause 16.09

Replace the clause by the following:

(1) Water for concrete and for curing concrete shall be clean fresh water taken from the public supply.

(2) Wash water from concrete mixer washout operations (recycled water) may be used for mixing concrete of grade strength not exceeding 35MPa provided that:

- (a) The density of the recycled water shall not exceed 1010 kg/m³.
- (b) The limits for the time of setting (h:min), expressed as deviation from those for control mix, shall comply with Table 16.7A. Comparison with a control mix of the same mix design but using clean fresh water shall be made.
- (c) The chemical limits of the recycled water shall not exceed those specified in Table 16.7A.

- (g) Clause 16.17

Replace sub-clause (4) by the following and re-number the original sub-clause (4) as sub-clause (5):

(4) If recycled water is used for mixing concrete, results of the tests specified in Clause 16.51 and Table 16.7A shall be submitted to the Engineer.

- (h) Clauses 16.49 to
16.51, Heading

Replace by TESTING: CEMENT, PFA, AGGREGATE, ADMIXTURE, CURING COMPOUND, RECYCLED WATER

- (i) Clause 16.51,
Marginal heading

Replace by *Testing: cement, PFA, aggregate, admixture, curing compound, recycled water*

- (j) Clause 16.51

Add the following sub-clause:

(4) If recycled water is used for mixing concrete, tests shall be carried out according to the methods and frequency stated in Table 16.7A.

- (k) New Table 16.7A

Add the following new table after Table 16.7:

Table 16.7A: Recycled water testing for each batching plant location

Description	Limits	Test method	Test frequency
Density test	$\leq 1010 \text{ kg/m}^3$	Note 1	At least once per day
Physical test			
Initial setting time (time of set, deviation from control, h:min)	From 1:00 earlier to 1:30 later	BS 4550:Part 3: section 3.6:1978 (AMD 5706)	Once every 3 months for the first year and thereafter at half-yearly intervals
Chemical test			For all tests:
(a) Chloride content (as Cl): - prestressed concrete steam-cured structural concrete - concrete with reinforcement or other embedded metal	500 ppm 1,000 ppm	APHA 4500-Cl-B, 18th Edition (1992) APHA 4500-Cl-B, 18th Edition (1992)	(i) Once per week for the first 2 months (ii) Once per month for the next 12 months thereafter
(b) Sulphate content (as SO_3)	3,000 ppm	APHA 4500-SO42-C, 18th Edition (1992)	(iii) In case of a weekly or monthly test indicates that the limits are exceeded, the recycled water shall immediately be suspended for use in concrete mixing until two sets of consecutive test results taken from the same source are satisfactory. In such case, the testing frequency shall be maintained at or reverted back to once per week until two sets of consecutive test results are satisfactory.
(c) Acid-soluble alkali content	600 ppm	APHA 3500-K-C & 3500- Na-C, 18th Edition (1992)	(iv) The testing frequency shall be subject to review after the 12- month period for the monthly test

- Notes: 1. Test method to be proposed by the Contractor for the acceptance of the Engineer.
2. Laboratories accredited by HOKLAS for the relevant tests shall be used, if available, in which case results shall be issued on HOKLAS endorsed test reports.

**Standards Unit
Civil Engineering Department
March 2003**