GENERAL SPECIFICATION
FOR CIVIL ENGINEERING WORKS

1992 Edition

CORRIGENDUM No. 3/2003 (December)

EFFECT ON EXISTING CORRIGENDUM

The whole of Corrigendum No. 1/94 is hereby cancelled and superseded by this Corrigendum as follows:

VOLUME 1

CONTENTS OF VOLUME 1

SECTION 1

(a) SECTION 6

Replace the title of APPENDIX 6.3 by the following:

Not used

SECTION 1 GENERAL

(b) Appendix 1.1

Replace the item under BS 1377 by the following:

BS 1377 : 1990 (as modified in accordance with Geospec 3, entitled "Model Specification for Soil Testing", except for Clause 7.39(1) where the year of edition remains to be 1975)

SECTION 6 EARTHWORKS

(c) Clause 6.57(2)

Replace the sub-clause by the following:

(2) The size of samples of fill material other than rock fill material shall be in accordance with Geospec 3, Clauses 2.5.1, 4.2 and Table 2.1. Each sample of rock fill material of Grade size not exceeding 200 shall have a mass of at least 250 kg and each sample of rock fill material of Grade size exceeding 200 shall have a mass of at least 1000 kg.

(d) Clause 6.59(2) **Replace the sub-clause by the following:**

(2) The method of testing shall be in accordance with the following:

Particle size distribution	: Clause 6.59(3)
Liquid limit	: Test Method 6.1 of Geospec 3
Plasticity index	: Test Method 6.1 of Geospec 3
Soluble sulphate content	: Test Method 9.3 of Geospec 3
Total sulphate content	: Test Method 9.3 of Geospec 3

(e) Clause 6.59(3) **Replace the sub-clause by the following:**

(3) The particle size distribution of fill material passing a 75 mm BS test sieve shall be determined in accordance with Geospec 3, Test Method 8.1 or 8.2, whichever as instructed by the Engineer. The size of particles of fill material which do not pass a 75 mm BS test sieve shall be taken as the largest dimension measured in any plane.

(f) Clause 6.62 **Replace the clause by the following:**

(1) Each sample of fill material taken as stated in Clause 6.61 shall be tested to determine the optimum moisture content and the maximum dry density.

(2) The method of testing shall be in accordance with Geospec 3, Test Method 10.1, 10.2, 10.3, 10.4, 10.5, 10.6, 10.7 or 10.8, whichever as instructed by the Engineer.

(3) If agreed by the Engineer, the Hilf method stated in Appendix 6.4 may be used instead of the methods stipulated in Clause 6.62(2) to determine the optimum moisture content and maximum dry density.

(4) If in the opinion of the Engineer there is any undue discrepancy between the results of tests for optimum moisture content of fill material using methods stipulated in Clause 6.62(2) and the results of tests using the Hilf method, the results of tests using methods stipulated in Clause 6.62(2) shall prevail.

(g) Clause 6.65(2)(a) **Replace the sub-clause by the following:**

(a) Method 1 : Geospec 3, Test Method 5.1 or 5.2, whichever as instructed by the Engineer

(h) Clause 6.68(4)(a) **Replace the sub-clause by the following:**

(a) Method 1 : Geospec 3, Test Method 11.4

(i) Clause 6.68(5)

Replace the sub-clause by the following:

(5) The in-situ bulk density and the in-situ dry density of fill material shall be determined in accordance with one of the following methods:

(a) Method 1 : Geospec 3, Test Method 11.1 or 11.2

(b) Method 2 : Nuclear densometer method as stated in Geospec 3, Test Method 11.3

Method 1 shall be used unless otherwise permitted by the Engineer.

(j) Clause 6.68(6)

Replace the sub-clause by the following:

(6) The maximum converted bulk density of fill material of which more than 5% is retained on a BS 20 mm test sieve shall be adjusted as stated in Appendix 6.5.

(k) Appendix 6.3

Replace the appendix by the following:

Not used

(l) Appendix 6.4, Clause 6.4.2

Replace the clause by the following:

The following apparatus is required:

(a) Apparatus in accordance with Geospec 3, Test Method 10.1 or 10.2, whichever as instructed by the Engineer.

(b) Apparatus for determination of the moisture content in accordance with either Geospec 3, Test Method 5.1 or 5.2 or Appendix 6.2, whichever as instructed by the Engineer.

(c) Apparatus to extract specimens from the mould.

(d) Apparatus, such as a warm air blower, for rapid drying of the material.

(m) Appendix 6.4, Clause 6.4.3(i)

Replace the sub-clause by the following:

(i) The first point on the graph shall be obtained as follows:

- A specimen shall be compacted at its in-situ moisture content in accordance with Geospec 3, Test Method 10.1, Clause 10.1.5 or Test Method 10.2, Clause 10.2.5, whichever as instructed by the Engineer.

- A diametrical slice of approximately 400 g to 500 g shall be cut from the specimen along its entire length. The in-situ moisture content of the slice (w_i) shall be determined in accordance with either Geospec 3, Test Method 5.1 or 5.2 or Appendix 6.2, whichever as instructed by the Engineer.

- The bulk density (BD_1) shall be calculated as stated in Clause 6.4.4(1) and plotted on the 0% ordinate of the graph as the converted bulk density (CBD_1).

(n) Appendix 6.4, Clause 6.4.3(j)

Replace the sub-clause by the following:

(j) The second point on the graph shall be obtained as follows:

- A second specimen shall be examined and, if the in-situ moisture content obviously exceeds the optimum moisture content, the procedure stated in Clause 6.4.3(k) shall be followed.

- The moisture content of the specimen shall be increased by adding an amount of water equal to 2% of the mass of the specimen. The specimen shall be thoroughly mixed and compacted in accordance with the method stipulated in Clause 6.4.3(i).

- The bulk density (BD_2) shall be calculated as stated in Clause 6.4.4(1), adjusted to converted bulk density (CBD_2) as stated in Clause 6.4.4(2) and plotted on the +2% ordinate of the graph.

(o) Appendix 6.4, Clause 6.4.3(k)

Replace the sub-clause by the following:

(k) If the in-situ moisture content of the second specimen obviously exceeds the optimum moisture content, the specimen shall be dried until the amount of water removed is approximately 2% of the mass of the specimen and cooled. The specimen shall be thoroughly mixed and compacted in accordance with the method stipulated in Clause 6.4.3(i). The amount of water removed shall be determined. The bulk density (BD_2) shall be calculated as stated in Clause 6.4.4(1), adjusted to converted bulk density (CBD_2) as stated in Clause 6.4.4(2) and plotted on the negative ordinate of the graph at a point which corresponds to the amount of water removed.

(p) Appendix 6.4, Clause 6.4.3(l)

Replace the sub-clause by the following:

(l) The third point on the graph shall be obtained as follows:

- If the plotted value of CBD_2 is equal to or greater than the plotted-value of CBD_1, the moisture content of a third specimen shall be increased by adding an amount of water equal to 4% of the mass of the specimen. Alternatively, if the procedure stated in Clause 6.4.3(k) has been followed, the specimen shall be dried until the amount of water removed is approximately 4% of the mass of the specimen after cooling.

- If the plotted value of CBD_2 is less than the plotted value of CBD_1, the third specimen shall be dried until the amount of water removed is approximately 2% of the mass of the specimen after cooling. Alternatively, if the procedure stated in Clause 6.4.3(k) has been followed, the moisture content shall be increased by adding an amount of water equal to 2% of the mass of the specimen.

- The specimen shall be thoroughly mixed and compacted in accordance with the method stipulated in Clause 6.4.3(i). The amount of water removed shall be determined.

- The bulk density (BD_3) shall be calculated as stated in Clause 6.4.4(1), adjusted to converted bulk density (CBD_3) as stated in Clause 6.4.4(2) and plotted on the graph at a point which corresponds to the amount of water added or removed.

(q) Appendix 6.4, Clause 6.4.4(6)

Replace the sub-clause by the following:

(6) The relative compaction (RC), if required, shall be calculated from the equation:

RC = IBD/MCBD x 100%

where:

- IBD is the in-situ bulk density of the material determined in accordance with Geospec 3, Test Method 11.1 or 11.2 as appropriate to the grain size of the material

(r) Appendix 6.5, Title

Replace the title by the following:

ADJUSTMENT OF THE MAXIMUM CONVERTED BULK DENSITY FOR THE DETERMINATION OF THE RELATIVE COMPACTION

(s) Appendix 6.5 Clause 6.5.1

Replace the clause by the following:

This method covers the adjustment of the maximum converted bulk density determined in accordance with Appendix 6.4 for the determination of the relative compaction of a material containing more than 5% of the mass of the material at the in-situ moisture content retained on a 20 mm BS test sieve.

(t) Appendix 6.5, Clause 6.5.2(a)

Replace the sub-clause by the following:

(a) Apparatus in accordance with Appendix 6.4.

(u) Appendix 6.5, Clause 6.5.3(a)

Replace the sub-clause by the following:

(a) If the amount of material retained on the 20 mm BS test sieve exceeds 5% and does not exceed 20%, the material passing the sieve shall be compacted in accordance with Appendix 6.4. The maximum converted bulk density ($MCBD_{20}$) shall be determined and adjusted as stated in Clause 6.5.4.

(v) Appendix 6.5, Clause 6.5.3(e)

Replace the sub-clause by the following:

(e) The procedure stated in Appendix 6.4 shall be followed except that the material shall be compacted into the CBR mould and each layer shall be subjected to 62 blows of the rammer.

(w) Appendix 6.5, Clause 6.5.4

Delete Clause 6.5.4(1) and Clause 6.5.4(2) becomes Clause 6.5.4.

(x) Appendix 6.5, Clause 6.5.5(b)

Replace the sub-clause by the following:

(b) The results in accordance with Appendix 6.4.

SECTION 7 **GEOTECHNICAL WORKS**

(y) Clause 7.39(1) **Replace the sub-clause by the following:**

(1) The apparatus and procedure for standard penetration tests shall comply with BS 1377:1975, test 19. The drive hammer shall be a type incorporating an automatic trip mechanism to ensure free fall. The 60° solid core shoe shall be used in soil containing coarse gravel.

(z) Clause 7.196(2) **Replace the sub-clause by the following:**

(2) The method of testing shall be in accordance with the wet sieving method stated in Geospec 3, Test Method 8.2.

(aa) Clause 7.200(2) **Replace the sub-clause by the following:**

(2) The method of testing to determine the particle size distribution shall be in accordance with Geospec 3, Test Method 8.2. The method of testing to determine the plasticity index shall be in accordance with Geospec 3, Test Method 6.1.

VOLUME 2

SECTION 9 **CARRIAGEWAYS: SUB-BASE MATERIAL AND BITUMINOUS MATERIALS**

(ab) Clause 9.43(4) **Replace the sub-clause by the following:**

(4) The method of testing for plasticity index shall be in accordance with Geospec 3, Test Method 6.1, except that sample preparation shall be by wet sieving the material over a 425 μm BS test sieve.

(ac) Clause 9.43(5) **Replace the sub-clause by the following:**

(5) The method for testing for maximum dry density and optimum moisture content shall be in accordance with Geospec 3, Test Method 10.1, 10.2, 10.3, 10.4, 10.5, 10.6, 10.7 or 10.8, and Appendix 6.5 of this Specification, whichever as instructed by the Engineer.

(ad) Clause 9.44(4) **Replace the sub-clause by the following:**

The method of testing for relative compaction shall be as stated in Clause 6.68(4).

(ae) Table 9.10, under 'Method of testing' for 'Particle size distribution' for 'Fine aggregate' **Replace the 'Method of testing' by the following:**

Geospec 3, Test Method 8.2

VOLUME 3

SECTION 21 MARINE WORKS

(af) Clause 21.81(2)

Replace the sub-clause by the following:

(2) The method of testing shall be in accordance with the following:

Particle size distribution	: Clause 6.59(3)
Plasticity index	: Test Method 6.1 of Geospec 3
Coefficient of uniformity	: Clause 6.59(4)

SECTION 22 RAILWAY WORKS

(ag) Table 22.5, under 'Method of testing' for 'Particle size distribution'

Replace the 'Method of testing' by the following:

Geospec 3, Test Method 8.2

Standards Unit
Civil Engineering Department
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