

GEODOMISI Ltd. - Dr. Costas Sachpazis

Civil & Geotechnical Engineering Consulting Company for
Structural Engineering, Soil Mechanics, Rock Mechanics,
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Project: Concrete Specification (BS 8500-1:2006) Analysis & Design, In accordance with BS 8500-1:2006+A1:2012 incorporating Corrigendum No. 1.

Job Ref.
www.geodomisi.com

Section
Civil & Geotechnical Engineering Calculations for

Sheet no./rev. 1

Calc. by	Made by	Date	Chk'd by	Date	App'd by	Date
Dr. C. Sachpazis		22/11/2015 2-Nov-15				

CONCRETE SPECIFICATION (BS 8500-1:2006)

In accordance with BS 8500-1:2006+A1:2012 incorporating Corrigendum No. 1

Element definition

Element description;	Reinforced foundation
Intended working life;	At least 50 years
Type of concrete;	Reinforced, ;normal weight;, air-entrained
Maximum aggregate size;	20 mm
The reinforcement fabrication is subjected to a quality assurance system	
Tolerance between minimum & nominal covers;	$\Delta C_{dev} = 5 \text{ mm}$
Concrete is cast against blinding - from Note E of Table A.9:-	
Tolerance bet. min & nom covers(XD & XS classes);	$\Delta C_{dev_s} = 25 \text{ mm}$

Exposure classes

Corrosion induced by carbonation (XC classes)

Type of exposure to air and moisture;	Moderate humidity or cyclic wet and dry
From BS8500-1:2006 Table A.1	
Classification for corrosion induced by carbonation;	XC3/XC4

Corrosion induced by chlorides other than from sea water (XD classes)

Type of exposure;	Cyclic wet and dry
From BS8500-1:2006 Table A.1	
Classification for corrosion induced by chlorides;	XD3

Corrosion induced by chlorides from sea water (XS classes)

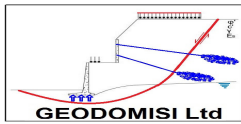
Type of exposure;	Tidal, splash and spray zones
From BS8500-1:2006 Table A.1	
Class for corrosion induced by sea water chlorides;	XS3

Freeze/thaw attack (XF classes)

Degree of saturation;	Moderate water saturation without de-icing agent
From BS8500-1:2006 Table A.1	
Class for freeze thaw attack;	XF1

Chemical attack (XA classes)

ACEC class;	AC-3s
Consequences of failure (Table A.9 note H);	Relatively serious
Section width;	t = 600 mm
Hydraulic gradient (Table A.9 note B);	Greater than 5
From BS8500-1:2006 Table A.9	
Design chemical class;	DC-4



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No of additional protective measures required;

APMs = 0

The APM may be any one of APM1 to APM5.;

Concrete requirements and specification

Consistence class; **S3**

Air-entrainment

Air-entrained concrete has been specified

Min air content for 20 mm max aggregate (T. A.8); **3.5%**

Minimum allowable nominal covers

For exposure class XC3/XC4 (Table A.4); **25 mm**

For exposure class XD3 (Table A.4); **65 mm**

For exposure class XS3 (Table A.4); **65 mm**

For DC-class DC-4 cast against blinding (T. A.9); **50 mm**

Specified nominal cover; **75 mm**

PASS - The specified nominal cover is adequate

Minimum strength class with 75 mm nominal cover

For exposure class XC3/XC4 (Table A.4); **C25/30**

For exposure class XD3 (Table A.4); **C25/30**

For exposure class XS3 (Table A.4); **C25/30**

For exposure class XF1 (Table A.8); **C25/30**

For DC-class DC-4 (Table. A.11); **C25/30**

Specified strength class; **C30/37**

PASS - The specified strength class is adequate

Maximum water/cement ratio with 75 mm cover and C30/37 concrete

For exposure class XC3/XC4 (Table A.4); **0.65**

For exposure class XD3 (Table A.4); **0.50**

For exposure class XS3 (Table A.4); **0.50**

For exposure class XF1 (Table A.8); **0.60**

For DC-class DC-4 with 20mm aggregate (T. A.11); **0.45**

Specified maximum water/cement ratio; **0.45**

PASS - The specified maximum water cement ratio is adequate

Minimum cement content with 75 mm cover and C30/37 concrete

For exposure class XC3/XC4 (Table A.4); **260 kg/m³**

For exposure class XD3 (Table A.4); **340 kg/m³**

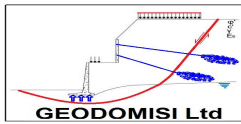
For exposure class XS3 (Table A.4); **340 kg/m³**

For exposure class XF1 (Table A.8); **280 kg/m³**

For DC-class DC-4 & w/c ratio of 0.45 (T. A.11); **360 kg/m³**

For specified max w/c ratio of 0.45 (Table A.7); **340 kg/m³**

Specified minimum cement content; **380 kg/m³**



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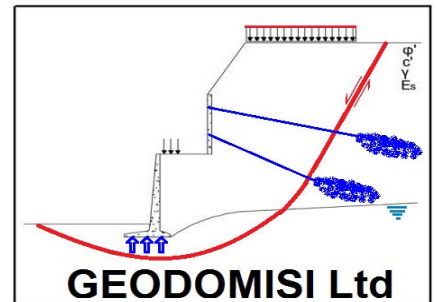
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PASS - The specified minimum cement content is adequate

Allowable cements/combinations with 75 mm cover and C30/37 concrete

- | | |
|---|--|
| For exposure class XC3/XC4 (Table A.4); | All in Table A.6 |
| For exposure class XD3 (Table A.4); | IIB-V, IIIA, IIIA+SR, IIIB, IIIB+SR, IVB-V |
| For exposure class XS3 (Table A.4); | IIB-V, IIIA, IIIA+SR, IIIB, IIIB+SR, IVB-V |
| For exposure class XF1 (Table A.8); | All in Table A.6 |
| For DC-4, w/c ratio=0.45, cem content=380 kg/m ³ ; | IIIB + SR (Table A.11) |
| Resultant allowable cement/combinations types; | IIIB+SR ; |
| Specified cement/composition designation; | CEM I |

FAIL - The specified cement/composition is inadequate



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