

**Code of practice for structural use of concrete
Part 1 : Design and construction**

AMENDMENT NO. 1

December 2011

1. Page 8, Foreword

Replace paragraphs 5 to 7 with the following text.

Most of the recommendations in CP 65 are as given in BS 8110 : Part 1 : 1997. Changes that are recommended by the British Standard have been incorporated into Part 1. One major exception is that the partial safety factor of steel reinforcement remains at 1.15. Another is that the section on "Concreting in cold and hot weather" is replaced by "Concreting in tropical climate". The lowest grades of concrete for reinforced concrete and prestressed concrete are now C30 and C35 respectively. Values in Table 3.9 have been adjusted accordingly for grade 30 in lieu of grade 25, which is specified in BS 8110 : Part 1 : 1997. This code refers to SS 2 : Part 3 : 1987, SS 18 : Part 2 : 1970 and SS 32 : Part 2 : 1986 which quote 460 grade strength for high yield steel reinforcement and 250 grade strength for mild steel reinforcement.

This Singapore Standard is an adoption of British Standard BS 8110 : Part 1: 1997 and was implemented with the permission of the British Standards Institution.

With the introduction of the new suite of SS EN for structural design (otherwise known as Eurocodes) in Singapore and to allow industry designers to phase in to the Eurocodes, the Building and Construction Authority has announced that there will be a co-existence period of 2 years for the SS EN 1992-1-1 'Design of concrete structures – Part 1-1 : General rules and rules for buildings' and SS CP 65 'Code of practice for structural use of concrete' (Part 1 : 1999 and Part 2 : 1996). The SS CP 65 for use during the transition to SS EN 1992-1-1 will be withdrawn at the end of the transition period as per Eurocodes implementation schedule in Singapore.

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2. Page 193, Publications referred to

Replace the list of standards / publications with the following:

S/N	Publications referred to in SS CP 65-1	Status or Replaced by
1.	BS 499 Welding terms and symbols Part 1 : 1991 Glossary for welding, brazing and thermal cutting (with Supplement : 1992) Part 2C : 1980 European arc welding symbols in chart form	BS 499 Welding terms and symbols Part 1 : 2009 Glossary for welding, brazing and thermal cutting Part 2C : 1999 European arc welding symbols in chart form
2.	BS 3148 : 1980 Methods of test for water for making concrete (including notes on the suitability of the water)	BS EN 1008 : 2002 Mixing water for concrete. Specification for sampling, testing and assessing the suitability of water, including water recovered from processes in the concrete industry, as mixing water for concrete
3.	BS 3921 : 1985(1995) Specification for clay bricks	BS EN 771-1 : 2003 Specification for masonry units. Clay masonry units
4.	BS 4027 : 1996 Specification for sulphate-resisting Portland cement	<i>Current</i>
5.	BS 4447 : 1973(1990) Specification for the performance of prestressing anchorages for post-tensioned construction	BS EN 13391 : 2004 Mechanical tests for post-tensioning systems
6.	BS 4466 : 1989 Specification for scheduling, dimensioning, bending and cutting of steel reinforcement for concrete	BS 8666 : 2005 Scheduling, dimensioning, bending and cutting of steel reinforcement for concrete. Specification BS EN ISO 3766 : 2003 Construction drawings. Bar scheduling.
7.	BS 4486 : 1980 Specification for hot rolled and hot rolled and processed high tensile alloy steel bars for the prestressing of concrete	<i>Current</i>
8.	BS 5135 : 1984 Specification for arc welding of carbon and carbon manganese steels	BS EN 1011 Welding Part 1 : 2009 Recommendations for welding of metallic materials. General guidance for arc welding Part 2 : 2001 Recommendations for welding of metallic materials. Arc welding of ferritic steels

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S/N	Publications referred to in SS CP 65-1	Status or Replaced by
9.	BS 5328 Concrete Part 1 : 1997 Guide to specifying concrete Part 2 : 1997 Methods for specifying concrete mixes Part 3 : 1990 Specification for the procedures to be used in producing and transporting concrete Part 4 : 1990 Specification for the procedures to be used in sampling, testing and assessing compliance of concrete	SS EN 206-1 : 2009 Concrete – Specification, performance, production and conformity' SS 544 Concrete – Complementary Singapore Standard to SS EN 206-1 Part 1 : 2009 Method of specifying and guidance for the specifier Part 2 : 2009 Specification for constituent materials and concrete
10.	BS 5531 : 1988 Code of practice for safety in erecting structural frames	BS 5531 : 1988 Code of practice for safety in erecting structural frames <i>(Withdrawn)</i>
11.	BS 5606 : 1990 Guide to accuracy in building	<i>Current</i>
12.	BS 5628 Code of practice for use of masonry Part 1 : 1992 Structural use of unreinforced masonry Part 2 : 1995 Structural use of reinforced and prestressed masonry Part 3 : 1985 Materials and components, design and workmanship	BS 5628 Code of practice for use of masonry Part 1 : 2005 Structural use of unreinforced masonry and BS EN 1052-1 : 1999 Methods of test for masonry. Determination of compressive strength Part 2 : 2005 Structural use of reinforced and prestressed masonry Part 3 : 2005 Materials and components, design and workmanship
13.	BS 5896 : 1980 Specification for high tensile steel wire strand for the prestressing of concrete	<i>Current</i>
14.	BS 5975 : 1996 Code of practice for falsework	SS CP 23 : 2000 Code of practice for formwork <i>(Draft under public comment – revised edition for publication by Q2 2012)</i>

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S/N	Publications referred to in SS CP 65-1	Status or Replaced by
15.	BS 6349 Maritime structures Part 1 : 1984 General criteria Part 2 : 1988 Design of quay walls, jetties and dolphins Part 3 : 1988 Design of dry docks, locks, slipways and shipbuilding berths, ship lifts and docks and lock gates Part 4 : 1994 Code of practice for design of fendering and mooring systems Part 5 : 1991 Code of practice for dredging and land reclamation Part 6 : 1989 Design of inshore moorings and floating structures Part 7 : 1991 Guide to the design and construction of breakwaters	BS 6349 Maritime structures Part 1 : 2000 General criteria Part 2 : 2010 Design of quay walls, jetties and dolphins Part 3 : 1988 Design of dry docks, locks, slipways and shipbuilding berths, ship lifts and docks and lock gates Part 4 : 1994 Code of practice for design of fendering and mooring systems Part 5 : 1991 Code of practice for dredging and land reclamation Part 6 : 1989 Design of inshore moorings and floating structures Part 7 : 1991 Guide to the design and construction of breakwaters
16.	BS 6399 Loading for buildings Part 1 : 1996 Code of practice for dead and imposed loads Part 2 : 1997 Code of practice for wind loads Part 3 : 1988 Code of practice for imposed roof loads	SS EN 1991-1-1 Eurocode 1: Actions on structures Part 1-1 : 2008 General actions – Densities, self-weight, imposed loads for buildings Part 1-7 : 2009 General actions – Accidental actions Part 1-4 : 2009 General actions – Wind Actions and their Singapore National Annexes
17.	BS 6954 Tolerances for building Part 1:1988 Recommendations for basic principles for evaluation and specification Part 2:1988 Recommendations for statistical basis for predicting fit between components Part 3:1988 Recommendations for selecting target size and predicting fit	<i>Current</i>
18.	BS 7542 : 1992 Method of test for curing compounds for concrete	<i>Current</i>

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S/N	Publications referred to in SS CP 65-1	Status or Replaced by
19.	BS 8110 Code of practice for structural use of concrete. Part 3 : 1985 Design charts for singly reinforced beams, doubly reinforced beams and rectangular columns	BS 8110 Code of practice for structural use of concrete. Part 3 : 1985 Design charts for singly reinforced beams, doubly reinforced beams and rectangular columns (<i>Withdrawn</i>)
20.	BS 8204 Code of practice for screeds, bases and in situ floorings Part 1 : 1987 Code of practice for concrete bases and screeds to receive in-situ floorings Part 2 : 1987 Code of practice for concrete wearing surfaces Part 3 : 1993 Code of practice for polymer modified cementitious wearing surfaces Part 4 : 1993 Code of practice for terrazzo wearing surfaces Part 5 : 1994 Code of practice for mastic asphalt underlays and wearing surfaces	BS 8204 Code of practice for screeds, bases and in situ floorings Part 1:2003+A1:2009 Concrete bases and cementitious levelling screeds to receive floorings Part 2:2003+A2:2011 Concrete wearing surfaces Part 3:2004+A2:2011 Polymer modified cementitious levelling screeds and wearing screeds Part 4:2004+A1:2011 Cementitious terrazzo wearing surfaces. Part 5:2004+A1:2011 Mastic asphalt underlays and wearing surfaces
21.	SS 2 Specification for steel for the reinforcement of concrete Part 3 : 1987 Plain and ribbed bars (Steel grades 250 and 460)	<i>*Current</i>
22.	SS 18 Specification for cold-reduced steel wire for the reinforcement of concrete and the manufacture of welded fabric Part 2 : 1970 (Steel grade 485)	<i>*Current</i>
23.	SS 26 : 1997 Specification for ordinary Portland cement	SS EN 197 Specification for cement Part 1 : 2008 Composition, specifications and conformity criteria for common cements Part 2 : 2008 Conformity evaluation Part 4 : 2008 Composition, specifications and conformity criteria for low early strength blastfurnace cements

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S/N	Publications referred to in SS CP 65-1	Status or Replaced by
24.	SS 31 : 1998 Aggregates	SS EN 12620 : 2008 + Amendment 1 : 2009 Specification for aggregates for concrete
25.	SS 32 Specification for welded steel fabric for the reinforcement of concrete Part 2 : 1986 (Steel grade 485)	<i>*Current</i>
26.	SS 74 : 1994 Specification for test sieves	<p>BS EN 933-2 Tests for geometrical properties of aggregates. Determination of particle size distribution. Test sieves, nominal size of apertures</p> <p>ISO 3310-1 Test sieves – Technical requirements and testing Part 1 : Test sieves of metal wire cloth Part 2 : Test sieves of perforated metal plate</p> <p>ISO 565 Test sieves – Woven metal wire cloth, perforated plate and electroformed sheet – Nominal sizes of openings</p>
27.	<p>SS 78 Methods of testing concrete</p> <p>Part A8 : 1987 Method for making test cubes from fresh concrete</p> <p>Part A11 : 1987 Method of normal curing of test specimens (27°C method)</p> <p>Part A16 : 1987 Method for determination of compressive strength of concrete cubes</p> <p>Part B5 : 1992 Recommendations for radiography of concrete</p>	BS EN 12390 Testing hardened concrete series
28.	SS CP 4 : 1976 Code of practice for foundations	SS CP 4 : 2003 Code of practice for foundations

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S/N	Publications referred to in SS CP 65-1	Status or Replaced by
29.	SS CP 33 : 1996 Code of practice for lightning protection	SS 555 Code of practice for protection against lightning Part 1 : 2010 General principles Part 2 : 2010 Risk management Part 3 : 2010 Physical damage to structures and life hazard Part 4 : 2010 Electrical and electronic systems within structures
30.	SS CP 65 Code of practice for structural use of concrete Part 2 : 1996(1999) Special circumstances	SS CP 65 Code of practice for structural use of concrete. Part 2 : 1996 (1999) Special circumstances (including Amendment No. 1, December 2011)

*SS 2 : Part 3:1987, SS 18 Part 2 : 1970 and SS 32 : Part 2 : 1986 will be withdrawn after the co-existence period of SS CP 65 and SS EN 1992-1-1 as per Eurocodes implementation schedule in Singapore.