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Building Engineering Group (#05-00)

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Dear Sir/Madam

IMPLEMENTATION OF STRUCTURAL EUROCODES IN SINGAPORE

Objectives

This circular informs the industry that:

- (a) Structural Eurocodes will be accepted from 1 Apr 2013, and co-exist for two years with the current Singapore/British Standards and
- (b) Structural Eurocodes will be the only prescribed structural design standards from 1 Apr 2015.

Structural Eurocodes to be implemented on 1 Apr 2013

2 On 26 Sep 2011, we issued a circular indicating the tentative timeline on the implementation of structural Eurocodes in Singapore. This proposed timeline was subsequently deferred to allow time for the completion of all the Singapore's National Annexes to the Eurocodes. With the recent completion of the last Singapore's National Annex, we are ready to implement Eurocodes for structural design.

3 Singapore's version of the Eurocodes is denoted as "SS EN", and the corresponding National Annexes denoted as "NA to SS EN". All SS EN design standards shall be used with the corresponding NA to SS EN. The number of Parts in SS EN and NA to SS EN applicable in Singapore are shown in Annex A.

4 Structural Eurocodes will be implemented on 1 Apr 2013. There will be a two-year co-existence period when the current Singapore Standards/British Standards (SS/BS) and the SS ENs are accepted for structural plans submissions. However, mixing the use of SS EN with the current SS/BS **for the same building** will **not** be accepted, i.e., the same standard shall be used throughout the building design.

SS EN as the only prescribed structural design standards after 1 Apr 2015

5 At the end of the two-year co-existence period on 1 Apr 2015, the SS/BS will be withdrawn from the Approved Document. Thereafter, the SS ENs will be the only prescribed design standards from 1 Apr 2015. The list of SS ENs and the corresponding Singapore/British design standards to be withdrawn from the Approved Document is in Annex B. A comparative list of Singapore/British standards and the equivalent SS ENs that replace them is in Annex C.

Industry training and briefings

6 To prepare the industry for migration to the structural Eurocodes, the BCA Academy¹ and other organisations such as SPRING, professional associations², and our local universities have been organising training courses and seminars since 2006. These organisations will continue to offer more training courses and workshops. We would recommend industry practitioners to attend such training courses and seminars to familiarise themselves with the new structural Eurocodes.

7 BCA will shortly commence briefing sessions to the industry on the regulatory requirements in relation to the adoption of the Eurocodes. We advise industry practitioners, especially professional engineers, to attend our briefing sessions to better understand the regulatory requirements if they plan to start adopting SS ENs in their structural design.

8 I would appreciate it if you could bring the contents of this circular to the attention of your members. Please contact Er. Lung Hian Hao at Tel: 6325-2090 or email: lung_hian_hao@bca.gov.sg if you need further clarification.

Thank you.

Yours faithfully



K THANABAL
DIRECTOR, BUILDING ENGINEERING GROUP
for COMMISSIONER OF BUILDING CONTROL

¹ Details of the various courses and workshops organised by BCA Academy can be obtained at the following links:

- www.bcaa.edu.sg (and doing a search under "Eurocode"); or
- http://www.bca.gov.sg/academy/courses_tests.aspx?txtCourseTestCode=eurocode

² Participating professional associations are the Association of Consulting Engineers Singapore, the Institution of Engineers Singapore, the Geotechnical Society of Singapore and the Singapore Structural Steel Society.

ANNEX A: Number of Parts and National Annexes that are applicable in Singapore

Code Ref	Title	Number of parts	Number of NA to SS EN
SS EN 1990	Basis of structural design	1	1
SS EN 1991	Actions of structure	9	9
SS EN 1992	Design of concrete structures	4	4
SS EN 1993	Design of steel structures	20	14
SS EN 1994	Design of composite steel and concrete structures	3	3
SS EN 1995	Design of timber structures	*	*
SS EN 1996	Design of masonry structures	*	*
SS EN 1997	Geotechnical design	2	2
SS EN 1998	Design of structures for earthquake resistance	1**	1
SS EN 1999	Design of aluminium structures	*	*
TOTAL		40	34

* EN 1995, EN 1996 and EN 1999 are not currently in the Singapore Eurocodes adoption programme.

** Only EN 1998-1 is adopted as Singapore Eurocodes. The remaining EN 1998-2 to 6 are not currently in the Singapore Eurocodes adoption programme.

ANNEX B: Listing of SS ENs and NAs to SS EN and the corresponding Singapore/British design standards to be withdrawn from the Approved Document

SS EN Parts	Associated National Annex (NA)	Corresponding SS/BS to be withdrawn
Eurocode : Basis of structural design		
SS EN 1990 Basis of structural design	NA to SS EN 1990	-
Eurocode 1 : Actions on structures		
SS EN 1991-1-1 Actions on structures. General actions – Densities, self-weight, imposed loads for buildings	NA to SS EN 1991-1-1	BS 6399-1 BS 6399-3 BS 648
SS EN 1991-1-2 Actions on structures. General actions – Actions on structures exposed to fire	NA to SS EN 1991-1-2	-
SS EN 1991-1-4 Actions on structures. General actions - Wind actions	NA to SS EN 1991-1-4	BS 6399-2 BS 5400-2
SS EN 1991-1-5 Actions on structures. General actions – Thermal actions Note: Some sections of EN 1991-1-5 relating to bridges correspond to BS 5400-2	NA to SS EN 1991-1-5	-
SS EN 1991-1-6 Actions on structures. General actions - Actions during execution	NA to SS EN 1991-1-6	-
SS EN 1991-1-7 Actions on structures. General actions - Accidental actions	NA to SS EN 1991-1-7	Minimal guidance in BS 6399-1. Some sections on EN 1991-1-7 correspond with BS 6399-1, BS 5268-2, BS 5628-1, BS 5950-1, SS CP 65-1 and 2, and BS 5400-3.
SS EN 1991-2 Actions on structures. Traffic loads on bridges	NA to SS EN 1991-2	BS 5400-2
SS EN 1991-3 Actions on structures. Actions induced by cranes and machinery	NA to SS EN 1991-3	-
SS EN 1991-4 Actions on structures. Silos and tanks	NA to SS EN 1991-4	-

SS EN Parts	Associated National Annex (NA)	Corresponding SS/BS to be withdrawn
Eurocode 2 : Design of concrete structures		
SS EN 1992-1-1 Design of concrete structures. General rules and rules for buildings	NA to SS EN 1992-1-1	SS CP 65-1 SS CP 65-2 BS 8110-3
SS EN 1992-1-2 Design of concrete structures. General rules - Structural fire design	NA to SS EN 1992-1-2	SS CP 65-1 SS CP 65-2
SS EN 1992-2 Design of concrete structures. Concrete bridges - Design and detailing rules	NA to SS EN 1992-2	BS 5400-4 BS 5400-7 BS 5400-8
SS EN 1992-3 Design of concrete structures. Liquid retaining and containment structures	NA to SS EN 1992-3	SS CP 73
Eurocode 3 : Design of steel structures		
SS EN 1993-1-1 Design of steel structures. General rules and rules for buildings	NA to SS EN 1993-1-1	BS 5950-1 BS 5400-3
SS EN 1993-1-2 Design of steel structures. General rules - Structural fire design	NA to SS EN 1993-1-2	BS 5950-8
SS EN 1993-1-3 Design of steel structures. General rules - Supplementary rules for cold-formed members and sheeting	NA to SS EN 1993-1-3	BS 5950-5 BS 5950-6 BS 5950-9
SS EN 1993-1-4 Design of steel structures. General rules - Supplementary rules for stainless steels	NA to SS EN 1993-1-4	-
SS EN 1993-1-5 Design of steel structures. Plated structural elements	NA to SS EN 1993-1-5	BS 5950-1 BS 5400-3
SS EN 1993-1-6 Design of steel structures. Strength and stability of shell structures	Nil***	-
SS EN 1993-1-7 Design of steel structures. Plated structures subject to out of plane loading	Nil***	-
SS EN 1993-1-8 Design of steel structures. Design of joints	NA to SS EN 1993-1-8	BS 5950-1 BS 4604-1 BS 4604-2 BS 5400-3
SS EN 1993-1-9 Design of steel structures. Fatigue	NA to SS EN 1993-1-9	BS 5950-1 BS 5400-10
SS EN 1993-1-10 Design of steel structures. Material toughness and through-thickness properties	NA to SS EN 1993-1-10	BS 5950-1 BS 5400-3

SS EN Parts	Associated National Annex (NA)	Corresponding SS/BS to be withdrawn
SS EN 1993-1-11 Design of steel structures. Design of structures with tension components	NA to SS EN 1993-1-11	-
SS EN 1993-1-12 Design of steel structures. Additional rules for the extension of EN 1993 up to steel grades S 700	NA to SS EN 1993-1-12	BS 5950-1
SS EN 1993-2 Design of steel structures. Steel bridges	NA to SS EN 1993-2	BS 5400-3
SS EN 1993-3-1 Design of steel structures. Towers, masts and chimneys -Towers and masts	NA to SS EN 1993-3-1	BS 8100-1 BS 8100-2 BS 8100-3 BS 8100-4
SS EN 1993-3-2 Design of steel structures. Towers, masts and chimneys – Chimneys	Nil***	BS 4076
SS EN 1993-4-1 Design of steel structures. Silos	Nil***	-
SS EN 1993-4-2 Design of steel structures. Tanks	Nil***	-
SS EN 1993-4-3 Design of steel structures. Pipelines	Nil***	-
SS EN 1993-5 Piling	NA to SS EN 1993-5	BS 5950-1
SS EN 1993-6 Design of steel structures. Crane supporting structures	NA to SS EN 1993-6	BS 5950-1 BS 2853
Eurocode 4 : Design of composite steel and concrete structures		
SS EN 1994-1-1 Design of composite steel and concrete structures. General rules and rules for buildings	NA to SS EN 1994-1-1	BS 5950-3.1 BS 5950-4
SS EN 1994-1-2 General rules - Structural fire design	NA to SS EN 1994-1-2	BS 5950-8
SS EN 1994-2 Design of composite steel and concrete structures. General rules and rules for bridges	NA to SS EN 1994-2	BS 5400-5

SS EN Parts	Associated National Annex (NA)	Corresponding SS/BS to be withdrawn
Eurocode 5 : Design of timber structures		
BS EN 1995-1-1 Design of timber structures. General – Common rules and rules for buildings	NA to BS EN 1995-1-1	BS 5268-2 BS 5268-3 BS 5268-6.1 BS 5268-6.2 BS 5268-7.1 BS 5268-7.2 BS 5268-7.3 BS 5268-7.4 BS 5268-7.5 BS 5268-7.6 BS 5268-7.7
BS EN 1995-1-2 Design of timber structures. General – Structural fire design	NA to BS EN 1995-1-2	BS 5268-4.1 BS 5268-4.2
BS EN 1995-2 Design of timber structures. Bridges	NA to BS EN 1995-2	-
Eurocode 7 : Geotechnical design		
SS EN 1997-1 Geotechnical design. General rules	NA to SS EN 1997-1	BS 8002 BS 8004 BS 8006 BS 8081
SS EN 1997-2 Geotechnical design. Ground investigation and testing	NA to SS EN 1997-2	-
Eurocode 8 : Design of structures for earthquake resistance		
SS EN 1998-1 Design of structures for earthquake resistance. General rules, seismic actions and rules for buildings	NA to SS EN 1998-1	-
Eurocode 9 : Design of aluminium structures		
BS EN1999-1-1 Design of aluminium structures. General structural rules	NA to BS EN 1999-1-1	BS 8118-1 BS 8118-2
BS EN1999-1-2 Design of aluminium structures. Structural fire design	NA to BS EN 1999-1-2	-
BS EN1999-1-3 Design of aluminium structures. Structures susceptible to fatigue	NA to BS EN 1999-1-3	BS 8118-1
BS EN1999-1-4 Design of aluminium structures. Cold-formed structural sheeting	NA to BS EN 1999-1-4	-
BS EN1999-1-5 Design of aluminium structures. Shell structures	NA to BS EN 1999-1-5	BS 8118-1

*** - There is no UK National Annex for this part of the Eurocode.

Annex C: Comparative list of Singapore/British standards to be withdrawn and their equivalent replacement by Singapore/European standards (informative)

Singapore/British Standards (to be withdrawn from the Approved Document)		Equivalent Singapore / European Standards
BS 648	Schedule of weights of building materials.	Withdrawn by the British Standards Institution (BSI).
BS 6399-1	Loading for buildings. Code of practice for dead and imposed loads.	SS EN 1991-1-1 SS EN 1991-1-7
BS 6399-2	Loading for buildings. Code of practice for wind loads.	SS EN 1991-1-4
BS 6399-3	Loading for buildings. Code of practice for imposed roof loads.	BS EN 1991-1-3
CP3: Chapter V-2	Code of basic data for the design of buildings. Loadings. Wind loads.	SS EN 1991-1-4
BS 2573-1	Rules for the design of cranes. Specifications for classification, stress calculations and design criteria for structures.	BS EN 13001-1 BS EN 13001-2
SS CP 65: Part 1	Code of practice for structural use of concrete. Design and construction.	SS EN 1992-1-1
SS CP 65: Part 2	Code of practice for structural use of concrete. Special circumstances.	SS EN 1992-1-1
BS 5400-1	Steel, concrete and composite bridges. General statement.	SS EN 1991-1-7 SS EN 1990
BS 5400-2	Steel, concrete and composite bridges. Specification for loads.	SS EN 1991-1-7 SS EN 1990
BS 5400-3	Steel, concrete and composite bridges. Code of practice for design of steel bridges.	SS EN 1993-1-1 SS EN 1993-1-5 SS EN 1993-1-8 SS EN 1993-1-10
BS 5400-4	Steel, concrete and composite bridges. Code of practice for design of concrete bridges.	SS EN 1992-2
BS 5400-5	Steel, concrete and composite bridges. Code of practice for the design of composite bridges.	SS EN 1994-2
BS 5400-6	Steel, concrete and composite bridges. Specification for materials and workmanship, steel.	BS EN 1090-2
BS 5400-7	Steel, concrete and composite bridges. Specification for materials and workmanship, concrete, reinforcement and prestressing tendons.	SS EN 1992-2
BS 5400-8	Steel, concrete and composite bridges. Specification for materials and workmanship, concrete, reinforcement and prestressing tendons.	SS EN 1992-2
BS 5400-9.1	Steel, concrete and composite bridges. Bridge bearings. Code of practice for design of bridge bearings.	BS EN 1337 Parts 2 to 8
BS 5400-9.2	Steel, concrete and composite bridges. Bridge bearings. Specification for material, manufacture and installation of bridge bearings.	BS EN 1337 Parts 2, 3, 5, 7 and 8
BS 5400-10	Steel, concrete and composite bridges. Code of practice for fatigue.	SS EN 1993-1-9
BS 5400-10C	Steel, concrete and composite bridges. Charts for classification of details for fatigue.	Withdrawn by BSI.

Singapore/British Standards (to be withdrawn from the Approved Document)		Equivalent Singapore / European Standards
BS 5950-1	Structural use of steelworks in building. Code of practice for design – Rolled and welded sections.	SS EN 1993-1-1 SS EN 1993-1-5 SS EN 1993-1-8 SS EN 1993-1-10 SS EN 1993-5 SS EN 1993-6 SS EN 1993-1-8
BS 5950-2	Structural use of steelworks in building. Specification for materials, fabrication and erection – Rolled and welded sections.	BS EN 1090-2
BS 5950-3.1	Structural use of steelworks in building. Code of practice for design of simple and continuous composite beams.	SS EN 1994-1-1
BS 5950-4	Structural use of steelworks in building. Code of practice for design of composite slabs with profiled steel sheeting.	SS EN 1994-1-1
BS 5950-5	Structural use of steelworks in building. Code of practice for design of cold formed thin gauge sections.	SS EN 1993-1-3
BS 5950-6	Structural use of steelworks in building. Code of practice for design of light gauge profiled steel sheeting.	SS EN 1993-1-3
BS 5950-7	Structural use of steelworks in building. Specification for materials and workmanship: cold formed sections.	Withdrawn by BSI.
BS 5950-8	Structural use of steelworks in building. Code of practice for fire resistant design.	SS EN 1993-1-2
BS 5950-9	Structural use of steelworks in building. Code of practice for stressed skin design.	SS EN 1993-1-3
SS CP 4	Code of practice for foundations.	To be reviewed by SPRING Singapore.
BS 8118-1	Structural use of aluminium. Code of practice for design.	BS EN 1999-1-1 BS EN 1999-1-3 BS EN 1999-1-4
BS 8118-2	Structural use of aluminium. Specification for materials, workmanship and protection.	BS EN 1999-1-1
SS CP 7	Code of practice for structural use of timber.	To be reviewed by SPRING Singapore.
BS 5268-2	Structural use of timber. Code of practice for permissible stress design, materials and workmanship. [note: For use of glued laminated timber structures and non-tropical timber.]	BS EN 14080
SS CP 73	Code of practice for design of concrete structures for retaining aqueous liquids.	SS EN 1992-3
BS 8002	Code of practice for earth retaining structures.	SS EN 1997-1
BS 1881-1	Methods of testing concrete. Method of mixing and sampling fresh concrete in the laboratory.	BS EN 12350-1 BS 1881-125
BS 1881-5	Testing concrete. Methods of testing hardened concrete for other than strength.	BS 1881-208 BS 1881-209 BS 1881-121 BS 1881-122 BS EN 12390-7
BS 1881-6	Methods of testing concrete. Analysis of hardened concrete	BS 1881-124
BS 1881-101	Testing concrete. Method of sampling fresh concrete on site.	BS EN 12350-1
BS 1881-102	Testing concrete. Method for determination of slump.	BS EN 12350-2
BS 1881-103	Testing concrete. Method for determination of compacting factor.	BS EN 12350-4
BS 1881-104	Testing concrete. Method for determination of Vebe time.	BS EN 12350-3
BS 1881-105	Testing concrete. Method for determination of flow.	BS EN 12350-5

Singapore/British Standards (to be withdrawn from the Approved Document)		Equivalent Singapore / European Standards
BS 1881-106	Testing concrete. Methods for determination of air content of fresh concrete.	BS EN 12350-7
BS 1881-107	Testing concrete. Method for determination of density of compacted fresh concrete.	BS EN 12350-6
BS 1881-108	Testing concrete. Method for making test cubes from fresh concrete.	BS EN 12390-1 BS EN 12390-2
BS 1881-109	Testing concrete. Method for making test beams from fresh concrete.	BS EN 12390-1 BS EN 12390-2
BS 1881-110	Testing concrete. Method for making test cylinders from fresh concrete.	BS EN 12390-1 BS EN 12390-2
BS 1881-111	Testing concrete. Method of normal curing of test specimens (20°C method).	BS EN 12390-2
BS 1881-112	Testing concrete. Methods of accelerated curing of test cubes.	Declared obsolescent by BSI.
BS 1881-113	Testing concrete. Method for making and curing no-fines test cubes.	Still current.
BS 1881-114	Testing concrete. Methods for determination of density of hardened concrete.	BS EN 12390-7
BS 1881-115	Testing concrete. Specification for compression testing machines for concrete.	BS EN 12390-4
BS 1881-116	Testing concrete. Method for determination of compressive strength of concrete cubes.	BS EN 12390-3
BS 1881-117	Testing concrete. Method for determination of tensile splitting strength.	BS EN 12390-6
BS 1881-118	Testing concrete. Method for determination of flexural strength.	BS EN 12390-5
BS 1881-119	Testing concrete. Method for determination of compressive strength using portions of beams broken in flexure (equivalent cube method).	Still current.
BS 1881-120	Testing concrete. Method for determination of the compressive strength of concrete cores.	BS EN 12504-1
BS 1881-121	Testing concrete. Method for determination of static modulus of elasticity in compression.	Still current.
BS 1881-122	Testing concrete. Method for determination of water absorption.	Still current.
BS 1881-124	Testing concrete. Methods for analysis of hardened concrete.	Still current.
BS 1881-125	Testing concrete. Methods for mixing and sampling fresh concrete in the laboratory.	Still current.
BS 1881-127	Testing concrete. Method of verifying the performance of a concrete cube compression machine using the comparative cube test.	Withdrawn by BSI.
BS 1881-128	Testing concrete. Method for analysis of fresh concrete.	Declared obsolescent by BSI.
BS 1881-129	Testing concrete. Method for determination of density of partially compacted semi-dry fresh concrete.	Still current.
BS 1881-130	Testing concrete. Method for temperature-matched curing of concrete specimens.	Declared obsolescent by BSI.
BS 1881-131	Testing concrete. Method for testing cement in a reference cement.	Declared obsolescent by BSI.
BS 1881-201	Testing concrete. Guide to the use of non-destructive methods of test for hardened concrete.	Declared obsolescent by BSI.
BS 1881-202	Testing concrete. Recommendations for surface hardness testing by rebound hammer.	BS EN 12504-2

Singapore/British Standards (to be withdrawn from the Approved Document)		Equivalent Singapore / European Standards
BS 1881-203	Testing concrete. Recommendations for measurement of velocity of ultrasonic pulses in concrete.	BS EN 12504-4
BS 1881-204	Testing concrete. Recommendations on the use of electromagnetic covermeters.	Still current.
BS 1881-205	Testing concrete. Recommendations for radiography of concrete.	Withdrawn by BSI.
BS 1881-206	Testing concrete. Recommendations for determination of strain in concrete.	Still current.
BS 1881-207	Testing concrete. Recommendations for the assessment of concrete strength by near-to-surface tests.	Still current.
BS 1881-208	Testing concrete. Recommendation for the determination of the initial surface absorption of concrete.	Still current.
BS 1881-209	Testing concrete. Recommendations for the measurement of dynamic modulus of elasticity	Still current.
BS 6089	Guide to assessment of concrete strength in existing structures.	SS EN 13791 BS 6089:2010
BS 5502-22	Buildings and structures for agriculture. Code of practice for design, construction and loading.	Still current.
BS 6349-1	Maritime structures. Code of practice for general criteria.	Still current.
BS 6349-2	Maritime works. Code of practice for the design of quay walls, jetties and dolphins.	Still current.
BS 6349-3	Maritime structures. Design of dry docks, locks, slipways and shipbuilding berths, shiplifts and dock and lock gates.	Still current.
BS 6349-4	Maritime structures. Code of practice for design of fendering and mooring systems.	Still current.
BS 6349-5	Maritime structures. Code of practice for dredging and land reclamation.	Still current.
BS 6349-6	Maritime structures. Design of inshore moorings and floating structures.	Still current.
BS 6349-7	Maritime structures. Guide to the design and construction of breakwaters.	Still current.
BS 6349-8	Maritime structures. Code of practice for the design of RO-Ro ramps, linkspans and walkways.	Still current.
BS 5930	Code of practice for site investigation.	Still current but partially replaced by: BS EN ISO 14688-1 BS EN ISO 14688-2 BS EN ISO 14689-1 BS EN ISO 22475-1 BS EN ISO 22476-2 BS EN ISO 22476-3 SS EN 1997-2 BS EN ISO 22282-1 BS EN ISO 22282-2 BS EN ISO 22282-3 BS EN ISO 22282-4 BS EN ISO 22282-5 BS EN ISO 22282-6
BS 1377-1	Methods of test for soils for civil engineering purposes. General requirements and sample preparation.	Still current.
BS 1377-2	Methods of test for soils for civil engineering purposes. Classification tests.	Still current.
BS 1377-3	Methods of test for soils for civil engineering purposes. Chemical and electro-chemical tests.	Still current.

Singapore/British Standards (to be withdrawn from the Approved Document)		Equivalent Singapore / European Standards
BS 1377-4	Methods of test for soils for civil engineering purposes. Compaction-related tests.	Still current.
BS 1377-5	Methods of test for soils for civil engineering purposes. Compressibility, permeability and durability tests.	Still current.
BS 1377-6	Methods of test for soils for civil engineering purposes. Consolidation and permeability tests in hydraulic cells and with pore pressure measurement.	Still current.
BS 1377-7	Methods of test for soils for civil engineering purposes. Shear strength tests (total stress).	Still current.
BS 1377-8	Methods of test for soils for civil engineering purposes. Shear strength tests (effective stress).	Still current.
BS 1377-9	Methods of test for soils for civil engineering purposes. In-situ tests.	Partially replaced by: BS EN ISO 22476-2 BS EN ISO 22476-3 SS EN 1997-2
SS CP18	Code of practice for earthworks.	To be reviewed by SPRING Singapore.
SS 557	Code of practice for demolition.	Still current.
SS 26	Specification for ordinary Portland cement.	SS EN 197-1
BS 4027	Specification for sulphate-resisting Portland cement.	Withdrawn by BSI as it conflicts with BS EN 197-1:2011
BS 4248	Supersulfated cement.	BS EN 15743
SS 477	Specification for Portland blastfurnace cement.	SS EN 197-4
SS 476	Specification for high slag blastfurnace cement.	SS EN 197-4
SS 31	Specification for aggregates from natural sources for concrete.	SS EN 12620
SS 2: Part 1	Specification for steel for the reinforcement of concrete. Plain bars (steel grade 300).	SS 560
SS 2: Part 2	Specification for steel for the reinforcement of concrete. Ribbed bars (steel grade 500).	SS 560
SS 2: Part 3	Specification for steel for the reinforcement of concrete. Plain and ribbed bars (steel grades 250 and 460).	SS 560
SS 18: Part1	Specification for cold-reduced steel wire for the reinforcement of concrete and the manufacture of welded fabric. Steel grade 500.	SS 561
SS 18: Part 2	Specification for cold-reduced steel wire for the reinforcement of concrete and the manufacture of welded fabric. Steel grade 485.	SS 561
SS 32: Part 1	Specification for welded steel fabric for the reinforcement of concrete. Steel grades 300 and 500.	SS 561
SS 32: Part 2	Specification for welded steel fabric for the reinforcement of concrete. Steel grade 485.	SS 561
BS 4449	Steel for the reinforcement of concrete – Weldable reinforcing steel – Bar, coil and decoiled product – Specification.	Still current.
BS 4483	Steel fabric for the reinforcement of concrete - Specification.	Still current.
SS 475: Part 1	Specification for steel for the prestressing of concrete. General requirements.	To be reviewed by SPRING Singapore.
SS 475: Part 2	Specification for steel for the prestressing of concrete. Cold-drawn wire.	To be reviewed by SPRING Singapore.
SS 289: Part 1	Specification for concrete. Guide to specifying concrete.	SS EN 206-1 SS 544-1 SS 544-2

Singapore/British Standards (to be withdrawn from the Approved Document)		Equivalent Singapore / European Standards
SS 289: Part 2	Specification for concrete. Method for specifying concrete mixes.	SS EN 206-1 SS 544-1 SS 544-2
SS 289: Part 3	Specification for concrete. Specification for the procedures to be used in producing and transporting concrete.	SS EN 206-1 SS 544-1 SS 544-2
SS 289: Part 4	Specification for concrete. Specification for the procedures to be used in sampling, testing and assessing compliance of concrete.	SS EN 206-1 SS 544-1 SS 544-2
SS 320	Specification for concrete admixtures.	SS EN 934-2 SS EN 934-6 BS EN 480-1 BS EN 480-2 BS EN 480-4 BS EN 480-5 BS EN 480-6 BS EN 480-8 BS EN 480-10 BS EN 480-11 BS EN 480-12
BS 7668	Weldable structural steels – Hot finished structural hollow sections in weather resistant steels – Specification.	Still current.
SS 470: Part 1	Specification for hot finished structural hollow sections of non-alloy and fine grain structural steels.	To be withdrawn by SPRING.
SS 470: Part 2	Specification for hot-finished structural hollow sections of non-alloy and fine grain structural steels - Tolerances, dimensions and sectional properties	To be withdrawn by SPRING.
BS EN 485-1	Aluminium and aluminium alloys. Sheet strip and plate. Technical conditions for inspection and delivery.	Still current.
BS EN 485-2	Aluminium and aluminium alloys. Sheet strip and plate. Mechanical properties.	Still current.
BS EN 485-3	Aluminium and aluminium alloys. Sheet strip and plate. Tolerances on dimensions and form for hot-rolled products.	Still current.
BS EN 485-4	Aluminium and aluminium alloys. Sheet strip and plate. Tolerances on shape and dimensions for cold-rolled products.	Still current.
BS EN 573-1	Aluminium and aluminium alloys. Chemical composition and form of wrought products. Numerical designation system.	Still current.
BS EN 573-2	Aluminium and aluminium alloys. Chemical composition and form of wrought products. Chemical symbol based designation system.	Still current.
BS EN 573-3	BS EN 573-3_2009_Aluminium and aluminium alloys. Chemical composition and form of wrought products. Chemical composition and form of products.	Still current.
BS EN 573-5	Aluminium and aluminium alloys. Chemical composition and form of wrought products. Codification of standardized wrought products.	Still current.
BS EN 755-1	Aluminium and aluminium alloys. Extruded rod/bar, tube and profiles. Technical conditions for inspection and delivery.	Still current.
BS EN 755-2	Aluminium and aluminium alloys. Extruded rod/bar, tube and profiles. Mechanical properties.	Still current.
BS EN 755-3	Aluminium and aluminium alloys. Extruded rod/bar, tube and profiles. Round bars, tolerances on dimensions and form.	Still current.
BS EN 755-4	Aluminium and aluminium alloys. Extruded rod/bar, tube and profiles. Square bars, tolerances on dimensions and form.	Still current.

Singapore/British Standards (to be withdrawn from the Approved Document)		Equivalent Singapore / European Standards
BS EN 755-5	Aluminium and aluminium alloys. Extruded rod/bar, tube and profiles. Rectangular bars, tolerances on dimensions and form.	Still current.
BS EN 755-6	Aluminium and aluminium alloys. Extruded rod/bar, tube and profiles. Hexagonal bars, tolerances on dimensions and form.	Still current.
BS EN 755-7	Aluminium and aluminium alloys. Extruded rod/bar, tube and profiles. Seamless tubes, tolerances on dimensions and form.	Still current.
BS EN 755-8	Aluminium and aluminium alloys. Extruded rod/bar, tube and profiles. Porthole tubes, tolerances on dimensions and form.	Still current.
BS EN 755-9	Aluminium and aluminium alloys. Extruded rod/bar, tube and profiles. Profiles, tolerances on dimensions and form.	Still current.
BS EN 12020-1	Aluminium and aluminium alloys. Extruded precision profiles in alloys EN AW-6060 and EN AW-6063. Technical conditions for inspection and delivery	Still current.
BS EN 12020-2	Aluminium and aluminium alloys. Extruded precision profiles in alloys EN AW-6060 and EN AW-6063. Tolerances on dimensions and form	Still current.
BS EN ISO 3506-1	Mechanical properties of corrosion-resistant stainless steel fasteners. Bolts, screws and studs.	Still current.
BS EN ISO 3506-2	Mechanical properties of corrosion-resistant stainless steel fasteners. Nuts.	Still current.
BS EN ISO 3506-3	Mechanical properties of corrosion-resistant stainless steel fasteners. Set screws and similar fasteners not under tensile stress.	Still current.
BS EN ISO 3506-4	Mechanical properties of corrosion-resistant stainless steel fasteners. Tapping screws	Still current.
SS 397: Part 1	Methods of testing cement. Determination of strength	BS EN 196-1
SS 397: Part 2	Methods of testing cement. Chemical analysis of strength	BS EN 196-2
SS 397: Part 3	Methods of testing cement. Determination of setting time and soundness.	BS EN 196-3
SS 397: Part 6	Methods of testing cement. Determination of fineness.	BS EN 196-6
SS 397: Part 7	Methods of testing cement. Methods of taking and preparing samples of cement.	BS EN 196-7
SS 397: Part 21	Methods of testing cement. Determination of the chloride, carbon dioxide and alkali content of cement.	BS EN 196-2
BS 5896	Specification for high tensile steel wire and strand for the prestressing of concrete.	Still current.
BS 4486	Specification for hot rolled and hot rolled and processed high tensile alloy steel bars for the prestressing concrete.	Still current.
BS EN 1290	Non-destructive examination of welds. Magnetic particle examination of welds.	BS EN ISO 17638
BS EN 1291	Non-destructive examination of welds. Magnetic particle testing of welds. Acceptance levels.	BS EN ISO 23278
BS EN 571-1	Non-destructive testing. Penetrant testing. General principles	Still current.
BS EN 1714	Non-destructive testing of welded joints. Ultrasonic testing of welded joints.	BS EN ISO 17640
BS 3923-2	Methods for ultrasonic examination of welds. Automatic examination of fusion welded butt joints in ferritic steels.	Declared obsolescent by BSI.
BS EN 1435	Non-destructive examination of welds. Radiographic examination of welded joints.	Still current.

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