Geotechnics & Concrete Engineering (Hong Kong) Ltd.
香港土力混凝土工程有限公司

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Branch Laboratories	:	Shops A & B, G/F & Flat A & B, 1/F, Yan Lee Building, 21-23 San Wai Street and G/F-1/F, 18-20 Pak Kung Street, Hung Hom, Kowloon, Hong Kong 香港九龍紅磡新圍街 21-23 號仁利大廈地下 A 及 B 號鋪及一字樓 A 及 B 室及北拱街 18-20 號地下及一樓 C2, G/F, Flat G, 4/F & Flat E, 7/F, Chin Fat Factory Building, 3 Tsat Po Street, San Po Kong, Kowloon, Hong Kong 香港九龍新蒲崗七寶街三號振發工廠大廈地下 C2, 四樓 G 室及七樓 E 室 No. 4-A3, Lin Tong Mei Village, Sheung Shui, New Territories, Hong Kong 香港新界上水蓮塘尾村 4-A3 號
ACCREDITED TEST CATEGORIES **認可測試類別**	:	Calibration Services 校正服務 Construction Materials 建築材料 Environmental Testing 環境測試

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Adhesive	Pull-off test of adhesive	In-house method CON-S57 (by coring method) In-house method CON-S58 (by saw cutting method)
	Pull-off test of render	In-house method CON-S59 (by coring method) In-house method CON-S60 (by saw cutting method)
	Pull-off test of tiles	In-house method CON-S52 (by coring method) In-house method CON-S53 (by saw cutting method) Hong Kong Housing Authority Materials Testing Services (2020/2022) for Maintenance & Building Materials Specification Part D Cl. 7.11 with modifications Hong Kong Housing Authority Materials Testing Services (2022/2024) for Maintenance & Building Materials Specification Part D Cl. 7.11 with modifications Hong Kong Housing Authority Specification Library (2018) FIN 5.T150.8 (3) Hong Kong Housing Authority Specification Library (2022) FIN 5.T150.9 (3)
	Pull-off test of repair mortar	Hong Kong Housing Authority Materials Testing Services (2020/2022) for Maintenance & Building Materials Specification Part D C1. 2.1.15 (Method 1) Hong Kong Housing Authority Materials Testing Services (2022/2024) for Maintenance & Building Materials Specification Part D C1. 2.1.15 (Method 1)

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Blocks and Bricks	Dimensions of precast concrete masonry units	BS 6073: Part 1: 1981 + Amd. 3944 & 4462 App. A
	Compressive strength of precast concrete masonry units	BS 6073: Part 1: 1981 + Amd. 3944 & 4462 App. B
	Compressive strength of clay bricks	BS 3921: 1985 App. D
Concrete	Sampling of fresh concrete on site	CS1: 2010 + Amd. 1/2017 Section 1
	Slump of fresh concrete	CS1: 2010 + Amd. 1/2017 Section 2 Part I
	Compacting factor of fresh concrete	CS1: 2010 Section 2 Part II
	Flow table test	BS EN 12350-5: 2000 + Amd. 11078 BS EN 12350-5: 2009 CS1: 2010 Section 2 Part IV
	Slump flow test	CS1: 2010 Section 2 Part V
	Density of compacted fresh concrete	CS1: 2010 Section 5
	Making test cubes from fresh concrete	CS1: 2010 Section 7
	Making test beams from fresh concrete	CS1: 2010 Section 8
	Making test cylinders from fresh concrete	CS1: 2010 Section 9
	Curing test specimens	CS1: 2010 Section 10
	Compressive strength of concrete cubes in the force range 50 kN - 3000 kN	CS1: 2010 Section 12
	Obtaining core samples	CS1: 2010 Section 15
	Density of hardened concrete	CS1: 2010 Section 16

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Concrete (cont'd)	Obtaining drilling powder samples	Hong Kong Housing Authority Materials Testing Services (2020/2022) for Maintenance & Building Materials Specification Part D Cl. 6.4 Hong Kong Housing Authority Materials Testing Services (2022/2024) for Maintenance & Building Materials Specification Part D Cl. 6.4 Hong Kong Housing Authority Materials Testing Services (2020/2022) for Construction Materials Specification Part D Cl. 4.5 Hong Kong Housing Authority Materials Testing Services (2022/2024) for Construction Materials Specification Part D Cl. 4.5
	Dry cutting of mini-cores	Hong Kong Housing Authority Materials Testing Services (2020/2022) for Maintenance & Building Materials Specification Part D Cl. 6.2 Hong Kong Housing Authority Materials Testing Services (2022/2024) for Maintenance & Building Materials Specification Part D Cl. 6.2 Hong Kong Housing Authority Materials Testing Services (2020/2022) for Construction Materials Specification Part D Cl. 4.4 Hong Kong Housing Authority Materials Testing Services (2022/2024) for Construction Materials Specification Part D Cl. 4.4
	Temperature measurement of fresh concrete	BS 5328: Part 4: 1990 Cl. 3.4(b) in conjunction with the following specification: BS EN 206: 2013 + A2: 2021 Cl. 5.2.9
	Temperature rise evaluation test	In-house method CON-S21 Mass Transit Railway Corporation Specification D/MTRCL/NW/CIV/M&W/002/A3, Cl. 11.40 (10)
	Heat of hydration monitoring (temperature monitoring of concrete structure)	In-house method CON-S23 Mass Transit Railway Corporation Specification D/MTRCL/NW/CIV/M&W/002/A3, Cl. 11.82 & 11.83
	Setting time monitoring	Hong Kong Housing Authority Materials Testing Services (2020/2022) for Construction Materials Specification Part D Cl. 1.3.9 Hong Kong Housing Authority Materials Testing Services (2022/2024) for Construction Materials Specification Part D Cl. 1.3.9

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Concrete (cont'd)	Removal of concrete cover to expose reinforcement	In-house method CON-S20 Hong Kong Housing Authority Materials Testing Services (2020/2022) for Maintenance & Building Materials Specification Part D Cl. 4.2.1 Hong Kong Housing Authority Materials Testing Services (2022/2024) for Maintenance & Building Materials Specification Part D Cl. 4.2.1
	Crack survey	Hong Kong Housing Authority Materials Testing Services (2020/2022) for Maintenance & Building Materials Specification Part D Cl. 4.3.14 Hong Kong Housing Authority Materials Testing Services (2022/2024) for Maintenance & Building Materials Specification Part D Cl. 4.3.14

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Concrete (diagnostic)	Carbonation test	BS EN 14630: 2006 Building Research Establishment IP6/81 Hong Kong Housing Authority Materials Testing Services (2020/2022) for Maintenance & Building Materials Specification Part D Cl. 4.3.1 (Method 1 & Method 2) Hong Kong Housing Authority Materials Testing Services (2022/2024) for Maintenance & Building Materials Specification Part D Cl. 4.3.1 (Method 1 & Method 2)
	Covermeter survey	BS 1881: Part 204: 1988 Hong Kong Housing Authority Materials Testing Services (2020/2022) for Maintenance & Building Materials Specification Part D Cl. 4.3.2 (Method 1 & Method 2) Hong Kong Housing Authority Materials Testing Services (2022/2024) for Maintenance & Building Materials Specification Part D Cl. 4.3.2 (Method 1 & Method 2)
	Half-cell potential measurement	ASTM C876-91 ASTM C876-91 (Reapproved 1999) ASTM C876-09 ASTM C876-15 Hong Kong Housing Authority Materials Testing Services (2020/2022) for Maintenance & Building Materials Specification Part D Cl. 4.3.4 Hong Kong Housing Authority Materials Testing Services (2022/2024) for Maintenance & Building Materials Specification Part D Cl. 4.3.4
	Resistivity measurement	BS 1881: Part 201: 1986 Cl. 2.3 Hong Kong Housing Authority Materials Testing Services (2020/2022) for Maintenance & Building Materials Specification Part D Cl. 4.3.6 Hong Kong Housing Authority Materials Testing Services (2022/2024) for Maintenance & Building Materials Specification Part D Cl. 4.3.6

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Concrete (diagnostic) (cont'd)	Surface hardness measurement	BS 1881: Part 202: 1986 BS EN 12504-2: 2001 BS EN 12504-2: 2012 BS EN 12504-2: 2021 Hong Kong Housing Authority Materials Testing Services (2020/2022) for Maintenance & Building Materials Specification Part D Cl. 4.1.1 Hong Kong Housing Authority Materials Testing Services (2022/2024) for Maintenance & Building Materials Specification Part D Cl. 4.1.1
	Ultrasonic pulse velocity measurement	BS 1881: Part 203: 1986 (by direct transmission) BS EN 12504-4: 2004 (by direct transmission) Hong Kong Housing Authority Materials Testing Services (2020/2022) for Maintenance & Building Materials Specification Part D Cl. 4.1.2 Hong Kong Housing Authority Materials Testing Services (2022/2024) for Maintenance & Building Materials Specification Part D Cl. 4.1.2
	Infrared thermography for detection of building surface defects	Hong Kong Concrete Institute TM1 Issue 2 (2022)
	Infrared thermography survey on membrane for roof	In-house method CND-S23
	Surface penetration radar survey for determination of concrete cover and distribution of steel reinforcement	Hong Kong Concrete Institute TM2 (2009)

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Foundation	Borehole video inspection test	Hong Kong Housing Authority Materials Testing Services (2023/2025) for Non-destructive Pile Testing Cl. D8 & D10 Hong Kong Housing Authority Materials Testing Services (2024/2026) for Non-destructive Pile Testing Cl. D8 & D10
	Compression static loading test on pile (SLT)	ASTM D1143M-07 (Reapproved 2013) Cl. 8.1.3 Architectural Services Department General Specification for Building (2012) Section 5.28 Architectural Services Department General Specification for Building (2017) Section 5.29 BS 8004: 1986 Cl. 7.5.5 Buildings Department Code of Practice for Foundations (2004) Cl. 8.4 Buildings Department Code of Practice for Foundations (2017) Cl. 8.4 General Specification for Civil Engineering Works (2006) Vol. 1 App. 8.1 General Specification for Civil Engineering Works (2020) Vol. 1 App. 8.1 Hong Kong Housing Authority Specification Library (2018) PIL1.T610.8 to PIL1.T1110.8 Hong Kong Housing Authority Specification Library (2022) PIL1.T610.9 to PIL1.T1110.9
	Compression static loading test on pile (SLT) using multiple hydraulic jacks and load cells	Buildings Department Code of Practice for Foundations (2017) Cl. 8.4 with modification
	Crosshole sonic logging test (SOLT)	ASTM D6760-02 ASTM D6760-08 ASTM D6760-14 ASTM D6760-16
	Pile dynamic test (PDA)	ASTM D4945-08 ASTM D4945-12 ASTM D4945-17
	Pile integrity test (PIT)	ASTM D5882-07 ASTM D5882-16

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Foundation (cont'd)	Plate load test (PLT)	BS 1377: Part 9: 1990 Cl. 4.1 (incremental loading) excluding Cl. 4.1.6.1 Buildings Department Code of Practice for Foundations (Oct 2004) Cl. 8.2 excluding 8.2 (e) Buildings Department Code of Practice for Foundations (Apr 2017) Cl. 8.2 (2) excluding (2)(f) to (h) Hong Kong Housing Authority Specification Library (2018) GIN.T190.8 Hong Kong Housing Authority Specification Library (2022) GIN.T190.9
	Single-hole sonic logging test (SOLT)	ASTM D6760-08 ASTM D6760-14 ASTM D6760-16
	Tension static loading test (SLT)	Architectural Services Department, Technical Instruction No. 4/2005: Particular Specification for Tension Piles Buildings Department Code of Practice for Foundations (2017) Cl. 8.10
	Ultrasonic echo sounder test (UEST)	Hong Kong Concrete Institute TM3 Issue 2 (2024)
Foundation (Geotechnical monitoring)	Inclination monitoring	In-house method PIL-P10
	Monitoring ground movement using probe-type inclinometers	ASTM D6230-13
	Verticality check using inclinometer	In-house method PIL-P11
	Vibration monitoring	In-house method PIL-P6
Rock	Unconfined compressive strength of intact rock core specimens	ASTM D7012-07 with modifications (Method C) ASTM D7012-10 with modifications (Method C) ASTM D7012-14 with modifications (Method C)

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Structural fixings	Tensile proof load test of anchors & dowel bars by incremental loading in the force range 1 kN – 1000 kN	BS 5080: Part 1: 1993 Cl. 6, 7.1.1 & 7.1.3 with modifications
	Tensile proof load test of drill-in anchors used for cantilevered structure/hanger/curtain wall remedial works by incremental loading in the force range 1 kN to 1000 kN	Buildings Department PNAP APP-169 (Oct 2023) App. A
	Tensile proof load test of drilled-in anchors used for works other than cantilevered structure/ hanger/ curtain wall remedial works by incremental loading in the force range 1 kN to 1000 kN	Buildings Department PNAP APP-169 (Oct 2023) App. B
	Tensile proof test for cementitious or polymer based grouted bolts or dowels or reinforcing bars works or/and steel T-bolts with cast-in channels in the force range 1 kN to 1000 kN	Buildings Department PNAP APP-169 (Oct 2023) App. C
	Shear proof load test of anchors & dowel bars by incremental loading in the force range 1 kN – 600 kN	BS 5080: Part 2: 1986 + Amd. 7602 Cl. 7.1, 7.2.1 & 7.2.3 with modifications
	Shear proof load test of drill-in anchors used for cantilevered structure/hanger/curtain wall remedial works by incremental loading in the force range 1 kN to 600 kN	Buildings Department PNAP APP-169 (Oct 2023) App. A
	Shear proof load test of drilled-in anchors used for works other than cantilevered structure/ hanger/ curtain wall remedial works by incremental loading in the force range 1 kN to 600 kN	Buildings Department PNAP APP-169 (Oct 2023) App. B
	Shear proof test for cementitious or polymer based grouted bolts or dowels or reinforcing bars works or/and steel T-bolts with cast-in channels in the force range 1 kN to 600 kN	Buildings Department PNAP APP-169 (Oct 2023) App. C
Tiles	Static coefficient of friction of ceramic tiles by horizontal dynamometer pull-meter method	ASTM C1028-07

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Welds (non-destructive)	Liquid penetrant test (colour contrast method)	BS 6443: 1984 BS EN 571-1: 1997 BS EN ISO 3452-1: 2013 BS EN ISO 3452-1: 2021 in conjunction with the following specification(s): BS 4870-1: 1981 Table 5 BS 4871-1: 1982 Table 3 BS 5135: 1984 Table 18 & 19 BS EN ISO 5817: 2007 Table 1 BS EN ISO 5817: 2014 Table 1 Buildings Department Code of Practice for the Structural Use of Steel (2011) Table14.3b Hong Kong International Airport General Material & Workmanship Specification (GMWS) Issue No. 5a (2019) Vol. 1 – Civil & Structural Works Section 22.6.22
	Magnetic particle test (magnetic flow method colour contrast technique using permanent magnets, A.C. yokes)	BS 6072: 1981 (1986) BS EN 1290: 1998 BS EN ISO 9934-1: 2001 BS EN ISO 9934-1: 2015 BS EN ISO 9934-1: 2016 BS EN ISO 17638: 2009 BS EN ISO 17638: 2016 in conjunction with the following specification(s): BS 4515-1: 2009 Table 9 BS 4870-1: 1981 Table 5 BS 4871-1: 1982 Table 3 BS 5135: 1984 Table 18 & 19 BS 5400-6: 1999 Cl. 5.5.2.4.1 BS EN ISO 5817: 2007 Table 1 BS EN ISO 5817: 2014 Table 1 BS EN ISO 23278: 2009 BS EN ISO 23278: 2015 Buildings Department Code of Practice for the Structural Use of Steel (2011) Table14.3b Hong Kong International Airport General Material & Workmanship Specification (GMWS) Issue No. 5a (2019) Vol. 1 – Civil & Structural Works Section 22.6.22

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Welds (non-destructive) (cont'd)	Ultrasonic test (butt welds in plates & pipes, 'T'-joint welds, nozzle welds and node welds)	BS 3923: Part 1: 1986 (Level 1, 2A, 2B & 3) BS EN 1714: 1998 (Level A, B & C) BS EN ISO 17640: 2010 (Level A, B & C) BS EN ISO 17640: 2018 (Level A, B & C) in conjunction with the following specification(s): BS 4870-1: 1981 Table 5 BS 4871-1: 1982 Table 3 BS 5135: 1984 Table 18 & 19 BS EN ISO 5817: 2007 Table 1 BS EN ISO 5817: 2014 Table 1 BS EN ISO 11666: 2010 BS EN ISO 11666: 2018 Buildings Department Code of Practice for the Structural Use of Steel (2011) Table14.3b Hong Kong International Airport General Material &Workmanship Specification (GMWS) Issue No. 5a (2019) Vol. 1 – Civil & Structural Works Section 22.6.22
	Visual examination	BS 5289: 1976 BS EN 970: 1997 BS EN ISO 17637: 2011 BS EN ISO 17637: 2016 in conjunction with the following specification(s): BS 4515-1: 2009 Table 9 BS 4870-1: 1981 Table 5 BS 4871-1: 1982 Table 3 BS 5135: 1984 Table 18 & 19 BS EN ISO 5817: 2007 Table 1 BS EN ISO 5817: 2014 Table 1 Buildings Department Code of Practice for the Structural Use of Steel (2011) Table14.3b Hong Kong International Airport General Material & Workmanship Specification (GMWS) Issue No. 5a (2019) Vol. 1 – Civil & Structural Works Section 22.6.22

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Welds (non-destructive) (cont'd)	Visual examination and bend test on stud connectors	<Visual examination as follows:> BS 5289: 1976 BS EN 970: 1997 BS EN ISO 17637: 2011 BS EN ISO 17637: 2016 < together with the following bend test method(s):> BS 5400-6: 1999 Cl. 5. 5.4(b) BS EN ISO 14555: 2014 Cl. 11.3 (excluding Torque wrench method) BS EN ISO 14555: 2017 Cl. 11.3 (excluding Torque wrench method) in conjunction with the following specification(s): Buildings Department Code of Practice for the Structural Use of Steel (2005) Cl. 14.3.7.3 Buildings Department Code of Practice for the Structural Use of Steel (2011) Cl. 14.3.7.3

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Blocks and Bricks	Bending strength of precast unreinforced concrete kerbs	BS 7263: Part 3: 2001 Annex E
	Bending strength of precast unreinforced concrete paving flags	BS 7263: Part 1: 2001 Annex E
	Bending strength and breaking load of paving flags	BS EN 1339: 2003 + Corr. 1: 2006 Annex F in conjunction with the following specification: BS EN 1339: 2003 + Corr. 1: 2006 Table 5 & 7 General Specification for Civil Engineering Works (2020) Vol. 1 Cl. 11.84 (3)
	Dimensions of precast concrete flags, kerbs, channels and edgings	BS 7263: Part 1: 1994 Annex A BS 7263: Part 3: 2001 Annex B.1 to B.3
	Dimensions of precast unreinforced concrete paving flags	BS 7263: Part 1: 2001 Annex B.1 to B.3
	Dimensions of concrete paving flags	BS EN 1339: 2003 + Corr. 1: 2006 Annex C.1 to C.3 in conjunction with the following specification: BS EN 1339: 2003 + Corr. 1: 2006 Table 1 & 2 General Specification for Civil Engineering Works (2020) Vol. 1 Cl. 11.86 (4)
	Dimensions of concrete paving blocks	BS EN 1338: 2003 + Corr. 1: 2006 Annex C.1 to C.3 in conjunction with the following specification: BS EN 1338: 2003 + Corr. 1: 2006 Table 1 & 2 General Specification for Civil Engineering Works (2020) Vol. 1 Cl. 11.86 (4)
	Dimensions of paving slabs	BS EN 1341: 2001 Annex A (excluding A.5 & A.6) in conjunction with the following specification: BS EN 1341: 2001 Cl. 4.1.2.1 & 4.1.2.2
	Transverse strength of precast concrete flags, kerbs, channels and edgings	BS 7263: Part 1: 1994 Annex B

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Concrete	Curing of test specimens	CS1: 2010 Section 10
	Compressive strength of concrete cubes in the force range 50 kN – 3000 kN	CS1: 2010 Section 12
	Flexural strength of beams in the force range 2 kN – 50 kN	CS1: 2010 Section 14
	Density of hardened concrete	CS1: 2010 Section 16

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Construction Materials 建築材料		
ITEM TESTED OR MEASURED 測試或量度項目	**SPECIFIC TEST OR PROPERTY MEASURED** 特定測試或量度的特性	**SPECIFICATION, STANDARD METHOD OR TECHNIQUE USED** 規範、標準方法或應用技術
Soil (Phase I)	Moisture content by oven-drying at 45˚C ± 5˚C	GEOSPEC 3: 2001 Test 5.1 GEOSPEC 3: 2017 Test 5.1
	Moisture content by oven-drying at 105˚C ± 5˚C	GEOSPEC 3: 2001 Test 5.2 GEOSPEC 3: 2017 Test 5.2
	Comparative test for the determination of moisture content by oven-drying	GEOSPEC 3: 2001 Test 5.3 GEOSPEC 3: 2017 Test 5.3
	Liquid limit, plastic limit and plasticity index	GEOSPEC 3: 2001 Test 6.1 GEOSPEC 3: 2017 Test 6.1
	Liquidity index	GEOSPEC 3: 2001 Test 6.2 GEOSPEC 3: 2017 Test 6.2
	Particle density by gas jar method	GEOSPEC 3: 2001 Test 7.1 GEOSPEC 3: 2017 Test 7.1
	Particle density by small pyknometer method	GEOSPEC 3: 2001 Test 7.2 GEOSPEC 3: 2017 Test 7.2
	Particle size distribution by wet sieving (with dispersant)	GEOSPEC 3: 2001 Test 8.1 GEOSPEC 3: 2017 Test 8.1
	Particle size distribution by wet sieving (without dispersant)	GEOSPEC 3: 2001 Test 8.2 GEOSPEC 3: 2017 Test 8.2
	Particle size distribution by hydrometer (with dispersant)	GEOSPEC 3: 2001 Test 8.5 GEOSPEC 3: 2017 Test 8.5
	Particle size distribution by hydrometer (without dispersant)	GEOSPEC 3: 2001 Test 8.6 GEOSPEC 3: 2017 Test 8.6
	Construction of a continuous particle size distribution curve from the results of wet sieving and sedimentation tests	GEOSPEC 3: 2001 Test 8.7 GEOSPEC 3: 2017 Test 8.7
	Dry density / moisture content relationship of soils containing particles which are not susceptible to crushing (using a 1000 cc mould and 2.5 kg rammer)	GEOSPEC 3: 2001 Test 10.1 GEOSPEC 3: 2017 Test 10.1

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Soil (Phase I) (cont'd)	Dry density / moisture content relationship of soils containing particles which are susceptible to crushing (using a 1000 cc mould and 2.5 kg rammer)	GEOSPEC 3: 2001 Test 10.2 GEOSPEC 3: 2017 Test 10.2
	Dry density / moisture content relationship of soils containing particles which are not susceptible to crushing (using CBR mould and 2.5 kg rammer)	GEOSPEC 3: 2001 Test 10.3 GEOSPEC 3: 2017 Test 10.3
	Dry density / moisture content relationship of soils containing particles which are susceptible to crushing (using CBR mould and 2.5 kg rammer)	GEOSPEC 3: 2001 Test 10.4 GEOSPEC 3: 2017 Test 10.4
	Dry density/moisture content relationship of soils containing particles which are not susceptible to crushing (using a 1000cc mould and 4.5 kg rammer)	GEOSPEC 3: 2001 Test 10.5 GEOSPEC 3: 2017 Test 10.5
	Dry density/moisture content relationship of soils containing particles which are susceptible to crushing (using a 1000cc mould and 4.5 kg rammer)	GEOSPEC 3: 2001 Test 10.6 GEOSPEC 3: 2017 Test 10.6
	Dry density/moisture content relationship of soils containing particles which are not susceptible to crushing (using a CBR mould and 4.5 kg rammer)	GEOSPEC 3: 2001 Test 10.7 GEOSPEC 3: 2017 Test 10.8
	Dry density/moisture content relationship of soils containing particles which are susceptible to crushing (using a CBR mould and 4.5 kg rammer)	GEOSPEC 3: 2001 Test 10.8 GEOSPEC 3: 2017 Test 10.8
	In-situ bulk density and in-situ dry density of soils by the sand replacement method suitable for fine- and medium-grained soils (with small pouring cylinder)	GEOSPEC 3: 2001 Test 11.1 GEOSPEC 3: 2017 Test 11.1

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Soil (Phase I) (cont'd)	In-situ bulk density and in-situ dry density of soils by the sand replacement method suitable for fine-, medium-, and coarse-grained soils (with large pouring cylinder)	GEOSPEC 3: 2001 Test 11.2 GEOSPEC 3: 2017 Test 11.2
	In-situ bulk density and in-situ dry density of soils by nuclear densometer method suitable for fine- and medium-grained soils	GEOSPEC 3: 2001 Test 11.3 GEOSPEC 3: 2017 Test 11.3
	Relative compaction of fill material	Buildings Department PNAP 55: 1994 Cl.2 App. A GEOSPEC 3: 2001 Test 11.4 GEOSPEC 3: 2017 Test 11.4
	California Bearing Ratio (CBR)	BS 1377: Part 9: 1990 Cl. 4.3 GEOSPEC 3: 2001 Test 12.1 GEOSPEC 3: 2017 Test 12.1
	Density of soil by linear measurement method	BS 1377: Part 2: 1990 Cl. 7.2
Soil (Phase II)	One-dimensional consolidation test	GEOSPEC 3: 2001 Test 14.1 GEOSPEC 3: 2017 Test 14.1
	Isotropic compression test in a triaxial cell	GEOSPEC 3: 2001 Test 14.2 GEOSPEC 3: 2017 Test 14.2
	Unconsolidated undrained triaxial compression test without pore pressure measurement	GEOSPEC 3: 2001 Test 15.1 GEOSPEC 3: 2017 Test 15.1
	Isotropically consolidated undrained triaxial compression test with pore pressure measurement	GEOSPEC 3: 2001 Test 15.2 GEOSPEC 3: 2017 Test 15.2
	Isotropically consolidated drained triaxial compression test with measurement volume change	GEOSPEC 3: 2001 Test 15.3 GEOSPEC 3: 2017 Test 15.3
	Direct shear test (small shear box apparatus)	GEOSPEC 3: 2001 Test 16.1 GEOSPEC 3: 2017 Test 16.1
	Unconfined compressive strength of cohesive soil by load frame method	BS 1377: Part 7: 1990 Cl. 7

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Soil (other)	GCO probe test	General Specification for Civil Engineering Works (2006) Vol. 1 App. 7.1 General Specification for Civil Engineering Works (2020) Vol. 1 App. 7.1 GEOGUIDE 2: 2017 Section 23 (Dynamic Probing) Hong Kong Housing Authority Specification Library (2018) GIN.T120.8 Hong Kong Housing Authority Specification Library (2022) GIN.T120.9
	Soil nail performance	Architectural Services Department General Specification for Building (2012) Cl. 26.42 Architectural Services Department General Specification for Building (2017) Cl. 26.42
	Pull-out test of soil nails	Architectural Services Department General Specification for Building (2012) Cl. 26.39 Architectural Services Department General Specification for Building (2017) Cl. 26.39 General Specification for Civil Engineering Works (2006) Cl. 7.138 General Specification for Civil Engineering Works (2020) Cl. 7.144 GEOGUIDE 7 (Mar 2008) Cl. 6.3.2 Hong Kong Housing Authority Specification Library (2018) SLO.T320.8 Hong Kong Housing Authority Specification Library (2022) SLO.T320.9 Mass Transit Railway Corporation Specification D/MTRC/NW/CIV/M&W/002/A2 Cl. 22.30

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Soil (other) (cont'd)	Redox potential	BS 1377: Part 3: 1990 Cl. 11
	Resistivity of soil by disc electrodes method	BS 1377: Part 3: 1990 Cl. 10.2
	Resistivity of soil by open container method	BS 1377: Part 3: 1990 Cl. 10.4
	Time domain reflectometry (TDR) test on soil nails	Geotechnical Engineering Office Particular Specification for soil nail TDR test (Sep 2011) Cl. 2 Geotechnical Engineering Office Guidelines on Test Procedure using Time Domain Reflectometry (TDR) to determine the length of installed soil nails (Jul 2007) Hong Kong Housing Authority Specification Library (2018) SLO.T360.8 Hong Kong Housing Authority Specification Library (2022) SLO.T360.9

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ITEM TESTED OR MEASURED 測試或量度項目	SPECIFIC TEST OR PROPERTY MEASURED[@] 特定測試或量度的特性[@]	CALIBRATION AND MEASUREMENT CAPABILITY (CMC)* 校準和測量能力*
Construction materials testing equipment		
- Bleeding cylinder	Verification in accordance with in-house method CAL-26 for the dimensional requirements as specified in: HKHA Specification (2008 edition) Section PIL 1.T320.5 Cl. 2a, HKHA Specification (2012 edition) Section PIL 1.T320.6 Cl. 2a, or HKHA Specification (2022 edition) Section PIL 1.T320.9 Cl. 2a, or General Specification for Civil Engineering Works (2006 Edition) Section 17.60 Cl. 2	
	Internal diameter: 100 mm	0.4 mm
	On-site verification in accordance with in-house method CAL-26 for the dimensional requirements as specified in: HKHA Specification (2008 edition) Section PIL 1.T320.5 Cl. 2a, HKHA Specification (2012 edition) Section PIL 1.T320.6 Cl. 2a, or HKHA Specification (2022 edition) Section PIL 1.T320.9 Cl. 2a, or General Specification for Civil Engineering Works (2006 Edition) Section 17.60 Cl. 2	
	Internal diameter: 100 mm	0.4 mm
- Cement grout flow cone	Verification in accordance with in-house method CAL-186 for the performance as specified in: ASTM C939-97 Cl. 8, ASTM C939-02 Cl. 8, or ASTM C939-10 Cl. 9	
	Time of efflux of water from cone: 8.0 s	0.078 s

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Construction materials testing equipment (cont'd)		
- Compacting bar	Verification in accordance with in-house method CAL-183 for the dimensional and mass requirements as specified in : CS1: 2010 Vol. 1 Cl. A10	
	Dimensions of ramming face: 25 mm x 25 mm	0.06 mm
	Length: 380 mm	0.9 mm
	Mass : 1.8 kg	0.4 g
	On-site verification in accordance with in-house method CAL-183 for the dimensional and mass requirements as specified in : CS1: 2010 Vol. 1 Cl. A10	
	Dimensions of ramming face: 25 mm x 25 mm	0.06 mm
	Length: 380 mm	0.9 mm
	Mass : 1.8 kg	0.4 g

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Construction materials testing equipment (cont'd)		
- Concrete test cube mould	Verification in accordance with in-house method CAL-184 for the dimensional requirements as specified in CS1: 2010 Vol. 1 Cl. A25	
	Dimensions: 100 mm or 150 mm	0.05 mm
	Thickness of base plate: minimum 10 mm	0.05 mm
	Flatness: not more than 0.03 mm or 0.06 mm	0.005 mm
	Perpendicularity: 0.5 mm	0.005 mm
	Parallelism: 1 mm	0.10 mm
	On-site verification in accordance with in-house method CAL-184 for the dimensional requirements as specified in CS1: 2010 Vol. 1 Cl. A25	
	Dimensions: 100 mm or 150 mm	0.05 mm
	Thickness of base plate: minimum 10 mm	0.05 mm
	Flatness: not more than 0.03 mm or 0.06 mm	0.005 mm
	Perpendicularity: 0.5 mm	0.005 mm
	Parallelism: 1 mm	0.10 mm
- Cone for testing the fluidity of grout	Verification in accordance with in-house method CAL-265 for the dimensional requirements (excluding volume requirement) as specified in BS EN 445: 2007 Cl. 4.3.1.2(a)	
	Open end diameter: 152 mm	0.5 mm
	Discharge tube diameter: 10 mm	0.06 mm
	Length of discharge tube: 60 mm	1.4 mm
	Length of conical section: 280 mm	3.0 mm

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Construction materials testing equipment (cont'd)		
- Covermeter	Calibration for depth of cover in accordance with in-house method CAL-196 using a device as specified in BS 1881: Part 204: 1988, Cl. 6.4 (Method C) over the following ranges:	
	20 mm to 90 mm	2 mm
	above 90 mm to 100 mm	3 mm
	above 100 mm to 160 mm	5 mm
- Curing tank	On-site verification in accordance with in-house method CAL-174 for the parameters as listed in CS1: 2010: Vol. 1 App. A28	
	Temperature distribution at a range of (27 ± 3) °C	0.33 K
	Efficiency of circulation	38 s
- Drying oven	On-site calibration in accordance with in-house method CAL-5 for the temperature variation over the following range:	
	30°C to 300°C	0.3 K
	On-site calibration in accordance with in-house method CAL-5 for the evaporation rate over the temperature range of 105°C to 110°C	
	Evaporation rate: 10 g/hr to 50 g/hr	0.1 g/hr
	On-site calibration in accordance with in accordance with in-house method CAL-3 for the temperature of centre point over the following range:	
	30°C to 300°C	0.3 K

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Construction materials testing equipment (cont'd)		
- Flow table for determining the flow of concrete	Verification in accordance with in-house method CAL-94 for the dimensional and mass requirements as specified in : CS1: 2010 Vol. 1 Cl. A15.1, BS EN 12350-5: 2000 Cl. 4.1, or BS EN 12350-5: 2009 Cl. 4.1	
	Dimensions of metal plate: 700 mm x 700 mm	1.0 mm
	Thickness of metal plate: minimum 2 mm	0.25 mm
	Diameter of central circle: 210 mm	0.50 mm
	Fall height: 40 mm	0.90 mm
	Mass: 16 kg	0.07 kg
	Verification in accordance with in-house method CAL-94 for the dimensional and mass requirements as specified in : BS 1881: Part 105: 1984 Cl. 3.1	
	Dimensions of metal plate: 700 mm x 700 mm	1.0 mm
	Thickness of metal plate: minimum 1.5 mm	0.25 mm
	Diameter of central circle: 200 mm	0.50 mm
	Extension of base frame: minimum 120 mm	0.90 mm
	Fall height: 40 mm	0.90 mm
	Mass: 16 kg	0.07 kg

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Construction materials testing equipment (cont'd)		
- Flow table for determining the flow of concrete (cont'd)	On-site verification in accordance with in-house method CAL-94 for the dimensional and mass requirements as specified in : CS1: 2010 Vol. 1 Cl. A15.1, BS EN 12350-5: 2000 Cl. 4.1, or BS EN 12350-5: 2009 Cl. 4.1	
	Dimensions of metal plate: 700 mm x 700 mm	1.0 mm
	Thickness of metal plate: minimum 2 mm	0.25 mm
	Diameter of central circle: 210 mm	0.50 mm
	Fall height: 40 mm	0.90 mm
	Mass: 16 kg	0.07 kg
	On-site verification in accordance with in-house method CAL-94 for the dimensional and mass requirements as specified in : BS 1881: Part 105: 1984 Cl. 3.1	
	Dimensions of metal plate: 700 mm x 700 mm	1.0 mm
	Thickness of metal plate: minimum 1.5 mm	0.25 mm
	Diameter of central circle: 200 mm	0.50 mm
	Extension of base frame: minimum 120 mm	0.90 mm
	Fall height: 40 mm	0.90 mm
	Mass: 16 kg	0.07 kg

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Construction materials testing equipment (cont'd)		
- Measuring jig for flow table test	Verification in accordance with in-house method CAL-244 for the following requirements as specified in CS1: 2010 Vol. 1 Cl. A15.5	
	Dimensions: 50 mm x 50 mm x 100 mm	0.20 mm
- Metal mould for determining the flow of concrete	Verification in accordance with in-house method CAL-94 for the dimensional requirements as specified in : CS1: 2010 Vol. 1 Cl. A15.2, BS 1881: Part 105: 1984 Cl. 3.2, BS EN 12350-5: 2000 Cl. 4.2, or BS EN 12350-5: 2009 Cl. 4.2	
	Internal diameter of base: 200 mm	0.25 mm
	Internal diameter of top: 130 mm	0.25 mm
	Height: 200 mm	0.25 mm
	Thickness of metal: 1.5 mm	0.25 mm
	On-site verification in accordance with in-house method CAL-94 for the dimensional requirements as specified in : CS1: 2010 Vol. 1 Cl. A15.2, BS 1881: Part 105: 1984 Cl. 3.2, BS EN 12350-5: 2000 Cl. 4.2, or BS EN 12350-5: 2009 Cl. 4.2	
	Internal diameter of base: 200 mm	0.25 mm
	Internal diameter of top: 130 mm	0.25 mm
	Height: 200 mm	0.25 mm
	Thickness of metal: 1.5 mm	0.25 mm

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Construction materials testing equipment (cont'd)		
- Rebound hammer	Calibration in accordance with in-house method CAL-220 by determining the rebound value using an anvil which complies with BS EN 12504-2: 2001 Cl. 4.2, BS EN 12504-2: 2012 Cl. 4.2, or BS EN 12504-2: 2021 Cl. 5.2	1 rebound count
	Calibration in accordance with in-house method CAL-220 by determining the friction of rider over the following range:	
	50 g to 80 g	1.5 g
- Slump cone	Verification in accordance with in-house method CAL-181 for the dimensional requirements as specified in : CS1: 2010 Vol. 1 Cl. A5	
	Internal diameter of base: 200 mm	0.25 mm
	Internal diameter of top: 100 mm	0.25 mm
	Height: 300 mm	0.2 mm
	Wall thickness: minimum 1.5 mm	0.15 mm
	On-site verification in accordance with in-house method CAL-181 for the dimensional requirements as specified in : CS1: 2010 Vol. 1 Cl. A5	
	Internal diameter of base: 200 mm	0.25 mm
	Internal diameter of top: 100 mm	0.25 mm
	Height: 300 mm	0.2 mm
	Wall thickness: minimum 1.5 mm	0.15 mm

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Calibration Services 校正服務		
ITEM TESTED OR MEASURED 測試或量度項目	**SPECIFIC TEST OR PROPERTY MEASURED@** 特定測試或量度的特性@	**CALIBRATION AND MEASUREMENT CAPABILITY (CMC)*** 校準和測量能力*
Construction materials testing equipment (cont'd)		
- Slump flow base plate	Verification in accordance with in-house method CAL-245 for the dimensional requirements as specified in CS1: 2010 Vol. 1 Cl. A16 :	
	Dimensions: minimum 800 mm x 800 mm	1.0 mm
	Thickness: minimum 2 mm	0.3 mm
	Deviation from flatness: not more than 3 mm	0.005 mm
	Diameter of inner inscribed circle: 200 mm	1.0 mm
	Diameter of outer inscribed circle: 500 mm	1.0 mm
- Tamping bar for determining the flow of concrete	Verification in accordance with in-house method CAL-94 for the dimensional requirements as specified in : CS1: 2010 Vol. 1 Cl. A15.3, BS EN 12350-5: 2000 Cl. 4.3, or BS EN 12350-5: 2009 Cl. 4.3	
	Dimensions of square section: 40 mm x 40 mm	0.10 mm
	Length of square section: 200 mm	0.10 mm
	Length of circular handle: 120 mm to 150 mm	0.10 mm
	On-site verification in accordance with in-house method CAL-94 for the dimensional requirements as specified in : CS1: 2010 Vol. 1 Cl. A15.3, BS EN 12350-5: 2000 Cl. 4.3, or BS EN 12350-5: 2009 Cl. 4.3	
	Dimensions of square section: 40 mm x 40 mm	0.10 mm
	Length of square section: 200 mm	0.10 mm
	Length of circular handle: 120 mm to 150 mm	0.10 mm

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Construction materials testing equipment (cont'd)		
- Tamping rod	Verification in accordance with in-house method CAL-182 for the dimensional requirements as specified in : CS1: 2010 Vol. 1 Cl. A6	
	Diameter: 16 mm Length: 600 mm	0.06 mm 0.9 mm
	On-site verification in accordance with in-house method CAL-182 for the dimensional requirements as specified in : CS1: 2010 Vol. 1 Cl. A6	
	Diameter: 16 mm Length: 600 mm	0.06 mm 0.9 mm
- Transparent tube for wick-induced test	Verification in accordance with in-house method CAL-264 for the dimensional requirements as specified in : BS EN 445: 2007 Cl. 4.5.2	
	Internal diameter: 60 mm to 80 mm Length: 1 m	0.5 mm 1.4 mm
	On-site verification in accordance with in-house method CAL-264 for the dimensional requirements as specified in : BS EN 445: 2007 Cl. 4.5.2	
	Internal diameter: 60 mm to 80 mm Length: 1 m	0.5 mm 1.4 mm

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Construction materials testing equipment (cont'd)		
- Weld gauge	Calibration for the following parameters in accordance with in-house method CAL-269:	
	Length scale: 0 mm to 60 mm	0.5 mm
	Scale measuring bevel angle: 0° to 60°	2°
	Scale measuring gap width: 2 mm to 5 mm	0.10 mm
	Scale measuring weld width: 0 mm to 40 mm	0.2 mm
	Scale measuring high low, weld cap and leg length: 0 mm to 25 mm	0.7 mm
	Scale measuring undercut depth: 0 mm to 25 mm	0.7 mm
	Scale measuring weld throat: 5 mm to 15mm	0.7 mm
- Wooden tamping bar for determining the flow of concrete	Verification in accordance with in-house method CAL-94 for the dimensional requirements as specified in BS 1881: Part 105: 1984 Cl. 3.3 (AMD 6087)	
	Dimensions of square section: 40 mm	0.10 mm
	Length of square section: 200 mm	0.10 mm
	Length of circular handle: 120 mm to 150 mm	0.10 mm
	On-site verification in accordance with in-house method CAL-94 for the dimensional requirements as specified in BS 1881: Part 105: 1984 Cl. 3.3 (AMD 6087)	
	Dimensions of square section: 40 mm	0.10 mm
	Length of square section: 200 mm	0.10 mm
	Length of circular handle: 120 mm to 150 mm	0.10 mm

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Electrical measurement		
- Time measurement		
- Stop watch / timer	Calibration for time in accordance with in-house method CAL-281 over the following range:	
	1 s to 3600 s	0.03 s

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Length and related quantities		
- Angle		
- Inclinometer	Calibration for angle in accordance with in-house method CAL-263 over the following range:	
	Vertical: -30° to +30°	0.3°
- Spirit level	Calibration for zero error in accordance with in-house method CAL-288 over the following range:	
	0.5 mm/m to 25 mm/m	2.7 mm/m
	Calibration for sensitivity in accordance with BS 3509: 1962 App. A.2C)(i) over the following range:	
	0.5 mm/m to 25 mm/m	2.7 mm/m

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Length and related quantities (cont'd)		
- Length		
- Calliper	Calibration for length in accordance with BS 887: 1982 (Amd 1) Cl. B.1 and B.2 over the following ranges:	
	External: 0 mm to 450 mm	20 µm
	Internal: 0 mm to 300 mm	20 µm
- Coating thickness gauge	Calibration for thickness in accordance with in-house method CAL-222 over the following ranges:	
	10 µm to 50 µm	0.5 µm
	above 50 µm to 100 µm	2 µm
	above 100 µm to 500 µm	4 µm
	above 500 µm to 1000 µm	6 µm
	above 1000 µm to 1500 µm	9 µm
	above 1500 µm to 2000 µm	10 µm
	above 2000 µm to 2300 µm	13 µm
- Dial gauge	Calibration for length in accordance with BS 907: 1965 Cl. B3 over the following range:	
	0 mm to 50 mm (0.01 mm scale division)	7 µm
	Calibration for length in accordance with AS 2103: 1978 Cl. A5 over the following ranges:	
	0 mm to 12 mm (0.002 mm scale division)	3 µm
	0 mm to 50 mm (0.01 mm scale division)	7 µm
	Calibration for length in accordance with in-house method CAL-224 over the following range:	
	0 mm to 100 mm	10 µm to 20 µm

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Length and related quantities (cont'd)		
- Length (cont'd)		
- Dip meter (water level meter)	Calibration for length in accordance with in-house method CAL-270 over the following ranges:	
	0 m to 5 m	3.0 mm
	above 5 m to 10 m	4.5 mm
	above 10 m to 30 m	7.5 mm
	above 30 m to 50 m	9.5 mm
	above 50 m to 100 m	13.5 mm
- Displacement transducer	Calibration for length in accordance with in-house method CAL-164 using a 25 mm reference micrometer type calibrator over the following range:	
	0 mm to 25 mm	2.0 µm
	Calibration for length in accordance with in-house method CAL-164 using a 50 mm reference micrometer type calibrator over the following range:	
	0 mm to 50 mm	3.0 µm

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Length and related quantities (cont'd)		
- Length (cont'd)		
- Displacement transducer (cont'd)	Calibration for length in accordance with GEOSPEC 3: 2001 Cl. A.3.4 using a 25 mm reference micrometer type calibrator over the following range:	
	0 mm to 25 mm	2.0 µm
	Calibration for length in accordance with GEOSPEC 3: 2001 Cl. A.3.4 using a 50 mm reference micrometer type calibrator over the following range:	
	0 mm to 50 mm	3.0 µm
	Calibration for length in accordance with GEOSPEC 3: 2017 Cl. A.3.4 using a 25 mm reference micrometer type calibrator over the following range:	
	0 mm to 25 mm	2.0 µm
	Calibration for length in accordance with GEOSPEC 3: 2017 Cl. A.3.4 using a 50 mm reference micrometer type calibrator over the following range:	
	0 mm to 50 mm	3.0 µm
- Engineers' steel rule	Calibration for length in accordance with in-house method CAL-166 over the following range:	
	0 mm to 1500 mm	0.7 mm

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Length and related quantities (cont'd)		
- Length (cont'd)		
- Extensometer - Grade A for gauge length from 150 mm to 700 mm	On-site calibration for displacement using calibration rig and verification of grade in accordance with BS 3846: 1970 over the following ranges:	
	0.010 mm to 2.5 mm	1 μm
	above 2.5 mm to 10 mm	2 μm
	above 10 mm to 50 mm	4 μm
- Grade B for gauge length from 10 mm to 700 mm	On-site calibration for displacement using calibration rig and verification of grade in accordance with BS 3846: 1970 over the following ranges:	
	0.010 mm to 2.5 mm	1 μm
	above 2.5 mm to 10 mm	2 μm
	above 10 mm to 50 mm	4 μm
- Class 0.5 for gauge length from 6 mm to 700 mm	On-site calibration for displacement using calibration rig and verification of class in accordance with BS EN 10002-4: 1995 over the following ranges:	
	0.010 mm to 2.5 mm	1 μm
	above 2.5 mm to 10 mm	2 μm
	above 10 mm to 50 mm	4 μm
- Class 0.5 for gauge length from 6 mm to 700 mm	On-site calibration for displacement using calibration rig and verification of class in accordance with BS EN ISO 9513: 2002 over the following ranges:	
	0.010 mm to 2.5 mm	1 μm
	above 2.5 mm to 10 mm	2 μm
	above 10 mm to 50 mm	4 μm

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Length and related quantities (cont'd)		
- Length (cont'd)		
- Feeler gauge	Calibration for length in accordance with in-house method CAL-167 over the following range:	
	0.03 mm to 1 mm	3.0 µm
- Linear variable displacement transducer (LVDT) with a resolution of 0.001 mm	Calibration for length in accordance with in-house method CAL-164 using a reference micrometer type calibrator over the following range:	
	0 mm to 25 mm	3 µm to 13 µm
	Calibration for length in accordance with GEOSPEC 3: 2017 Cl. A.3.4 using a reference micrometer type calibrator over the following range:	
	0 mm to 50 mm	3 µm to 13 µm

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Length and related quantities (cont'd)		
- Length (cont'd)		
- Linear variable displacement transducer (LVDT) with a resolution of 0.01 mm	Calibration for length in accordance with in-house method CAL-164 using a reference micrometer type calibrator over the following range:	
	0 mm to 50 mm	13 µm to 22 µm
	Calibration for length in accordance with GEOSPEC 3: 2017 Cl. A.3.4 using a reference micrometer type calibrator over the following range:	
	0 mm to 50 mm	13 µm to 22 µm
- Linear variable displacement transducer (LVDT)	Calibration for length in accordance with in-house method CAL-187 by using reference gauge blocks over the following range:	
	0 mm to 100 mm	16 µm
	Calibration for length in accordance with GEOSPEC 3: 2001 Cl. A.3.4 using a reference gauge blocks over the following range:	
	0 mm to 100 mm	16 µm

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Length and related quantities (cont'd)		
- Length (cont'd)		
- Measuring tape	Calibration for length in accordance with in-house method CAL-221 over the following ranges:	
	0 m to 5 m	2.0 mm
	above 5 m to 10 m	2.7 mm
	above 10 m to 30 m	4.7 mm
	above 30 m to 50 m	6.1 mm
	above 50 to 100 m	8.6 mm
- Plastic foil	Calibration for thickness in accordance with in-house method CAL-223 over the following ranges:	
	10 µm to 100 µm	3 µm
	above 100 µm to 250 µm	4 µm
	above 250 µm to 500 µm	6 µm
	above 500 µm to 1000 µm	11 µm
	above 1000 µm to 1500 µm	16 µm
	above 1500 µm to 2000 µm	20 µm
	above 2000 µm to 2300 µm	24 µm

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Mass and related quantities		
- Force		
- Concrete testing machine	On-site calibration for compressive force using true force method and Grade 1.0 load cells and verification for grade in accordance with BS 1610: Part 1: 1985 (AMD 6175), or BS 1610: Part 1: 1992, or over the following ranges:	
	1 kN to 2000 kN	0.6 % of reading
	above 2000 kN to 3000 kN	1.0 % of reading
	On-site calibration for compressive force using true force method and Class 1.0 load cells and verification for class in accordance with in-house method CAL-111 for the requirements as specified in : CS1: 2010 Vol.2 App. D over the following ranges:	
	1 kN to 2000 kN	0.6 % of reading
	above 2000 kN to 3000 kN	1.0 % of reading

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Mass and related quantities (cont'd)		
- Force (cont'd)		
- Concrete testing machine (cont'd)	On-site calibration for compressive force using true force method and Class 1.0 load cells and verification for class in accordance with BS EN 12390-4: 2000 Table 1 and Annex B over the following ranges:	
	1 kN to 2000 kN	0.6 % of reading
	above 2000 kN to 3000 kN	1.0 % of reading
	On-site calibration for compressive force using true force method and Class 1 load cells and verification for class in accordance with BS EN ISO 7500-1 : 1999, BS EN ISO 7500-1: 2004, or BS EN 10002-2: 1992 over the following ranges:	
	1 kN to 2000 kN	0.6 % of reading
	above 2000 kN to 3000 kN	1.0 % of reading
	On-site verification for strain ratio by performing strain gauged column and proving test (stability test) in accordance with BS 1881: Part 115: 1986 (AMD 6536), or BS EN 12390-4: 2000 Table 3 and Annex A over the following range of compressive force:	
	200 kN to 2000 kN	0.06 strain ratio
	On-site vertification for strain ratio by performing strain gauged column and proving test (stability test) in accordance with in-house method CAL-113 for the requirements as specified in CS1: 2010 App. D over the following range:	
	200 kN to 2000 kN	0.06 strain ratio

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Mass and related quantities (cont'd)		
- Force (cont'd)		
- Force measuring device in compression mode	On-site calibration for compressive force in accordance with in-house method CAL-199 over the following ranges:	
	500 kN to 1000 kN	3.4 % of reading
	above 1000 kN to 2000 kN	2.8 % of reading
	above 2000 kN to 3000 kN	2.5 % of reading
	above 3000 kN to 4000 kN	1.9 % of reading
	above 4000 kN to 5000 kN	1.4 % of reading
	above 5000 kN to 6000 kN	1.1 % of reading
	above 6000 kN to 15000 kN	1.0 % of reading
- Force measuring device in compression mode with hydraulic jack	On-site calibration for compressive force in accordance with in-house method CAL-201 over the following ranges:	
	500 kN to 1000 kN	3.4 % of reading
	above 1000 kN to 2000 kN	2.8 % of reading
	above 2000 kN to 3000 kN	2.5 % of reading
	above 3000 kN to 4000 kN	1.9 % of reading
	above 4000 kN to 5000 kN	1.4 % of reading
	above 5000 kN to 6000 kN	1.1 % of reading
	above 6000 kN to 15000 kN	1.0 % of reading

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Mass and related quantities (cont'd)		
- Force (cont'd)		
- Load cell	Calibration of compressive force in accordance with in-house method CAL-200 over the following ranges:	
	0.1 kN to 50 kN	0.12 % of reading
	above 50 kN to 500 kN	0.22 % of reading
	above 500 kN to 1500 kN	0.78 % of reading
	above 1500 kN to 15000 kN	2.33 % of reading
	Calibration of compressive force in accordance with in-house method CAL-168 over the following range:	
	0.1 kN to 50 kN	0.27 % of reading
	Calibration of compressive force in accordance with GEOSPEC 3: 2001 Cl. A.3.1 over the following range:	
	0.1 kN to 50 kN	0.27 % of reading
	Calibration of compressive force in accordance with GEOSPEC 3: 2017 Cl. A.3.1 over the following range:	
	0.1 kN to 50 kN	0.27 % of reading

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Mass and related quantities (cont'd)		
- Force (cont'd)		
- Proving ring	Calibration for compressive force in accordance with in-house method CAL-168 over the following range:	
	0.1 kN to 2 kN above 2 kN to 50 kN	0.57 % of reading 0.20 % of reading
	Calibration for compressive force in accordance with GEOSPEC 3: 2001 Cl. A.3.1 over the following range:	
	0.1 kN to 2 kN above 2 kN to 50 kN	0.57 % of reading 0.20 % of reading
	On-site calibration for compressive force in accordance with GEOSPEC 3: 2001 Cl. A.3.1 over the following range:	
	0.1 kN to 2 kN above 2 kN to 50 kN	0.57 % of reading 0.20 % of reading
	Calibration for compressive force in accordance with GEOSPEC 3: 2017 Cl. A.3.1 over the following range:	
	0.1 kN to 2 kN above 2 kN to 50 kN	0.57 % of reading 0.20 % of reading
	On-site calibration for compressive force in accordance with GEOSPEC 3: 2017 Cl. A.3.1 over the following range:	
	0.1 kN to 2 kN above 2 kN to 50 kN	0.57 % of reading 0.20 % of reading

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Mass and related quantities (cont'd)		
- Force (cont'd)		
- Pull-out and proof-load tester (Compression)	Calibration for compressive force in accordance with in-house method CAL-169 over the following range:	
	0.1 kN to 50 kN	1.5% of reading
- Pull-out and proof-load tester (Tension)	Calibration for tensile force in accordance with in-house method CAL-287 over the following ranges:	
	0.1 kN to 0.2 kN	1.5% of reading
	above 0.2 kN to 1 kN	1.0% of reading
	above 1 kN to 16 kN	0.5% of reading

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Mass and related quantities (cont'd)		
- Force (cont'd)		
- Universal testing machine in compression mode	On-site calibration for compressive force using true force method and Grade 1.0 load cells and verification for grade in accordance with BS 1610: Part 1: 1985 (AMD 6175), or BS 1610: Part 1: 1992, or over the following range:	
	0.1 kN to 3000 kN	0.5% of reading
	On-site calibration for compressive force using true force method and Class 1.0 load cells and verification for class in accordance with in-house method CAL-111 for the requirements as specified in : CS1: 2010 Vol.2 App. D over the following range:	
	0.1 kN to 3000 kN	0.5% of reading
	On-site calibration for compressive force using true force method and Class 1.0 load cells and verification for class in accordance with BS EN 12390-4: 2000 Table 1 and Annex B over the following range:	
	0.1 kN to 3000 kN	0.5% of reading
	On-site calibration for compressive force using true force method and Class 1 load cells and verification for class in accordance with BS EN ISO 7500-1 : 1999, BS EN ISO 7500-1: 2004, or BS EN 10002-2: 1992 over the following range:	
	0.1 kN to 3000 kN	0.5% of reading

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Mass and related quantities (Cont'd)		
- Force (cont'd)		
- Universal testing machine in tension mode	On-site calibration for tensile force using true force method and Grade 1.0 load cells and verification for grade in accordance with BS 1610: Part 1: 1985 (AMD 6175) over the following range:	
	0.1 kN to 2000 kN	0.6 % of reading
	On-site calibration for tensile force using true force method and Class 1 load cells and verification for class in accordance with BS EN ISO 7500-1 : 1999, BS EN ISO 7500-1: 2004, or BS EN 10002-2: 1992 over the following range:	
	0.1 kN to 2000 kN	0.6 % of reading

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Mass and related quantities (cont'd)		
- Pressure		
- Pressure gauge	Calibration for pressure in accordance with BS 1780: 1985 using oil as pressure medium over the following range:	
	100 kPa to 10000 kPa	1.5 kPa to 15 kPa
	Calibration for pressure in accordance with GEOSPEC 3: 2001 Cl. A.3.2 using water as pressure medium over the following range:	
	20 kPa to 1200 kPa	2 kPa
	On-site calibration for pressure in accordance with GEOSPEC 3: 2001 Cl. A.3.2 using water as pressure medium over the following range:	
	20 kPa to 1200 kPa	2 kPa
	Calibration for pressure in accordance with GEOSPEC 3: 2017 Cl. A.3.2 using water as pressure medium over the following range:	
	20 kPa to 1200 kPa	2 kPa
	On-site calibration for pressure in accordance with GEOSPEC 3: 2017 Cl. A.3.2 using water as pressure medium over the following range:	
	20 kPa to 1200 kPa	2 kPa

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Mass and related quantities (cont'd)		
- Pressure		
- Pressure transducer	Calibration for pressure in accordance with GEOSPEC 3: 2001 Cl. A.3.2 using water as pressure medium over the following range:	
	20 kPa to 1000 kPa	0.2 kPa to 0.3 kPa
	On-site calibration for pressure in accordance with GEOSPEC 3: 2001 Cl. A.3.2 using water as pressure medium over the following range:	
	20 kPa to 1000 kPa	0.2 kPa to 0.3 kPa
	Calibration for pressure in accordance with GEOSPEC 3: 2017 Cl. A.3.2 using water as pressure medium over the following range:	
	20 kPa to 1000 kPa	0.2 kPa to 0.3 kPa
	On-site calibration for pressure in accordance with GEOSPEC 3: 2017 Cl. A.3.2 using water as pressure medium over the following range:	
	20 kPa to 1000 kPa	0.2 kPa to 0.3 kPa

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Mass and related quantities (cont'd)		
- Mass		
- Electronic balance	Calibration for mass using following OIML Class standard weights (1) E2 weights from 1 mg to 200 g, (2) F1 weights from 1 mg to 20 kg, (3) M1 weights of 10 kg and 20 kg in accordance with in-house method CAL-100 over the following ranges:	
	1 mg to 220 g	0.3 mg
	above 220 g to 300 g	0.3 mg to 0.8 mg
	above 300 g to 1 kg	0.8 mg to 2 mg
	above 1 kg to 10 kg	2 mg to 20 mg
	above 10 kg to 20 kg	20 mg to 70 mg
	above 20 kg to 30 kg	70 mg to 90 mg
	above 30 kg to 60 kg	90 mg to 200 mg
	above 60 kg to 100 kg	200 mg to 10 g
	On-site calibration for mass using following OIML Class standard weights (1) E2 weights from 1 mg to 200 g, (2) F1 weights from 1 mg to 20 kg, (3) M1 weights of 10 kg and 20 kg in accordance with in-house method CAL-100 over the following ranges:	
	1 mg to 220 g	0.3 mg
	above 220 g to 300 g	0.3 mg to 0.8 mg
	above 300 g to 1 kg	0.8 mg to 2 mg
	above 1 kg to 10 kg	2 mg to 20 mg
	above 10 kg to 20 kg	20 mg to 70 mg
	above 20 kg to 30 kg	70 mg to 90 mg
	above 30 kg to 60 kg	90 mg to 200 mg
	above 60 kg to 100 kg	200 mg to 10 g

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Mass and related quantities (cont'd)		
- Mass (cont'd)		
- Weight	Calibration for mass in accordance with in-house method CAL-173 by using comparison method over the following ranges:	
	1 g to 200 g	0.2 mg to 2 mg
	above 200 g to 2 kg	2 mg to 20 mg
	above 2 kg to 20 kg	20 mg to 0.2 g
	above 20 kg to 30 kg	0.2 g to 0.6 g

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Mass and related quantities (cont'd)		
-Volume		
- Volume change measuring device	Calibration for volume in accordance with GEOSPEC3 : 2001 Cl. A.3.3 over the following range:	
	0 ml to 100 ml	0.2 ml
	On-site calibration for volume in accordance with GEOSPEC3 : 2001 Cl. A.3.3 over the following range:	
	0 ml to 100 ml	0.2 ml
	Calibration for volume in accordance with GEOSPEC3 : 2017 Cl. A.3.3 over the following range:	
	0 ml to 100 ml	0.2 ml
	On-site calibration for volume in accordance with GEOSPEC3 : 2017 Cl. A.3.3 over the following range:	
	0 ml to 100 ml	0.2 ml

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Mass and related quantities (cont'd)		
-Volume		
- Volumetric glassware	Calibration for volume in accordance with in-house method CAL-185 using the Tables in BS 1797: 1987 for any temperature corrections over the following range:	
	5 ml to 50 ml	0.02 ml to 0.07 ml
	above 50 ml to 250 ml	0.07 ml to 0.14 ml
	above 250 ml to 500 ml	0.14 ml to 0.2 ml
	above 500 ml to 1000 ml	0.2 ml to 0.3 ml
- Water meter	Calibration for volume in accordance with in-house method CAL-271 for the following volume of water collected:	
	100 litre to 1000 litre	1 % of measured value

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Thermometry		
- Temperature		
- Digital thermometer	Calibration for temperature in accordance with in-house method CAL-161.2 over the following ranges :	
	0°C to 80°C	0.17 K
	above 80°C to 230°C	0.22 K
- Liquid-in-glass thermometer	Calibration for temperature in accordance with in-house method CAL-161.1 over the following ranges:	
	0°C to 80°C	0.24 K
	above 80°C to 200°C	0.27 K
	above 200°C to 230°C	0.30 K
- Temperature recorder / logger with digital printout	Calibration for temperature in accordance with in-house method CAL-161.3 over the following ranges :	
	0°C to 80°C	0.22 K
	above 80°C to 230°C	0.22 K

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Construction Materials 建築材料		
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Admixtures (Chemical analysis)	Dry material content	BS 5075: Part 1: 1982 App. D1
	Ash content	BS 5075: Part 1: 1982 App. D2
	Chloride content	BS 5075: Part 1: 1982 App. E
	Relative density of liquid admixture	BS 5075: Part 1: 1982 App. D3
	Sodium oxide content (Na_2O)	In-house Method ADM-C5: 2003
	Potassium oxide content (K_2O)	In-house Method ADM-C5: 2003
	Acid-soluble alkali content	In-house Method ADM-C5: 2003
	pH value	In-house Method ADM-C6: 2003

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Aggregates	Aggregate abrasion value	BS 812: Part 113: 1990 + Amd. 6986 & 8770 BS EN 1097-8: 2009 Annex A
	Aggregate crushing value	BS 812: Part 110: 1990
	Aggregate impact value	BS 812: Part 112: 1990 + Amd. 8772 CS3: 2013 Section 15
	Bulk density, voids and bulking	BS 812: Part 2: 1995
	Clay, silt and dust content	BS 812: Part 1: 1975 + Amd. 4875 (Decantation method)
	Compaction fraction value of aggregates for granular bed	General Specification for Civil Engineering Works (2006) Vol. 1 App. 5.2 General Specification for Civil Engineering Works (2020) Vol. 1 App. 5.2 Hong Kong Housing Authority Specification Library (2018) DRA 2.T250.8 to T280.8 Hong Kong Housing Authority Specification Library (2022) DRA 2.T250.9 to T280.9
	Dry shrinkage of aggregate in concrete	BS 812: Part 120: 1989 + Amd. 8773 CS3: 2013 Section 20
	Effect of organic substances by mortar method	CS3: 2013 Section 22
	Elongation index	BS 812: Section 105.2: 1990 CS3: 2013 Section 12
	Flakiness index	BS 812: Section 105.1: 1989 CS3: 2013 Section 11
	Los Angeles value	CS3: 2013 Section 14
	Methylene blue value	CS3: 2013 Section 13
	Moisture content	BS 812: Part 109: 1990 (oven drying method) CS3: 2013 Section 18 (oven drying method)

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Aggregates (cont'd)	Particle densities and water absorption	BS 812: Part 2: 1995 + Amd. 9195 & 10379 CS3: 2013 Section 17
	Particle size distribution	BS 812: Part 103.1: 1985 + Amd. 6003 (sieve analysis) CS3: 2013 Section 10 (sieve analysis)
	Relative density and water absorption	BS 812: Part 2: 1975 + Amd. 4615 (Gas jar method, Pycnometer method and wire basket method)
	Resistance to degradation of small-size coarse aggregate by abrasion and impact in the Los Angeles Machine	ASTM C131-96 ASTM C131-03 ASTM C131-06
	Sampling	BS 812: Part 102: 1989 CS3: 2013 Section 8
	Shell content in coarse aggregates	BS 812: Part 106: 1985
	Soundness	BS 812: Part 121: 1989 excluding App. A BS 6349: Part 1: 1984 App. B CS3: 2013 Section 19
	Ten per cent fines value	BS 812: Part 111: 1990 CS3: 2013 Section 16

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Construction Materials 建築材料		
ITEM TESTED OR MEASURED 測試或量度項目	**SPECIFIC TEST OR PROPERTY MEASURED** 特定測試或量度的特性	**SPECIFICATION, STANDARD METHOD OR TECHNIQUE USED** 規範、標準方法或應用技術
Aggregates (Chemical analysis)	Water soluble chloride ion content	BS 812: Part 4: 1976 CS3: 2013 Section 21.3
	Acid soluble chloride ion content	CS3: 2013 Section 21.4
	Chloride content	BS 812: Part 117: 1988 ***< Excluding the following >*** C1. 4
	Total sulphate content (acid extraction)	BS 812: Part 118: 1988 (gravimetric method only) ***< Excluding the following >*** C1. 4
	Acid-soluble sulphate content	CS3: 2013 Section 21.5
	Total sulphur content	CS3: 2013 Section 21.6
	Acid-soluble material	BS 812: Part 119: 1985 ***< Excluding the following >*** C1. 4
	Soluble silica content and calcium oxide content	HKHA MTS (10/12) for Construction Materials Specification Part D Cl. 1.4.9
	Potential alkali-silica reactivity	ASTMC289-94
	Presence of humus	CS3 : 2013 Section 21.7

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Blocks and Bricks	Compressive strength of interlocking blocks	General Specification for Civil Engineering Works (2006) Vol. 1 App. 11.1 General Specification for Civil Engineering Works (2020) Vol. 1 App. 11.1 Hong Kong Housing Authority Specification Library (2018) EXT 3.T110.8 to T160.8 Hong Kong Housing Authority Specification Library (2022) EXT 3.T110.9 to T160.9
	Compressive strength of paving blocks	Mass Transit Railway Corporation Specification, D/MTRCL/NW/CIV/M&W/002/A3, App. 17.1
	Dimensions of clay and calcium silicate pavers	BS 6677: Part1: 1986 App. C
	Dimensions of clay pavers	BS EN 1344: 2002 + Amd. 14081 Annex B
	Dimensions of clay bricks	BS 3921: 1985 App. A
	Dimensions of precast concrete paving blocks	BS 6717: 2001 Annex B.1 to B.3
	Skid resistance value of clay and calcium silicate pavers	BS 6677: Part1: 1986 App. E
	Slip/Skid resistance value of precast concrete flags, kerbs, channels and edgings	BS 7263: Part 3: 2001 Annex G.2
	Transverse breaking load of clay and calcium silicate pavers	BS 6677: Part1: 1986 App. D
	Transverse breaking load of clay pavers	BS EN 1344: 2002 + Amd. 14081 Annex D
	Unpolished slip/skid resistance value of clay pavers	BS EN 1344: 2002 + Amd. 14081 Annex F
	Water absorption of clay bricks	BS 3921: 1985 App. E
	Water absorption of masonry units, segmental pavers and flags	AS/NZS 4456.14: 1997 AS/NZS 4456.14: 2003
	Water absorption of precast concrete flags, kerbs, channels and edgings	BS 7263: Part 1: 1994 Annex C

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Cement	Compressive strength of mortar cubes in the force range 50 kN – 2000 kN	BS EN 196-1: 1995
	Compressive strength of broken mortar prisms in the force range 2 kN – 250 kN	BS EN 196-1: 1995 BS EN 196-1: 2005
	Flexural strength of mortar prisms in the force range 2 kN – 50 kN	BS EN 196-1: 1995 BS EN 196-1: 2005
	Standard consistence	BS EN 196-3: 1995 BS EN 196-3: 2005 + A1: 2008
	Setting time	BS EN 196-3: 1995 BS EN 196-3: 2005 + A1: 2008
	Soundness	BS EN 196-3: 1995 BS EN 196-3: 2005 + A1: 2008
	Density	BS EN 196-6: 1992 Annex NC BS EN 196-6: 2010 Annex NC
	Fineness	BS EN 196-6: 1992 (by Blaine method) BS EN 196-6: 2010 (by Blaine method)
	Sampling	BS EN 196-7: 1992 BS EN 196-7: 2007

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Cement (Chemical analysis)	Calcium oxide content (CaO)	BS EN 196-2: 1995 Cl. 13.14 BS EN 196-2: 2005 Cl. 13.14
	Residue insoluble in hydrochloric acid and sodium carbonate	BS EN 196-2: 1995 Cl. 9 BS EN 196-2: 2005 Cl. 9
	Loss-on-ignition (L.O.I.)	BS EN 196-2: 1995 Cl. 7 BS EN 196-2: 2005 Cl. 7
	Chloride content	BS EN 196-21: 1992 Cl. 4 BS EN 196-2: 2005 Cl. 14
	Sulphate content (SO_3)	BS EN 196-2: 1995 Cl. 8 BS EN 196-2: 2005 Cl. 8
	Total silica content (SiO_2)	BS EN 196-2: 1995 Cl. 13.9 BS EN 196-2: 2005 Cl. 13.9
	Pure silica content (SiO_2)	BS EN 196-2: 1995 Cl. 13.5 and Cl. 13.6 BS EN 196-2: 2005 Cl. 13.5 and Cl. 13.6
	Soluble silica content (SiO_2)	BS EN 196-2: 1995 Cl. 13.7 and Cl. 13.8 BS EN 196-2: 2005 Cl. 13.7 and Cl. 13.8
	Alumina content (Al_2O_3)	BS EN 196-2: 1995 Cl. 13.11 BS EN 196-2: 2005 Cl. 13.11
	Iron oxide content (Fe_2O_3)	BS EN 196-2: 1995 Cl. 13.10 BS EN 196-2: 2005 Cl. 13.10
	Magnesia content (MgO)	BS EN 196-2: 1995 Cl. 13.15 BS EN 196-2: 2005 Cl. 13.15
	Manganese content (Mn)	BS EN 196-2: 1995 Cl. 12 BS EN 196-2: 2005 Cl. 12
	Manganese content (as MnO)	BS EN 196-2: 1995 Cl. 12 BS EN 196-2: 2005 Cl. 12
	Manganese trioxide content (as Mn_2O_3)	BS EN 196-2: 1995 Cl. 12 BS EN 196-2: 2005 Cl. 12

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Cement (Chemical analysis) (cont'd)	Alkali content	BS EN 196-21: 1992 Cl. 7 BS EN 196-2: 2005 Cl. 17
	Sodium oxide content (Na_2O)	BS EN 196-21: 1992 Cl. 7 BS EN 196-2: 2005 Cl. 17
	Potassium oxide content (K_2O)	BS EN 196-21: 1992 Cl. 7 BS EN 196-2: 2005 Cl. 17
	Heat of hydration	BS 4550: Part 3: Section 3.8: 1978 with modification

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Coating	Coating thickness test by gravimetric method	BS 729: 1971 App. A BS EN ISO 1460: 1995 BS EN 10244-2: 2001 BS EN 10244-2: 2009
	Coating thickness test by magnetic method	BS EN ISO 2178: 1995 + Amd. 8482 BS EN ISO 2178: 2016
	Pull-off test of coating	ASTM D4541-02 Test Method A BS EN ISO 4624: 2003 Cl. 9.4.2 BS EN ISO 4624: 2016 Cl. 8.4.2 BS 3900-E10: 2003 Cl. 9.4.2
Concrete	Curing of test specimens	CS1: 2010 Section 10
	Compressive strength of concrete cubes in the force range 50 kN to 3000 kN	CS1: 2010 Section 12
	Compressive strength of concrete cores in the force range 50 kN to 3000 kN	CS1: 2010 + Amd.1/2013 Section 15
	Density of hardened concrete	CS1: 2010 Section 16
	Concrete's ability to resist chloride ion penetration	CS1: 2010 Section 19
	Electrical indication of concrete's ability to resist chloride ion penetration	AASHTO T277-93 AASHTO T277-831 ASTM C1202-94 ASTM C1202-97 ASTM C1202-05 ASTM C1202-07 ASTM C1202-12 ASTM C1202-17

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Concrete (cont'd)	Assessment of the cement, aggregates and water contents of fresh concrete (Pressure filter Sandberg method)	DD 83: 1983 Section 3 with modification
	Alkali silica reaction potential by ultra-accelerated mortar bar test	CS1: 2010 Section 22 RILEM A-TC 106-2: 2000
	Bleeding test	ASTM C232-87 Method A ASTM C232-92 Method A ASTM C232-99 Method A ASTM C232-04 Method A ASTM C232-07 Method A ASTM C232-09 Method A ASTM C232-14 Method A Mass Transit Railway Corporation Specification D/MTRCL/NW/NW/CIV/M&W/002/A3 Cl. 11.40 (6)
	Depth of penetration of water under pressure	CS1: 2010 Section 18
	Flexural toughness and first-crack strength of fibre reinforced concrete (using beam with third point loading)	ASTM C1018-92 ASTM C1018-94b ASTM C1018-97
	Initial surface absorption	BS 1881: Part 208: 1996
	Stiffening time	CS1: 2010 Section 3 BS 5075-1: 1982 + Amd. 4183, 4910 & 11057 App. C.4
	Tensile splitting strength of cylinders in the force range 50 kN to 3000 kN	CS1: 2010 Section 13
	Time of setting of concrete mixtures by penetration resistance	ASTM C403–90 ASTM C403–99 ASTM C403–08 ASTM C403–16
	Water absorption	BS 1881: Part 122: 1983 + Amd. 6108

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Concrete (Chemical analysis)	Preparation of samples	CS 1: 1990 Section 21.4 CS 1: 2010 Section 21.4
	Detection of PFA	CS 1: 1990 Section 21.5 CS 1: 2010 Section 21.5
	Capillary porosity	CS 1: 1990 Section 21.7.4 CS 1: 2010 Section 21.7.4
	Carbon dioxide content	CS 1: 1990 Section 21.10.4 (manometric method) CS 1: 2010 Section 21.10.4 (manometric method)
	Cement and aggregate content	CS 1: 1990 Section 21.6 (based on CaO content) CS 1: 2010 Section 21.6 (based on CaO content) BS 1881: Part 124: 1988 Cl. 5.4 & 5.9 (based on CaO content)
	Aggregate / cement ratio	BS 1881 Part 124: 1988 Cl. 5.9 (based on CaO content)
	Chloride content	CS 1: 1990 Section 21.10.2 CS 1: 2010 Section 21.10.2 BS 1881: Part 124: 1988 Cl. 10.2
	Combined water content	CS 1: 1990 Section 21.7.5.2 CS 1: 2010 Section 21.7.5.2
	Insoluble residue	CS 1: 1990 Section 21.6.5.2 CS 1: 2010 Section 21.6.5.2
	Original water content	CS 1: 1990 Section 21.7 CS 1: 2010 Section 21.7
	Sulphate content	CS 1: 1990 Section 21.10.3 CS 1: 2010 Section 21.10.3
	Soluble silica content	CS 1: 1990 Section 21.6.5.3 CS 1: 2010 Section 21.6.5.3
	pH value	In-house Method CON-C10

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Dimension stones	Absorption and bulk specific gravity	ASTM C97-90 (Reapproved 1994) ASTM C97-02 ASTM C97-09 ASTM C97-15
	Compressive strength	ASTM C170-90 (Reapproved 1999) ASTM C170-06 ASTM C170-09 ASTM C170-17
	Flexural strength	ASTM C880-98 ASTM C880-06 ASTM C880-09 ASTM C880-15 BS EN 12372: 1999 BS EN 12372: 2006
	Modulus of rupture	ASTM C99-87 (Reapproved 2000) ASTM C99-08 ASTM C99-15
	Strength of individual stone anchorages	ASTM C1354-96 (Reapproved 2004) excluding Cl. 7.3 ASTM C1354-09 excluding Cl. 7.3 ASTM C1354-15 excluding Cl. 7.3

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Ground granulated blastfurnace slag (GGBS)	Moisture content	BS EN 15167-1: 2006 + Amd. 16763 Annex A
	Density	BS EN 196-6: 2010 Annex NC in conjunction with the following specification: BS EN 15167-1: 2006 + Amd. 16763 Cl. 5.5g
	Fineness	BS EN 196-6: 2010 (by Blaine Method) in conjunction with the following specification: BS EN 15167-1: 2006 + Amd. 16763 Cl. 5.3.1
	Initial setting time	BS EN 196-3: 2005 + A1: 2008 in conjunction with the following specification: BS EN 15167-1: 2006 + Amd. 16763 Cl. 5.3.2.2
	Activity index	BS EN 196-1: 2005 in conjunction with the following specification: BS EN 15167-1: 2006 + Amd. 16763 Cl. 5.3.2.3
	Sampling	BS EN 196-7: 2007 in conjunction with the following specification: BS EN 15167-1: 2006 + Amd. 16763 Cl. 7

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Ground Granulated Blastfurnace Slag (GGBS) (chemical analysis)	Loss-on-ignition (L.O.I.)	BS EN 15167-1: 2006 (Amd 16763) Cl. 5.2 & BS EN 196-2: 2005 Cl. 7
	Calcium oxide (CaO)	BS EN 196-2 : 2005 Cl. 13.12
	Magnesium oxide (MgO)	BS EN 15167-1 : 2006 (Amd 16763) Cl. 5.2 & BS EN 196-2 : 2005 Cl. 13.13
	Chloride content	BS EN 15167-1 : 2006 (Amd 16763) Cl. 5.2 & BS EN 196-2 : 2005 Cl. 14
	Sulphate content (as SO_3)	BS EN 15167-1: 2006 (Amd 16763) Cl. 5.2 & BS EN 196-2 : 2005 Cl. 8
	Sulphide content	BS EN 15167-1 : 2006 (Amd 16763) Cl. 5.2 & BS EN 196-2 : 2005 Cl. 11
	Sodium oxide content	BS EN 196-21 : 1992 Cl. 7
	Potassium oxide content	BS EN 196-21 : 1992 Cl. 7
	Total alkali content	BS EN 196-21 : 1992 Cl. 7

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Grout	Bleeding and free expansion	General Specification for Civil Engineering Works (2006) Vol. 2 Cl. 17.60 Hong Kong Housing Authority Specification Library (2018) PIL 1.T320.8 Hong Kong Housing Authority Specification Library (2022) PIL 1.T320.9
	Bleeding and volume change by wick-induced test	BS EN 445: 2007 Cl. 4.5
	Change in height	ASTM C1090-96 ASTM C1090-93 ASTM C1090-01 (Reapproved 2005) ASTM C1090-10 ASTM C1090-15
	Compressive strength of grout cubes in the force range 50 kN – 2000 kN	CS1: 2010 Section 12 Hong Kong Housing Authority Materials Testing Services (2020/2022) for Maintenance & Building Materials Specification Part D Cl. 2.2.6.1 Hong Kong Housing Authority Materials Testing Services (2022/2024) for Maintenance & Building Materials Specification Part D Cl. 2.2.6.1 Hong Kong Housing Authority Materials Testing Services (2020/2022) for Construction Materials Specification Part D Cl. 2.1 Hong Kong Housing Authority Materials Testing Services (2022/2024) for Construction Materials Specification Part D Cl. 2.1
	Early change in height	ASTM C827-95a (Re-approved 1997) ASTM C827-87 ASTM C827-01a (Reapproved 2005) ASTM C827-10 ASTM C827-16
	Expansion and bleeding of freshly mixed grout	ASTM C940-98a ASTM C940-98a with modifications ASTM C940-10a ASTM C940-10a with modifications ASTM C940-16 ASTM C940-16 with modifications

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Grout (cont'd)	Flow of grout for preplaced-aggregate concrete (Flow cone method)	ASTM C939-87 ASTM C939-94a ASTM C939-97 ASTM C939-02 ASTM C939-10 ASTM C939-16a
	Flow of grout (Flow cone method)	ASTM C939-94a with modifications (on ø19mm discharge tube) ASTM C939-97 with modifications (on ø19mm discharge tube) ASTM C939-02 with modifications (on ø19 mm discharge tube) ASTM C939-10 with modifications (on ø19 mm discharge tube) ASTM C939-16a with modifications (on ø19 mm discharge tube)
	Fluidity test by cone method	BS EN 445: 2007 Cl. 4.3.1
	Making of grout cubes	CS1: 2010 Section 7 with modifications
	Mixing of grout samples	In-house method GRO-P7
	Setting time	ASTM C953-87 (Re-approved 1997) ASTM C953-06 ASTM C953-10 ASTM C953-17

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Metallic materials	Bond property of steel reinforcing bars by surface geometry measurement	BS 4449: 2005 + A2: 2009 Cl. 7.4 CS 2: 2012 (Rev. 6) Cl. 6.1 & 6.7.2
	Mass per metre of steel reinforcing bars	BS EN ISO 15630-1: 2002 Cl. 12 CS 2: 2012 (Rev. 6) Cl. 6.1 & 6.2 in conjunction with the following specifications: BS 4449: 2005 + A2: 2009 Cl. 7.2.2, 7.3 & 9
	Mass per metre square, pitch and dimension of steel fabric for reinforcement of concrete	BS 4483: 1985 Cl. 5 & 9 BS 4483: 1998 Cl. 6 & 10 BS EN ISO 15630-1: 2002 Cl. 12 in conjunction with the following specifications: BS 4483: 2005 Cl. 7.3, 8.1.3.2 & BS 4449: 2005 + A2: 2009 Cl. 7.3
	Rebend test of reinforcing bars, wire rods, welded fabrics or cold reduced wires for reinforcement of concrete	BS EN ISO 15630-1: 2002 Cl. 7 BS EN ISO 15630-1: 2010 Cl. 7 CS 2: 2012 (Rev. 6) Cl. 6.1 & 6.5 in conjunction with the following specifications: BS 4449: 2005 + A2: 2009 Cl. 7.2.5 with modifications BS 4482: 1985 Cl. 1.2 & App. C.5 BS 4482: 2005 + Amd. 1: 2007 Cl. 7.2.4 & 9 BS 4483: 1985 Cl. 12.1 BS 4483: 1998 Cl. 13.1 BS 4483: 2005 + Amd. 1: 2007 Cl. 7.2.5, 8.1.3.2 & 9

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ITEM TESTED OR MEASURED 測試或量度項目	**SPECIFIC TEST OR PROPERTY MEASURED** 特定測試或量度的特性	**SPECIFICATION, STANDARD METHOD OR TECHNIQUE USED** 規範、標準方法或應用技術
Metallic materials (cont'd)	Tensile test of metallic materials in the force range 2.5 kN – 2400 kN	BS 18: 1987 in conjunction with the following specification(s): BS 4360: 1986 Cl. 23 BS 4486: 1980 + Amd.1: 1988 Cl. 9.1.6 BS EN 10002-1: 1990 BS EN 10002-1: 2001 BS EN ISO 6892-1: 2009 Cl. 10.4 Method B BS EN ISO 6892-1: 2016 Cl. 10.3.3 Method B in conjunction with the following specification(s): BS 4360: 1990 Cl. 23 BS EN 10025: 1993 Cl. 7.4.1 & 8.6.3.2 BS EN 10025-1: 2004 Cl. 7.3.1, 9.2.3.2 & 10.2.1 BS EN 10210-1: 1994 Cl. 6.6.1, 9.2 & 9.2.1 BS EN 10210-1: 2006 Cl. 6.6.1, 9.2.1 & 9.2.2 BS EN 10219-1: 1997 Cl. 6.7.1, 9.2 & 9.2.1 BS EN 10219-1: 2006 Cl. Cl. 6.7.1, 9.2 & 9.2.1
	Tensile test of reinforcing bars, wire rods, welded fabrics or cold reduced wire, for reinforcement of concrete in the force range 2.5 kN - 2400 kN	BS 18 : 1987 in conjunction with the following specification: BS 4483: 1985 BS EN 10002-1: 2001 BS EN ISO 6892-1: 2009 Cl. 10.4 Method B in conjunction with the following specification(s): BS 4449: 2005 + A2: 2009 Cl. 7.2.2, 7.2.3, 8.1.3.1 & 9 BS 4482: 1985 Cl. 12.1 & App. C.3 BS 4482: 2005 + Amd. 1: 2007 Cl. 8.1.3.1 & 9 BS 4483: 1998 Cl. 13.1 BS 4483: 2005 + Amd. 1: 2007 Cl. 7.2.2, 7.2.3, 8.1.3.1 & 9 CS 2: 2012 (Rev. 6) Cl. 6.1 & 6.4

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Metallic materials (cont'd)	Tensile test of carbon steel bars in the force range 2.5 kN – 2400 kN	BS 18 : 1987 in conjunction with the following specification: BS 4449: 1988 Cl. 10.2
	Tensile test of high tensile 7-wire strands in the force range 2.5 kN – 2400 kN	BS 18-2 : 1971 in conjunction with the following specification: BS 5896: 1980 App. A BS EN ISO 6892-1: 2009 Cl. 10.4 Method B in conjunction with the following specification: BS 5896: 2012 Cl. 7.2.2 & BS EN ISO 15630-3: 2010 Cl. 5
	Tensile test of stainless steel bars in the force range 2.5 kN – 2400 kN	BS EN 10002-1: 2001 in conjunction with the following specifications: BS 6744: 2001 + A2: 2009 (excluding cold worked stainless steel bars) BS 6744: 2016 (excluding cold work stainless steel bars)
	Tensile test of fasteners in the force range of 2.5 kN to 2400 kN	BS EN ISO 898-1: 1999 and BS 18: 1987 in conjunction with the following specification(s): BS 3692: 2001 Cl. 13 BS 3692: 2014 Cl. 14 BS 4190: 2001 Cl. 15.2 BS 4190: 2014 Cl. 15.2 BS 4395: Part 1: 1969 App. B.1 & B.5 BS 4395: Part 2: 1969 + Amd. 1842 & 2186 App. B.1 & B.5 BS 4395: Part 3: 1973 App. A.1 & A.5 BS EN ISO 6892-1: 2009 Cl. 10.4 Method B in conjunction with the following specification(s): BS EN 20898-1: 1992 Cl. 8.1, 8.2 & 8.4 BS EN ISO 898-1: 1999 Cl. 8.1, 8.2 & 8.5 BS EN ISO 898-1: 2009 Cl. 9.2 to 9.7 BS EN ISO 898-1: 2013 Cl. 9.2 to 9.7 ISO 898-1: 1988 Cl. 8.1, 8.2 & 8.5

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Metallic materials (cont'd)	Tensile test of stainless steel bolts, screws and studs in the force range 2.5 kN - 2400 kN	BS EN ISO 6892-1: 2009 Cl. 10.4 Method B in conjunction with the following specification: BS 6105: 1981 Cl. 6.2 to 6.4 BS EN ISO 3506-1: 1998 Cl. 6.2.2 to 6.2.4 BS EN ISO 3506-1: 2009 Cl. 6
	Effective cross sectional area and mass per metre of stainless steel bars	BS 6744: 2001 + A2: 2009 (excluding cold worked stainless steel bars) BS 6744: 2016 (excluding cold worked stainless steel bars)
	Bend test of stainless steel bars	BS 6744: 2001 + A2: 2009 (excluding cold worked stainless steel bars) BS 6744: 2016 (excluding cold worked stainless steel bars)
	Surface geometry of stainless steel bars	BS 6744: 2001 + A2: 2009 (excluding cold worked stainless steel bars) BS 6744: 2016 (excluding cold worked stainless steel bars)
	Dimensions of steel washer	BS 4320: 1968 BS 4395: Part 1: 1969 BS 4395: Part 2: 1969 BS 4395: Part 3: 1973

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Metallic materials (cont'd)	Charpy V-notch impact test on weldable structural steel	BS EN 10045-1: 1990 BS EN ISO 148-1: 2010 BS EN ISO 148-1: 2016
	Weld shear force test of steel fabric for reinforcement of concrete	BS EN ISO 15630-2: 2002 Cl. 7 ISO 10287: 1992 in conjunction with the following specification(s): BS 4483: 1985 BS 4483: 1998 BS 4483: 2005 + Amd. 1: 2007 Cl. 7.2.2, 7.2.4 & 9
	Proof load test of steel nuts in the force range 2.5 kN - 2400 kN	BS 3692: 2001 Annex C.1 BS 3692: 2014 Annex C.1 BS 4190: 2001 Annex A.1 BS 4190: 2014 Annex A.1 BS 4395: Part 1: 1969 App. C.1 BS 4395: Part 2: 1969 + Amd. 1842 & 2186 App. C.1 BS 4395: Part 3: 1973 App. C.1 BS 6105: 1981 Cl. 6.6, Table 3 & 4 BS EN 20898-2: 1994 Cl. 5-7 & 8.1 BS EN 20898-6: 1992 Cl. 8.1 BS EN ISO 898-2: 2012 Cl. 9.1 BS EN ISO 898-6: 1996 Cl. 8.1 ISO 898-2: 1992 Cl. 5-7 & 8.1 ISO 898-6: 1988 Cl. 8.1 BS EN 20898-2: 1994 and BS EN ISO 898-6: 1996 in conjunction with the following specification: BS EN ISO 3506-2: 1998 Cl. 5 BS EN ISO 898-2: 2012 Cl. 9.1 in conjunction with the following specification: BS EN ISO 3506-2: 2009 Cl. 6

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Metallic materials (cont'd)	Vickers hardness test in scale range HV5, HV10 and HV30	BS 427: 1990 Section 2 BS EN ISO 6507-1: 1998 BS EN ISO 6507-1: 2005 BS EN 23878: 1993
	Brinell hardness test of metallic materials up to the limit of 560.5 HBW	BS 240: 1986 Section 2 BS EN ISO 6506-1: 1999 BS EN ISO 6506-1: 2005
	Rockwell hardness test in the scale range HRB to HRC	BS 891: 1989 Section 2 BS EN ISO 6508-1: 1999 BS EN ISO 6508-1: 2005 BS EN 10109-1: 1996
	Tensile test & slip/permanent elongation test of mechanical coupler for reinforcing bar in the force range 2.5 kN – 2400 kN	BS EN ISO 6892-1: 2016 Cl. 10.3.3 Method B & ISO 15835-2: 2018 Cl. 5.4 excluding Cl.5.4.4 in conjunction with the following specification(s): BS 8110: Part 1: 1985 Cl. 3.12.8.16.2 BS 8110: Part 1: 1997 Cl. 3.12.8.16.2 Buildings Department Code of Practice for Structural Use of Concrete (2004) Cl. 3.2.8.2 Buildings Department Code of Practice for Structural Use of Concrete (2013) Cl. 3.2.8.3 General Specification for Civil Engineering Works (2006) Vol. 2 Cl. 15.35 General Specification for Civil Engineering Works (2020) Vol. 2 Cl. 15.35 ISO 15835-1: 2018 Cl.5.4.1 Option 2 & 5.4.2
	Static tension test, static compression test, cyclic tension & compression test for mechanical connectors for steel reinforcing bars (Type 2 splices) for steel reinforcing bars in the force range 2.5 kN - 2400 kN	ICC Evaluation Service, Inc. AC133 (Approved May 2008 effective 1 Jun 2008) Cl. 4.1.2 ICC Evaluation Service, Inc. AC133 (Approved May 2008 effective 1 Jun 2008) Cl. 4.1.2 with modifications ICC Evaluation Service, Inc. AC133 (Approved Jan 2010 effective 1 Jul 2010) Cl. 4.1.2 ICC Evaluation Service, Inc. AC133 (Approved Jan 2010 effective 1 Jul 2010) Cl. 4.1.2 with modifications in conjunction with the following specification(s): Buildings Department Code of Practice for Structural Use of Concrete (2013) Cl. 3.2.8.4

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Polymer modified mortar and prebagged materials (Chemical analysis)	Sample treatment	HKHA Standard 002: 1990 (modified) Cl. 6
	Cement content and sand/cement ratio	HKHA Standard 002: 1990 (modified) Cl. 7 (based on CaO content)
	Polymer solids content	HKHA Standard 002: 1990 (modified) Cl. 8
	Carbon dioxide content	HKHA Standard 002: 1990 (modified) Cl. 7.2
Polymer latex (Chemical analysis)	Polymer solids content	HKHA Standard 002: 1990 (modified) Cl. 2
Pulverized fuel ash (PFA)	Fineness	BS 3892: Part 1: 1997 Annex D
	Initial setting time	BS EN 196-3: 1995 BS EN 196-3: 2005 + A1: 2008 in conjunction with the following specification(s): BS 3892: Part 1: 1997 Cl. 10 BS 3892: Part 1: 1997 Cl. 10 with modifications
	Moisture content	BS 3892: Part 1: 1997 Annex C
	Particle density	BS EN 196-6: 1992 Annex NC BS EN 196-6: 2010 Annex NC in conjunction with the following specification(s): BS 3892: Part 1: 1997 Cl. 7
	Soundness	BS EN 196-3: 1995 BS EN 196-3: 2005 + A1: 2008 in conjunction with the following specification(s): BS 3892: Part 1: 1997 Cl. 11 BS 3892: Part 1: 1997 Cl. 11 with modifications
	Strength factor	BS 3892: Part 1: 1997 Annex F BS 3892: Part 1: 1997 Annex F with modifications
	Water requirement	BS 3892: Part 1: 1997 Annex E BS 3892: Part 1: 1997 Annex E with modifications

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Pulverized fuel ash (Chemical analysis)	Sample preparation	BS 4550: Part 1: 1978 Cl. 5.1 BS EN 196-2: 1995 Cl. 6
	Loss-on-ignition	BS EN 196-2: 1995 Cl. 7 (using 1 hr ignition time)
	Calcium oxide content (CaO)	BS EN 196-2: 1995 Cl. 13
	Chloride ion content	BS EN 196-21: 1992 Cl. 4
	Magnesium oxide content (MgO)	BS 3892: Part 1: 1982 App. C
	Sulphuric anhydride content (SO_3)	BS EN 196-2: 1995 Cl. 8
	Total alkali content	BS EN 196-21: 1992 Cl. 7
Pulverized fuel ash cement (Chemical analysis)	Sample preparation	BS 4550: Part 2: 1970 Cl. 1.2.1
	Loss-on-ignition (L.O.I.)	BS 4550: Part 2: 1970 Cl. 13.2
	Proportion of PFA content	In-house Method FAC-C3
	Magnesium oxide content (MgO)	BS 3892: Part 1: 1982 App. C
	Sodium oxide content (Na_2O)	In-house Method AA05, AA06: 1992
	Potassium oxide content (K_2O)	In-house Method AA05, AA06: 1992
	Alkali content (equivalent Na_2O)	In-house Method AA05, AA06: 1992 (Flame AA)
	Sulphur trioxide content (SO_3)	BS 4550: Part 2: 1970 Cl. 12

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Repair mortar	Air permeability	Hong Kong Housing Authority Specification Library (2018) CON 2.T120.8 Cl. 2 Hong Kong Housing Authority Specification Library (2022) CON 2.T120.9 Cl. 2
	Compressive strength of test cubes in the force range 50 kN – 3000 kN	BS 4551: 1980 + Amd. 4374 Section 15 BS 4551: Part 1: 1998 Section 12 Hong Kong Housing Authority Materials Testing Services (2020/2022) for Maintenance & Building Materials Specification Part D Cl. 2.1.1 Hong Kong Housing Authority Materials Testing Services (2022/2024) for Maintenance & Building Materials Specification Part D Cl. 2.1.1
	Consistence	BS 4551: 1980 + Amd. 4374 Section 10 BS 4551: Part 1: 1998 Section 7 In-house method MOR-P2
	Coutinho Ring test (shrinkage cracking)	Hong Kong Housing Authority Materials Testing Services (2020/2022) for Maintenance & Building Materials Specification Part D Cl. 2.1.6 Hong Kong Housing Authority Materials Testing Services (2022/2024) for Maintenance & Building Materials Specification Part D C1.2.1.6
	Flow	BS 4551: 1980 + Amd. 4374 Section 12 BS 4551: Part 1: 1998 Section 9 In-house method MOR-P3
	Long term shrinkage	In-house method MOR-P6
	Sorptivity	Hong Kong Housing Authority Materials Testing Services (2020/2022) for Maintenance & Building Materials Specification Part D Cl. 2.1.10 Hong Kong Housing Authority Materials Testing Services (2022/2024) for Maintenance & Building Materials Specification Part D C1. 2.1.10
	Trial mix	Hong Kong Housing Authority Materials Testing Services (2020/2022) for Maintenance & Building Materials Specification Part D Cl. 2.1.20 Hong Kong Housing Authority Materials Testing Services (2022/2024) for Maintenance & Building Materials Specification Part D C1. 2.1.20

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Repair mortar (cont'd)	Obtaining inspection core samples	Hong Kong Housing Authority Materials Testing Services (2020/2022) for Maintenance & Building Materials Specification Part D Cl. 2.1.22 Hong Kong Housing Authority Materials Testing Services (2022/2024) for Maintenance & Building Materials Specification Part D C1. 2.1.22
Road surfaces	Texture depth of carriageways (by sand patch test method)	General Specification for Civil Engineering Works (2006) Vol. 1 App. 10.1 General Specification for Civil Engineering Works (2020) Vol. 1 App. 10.1 Highways Department (Research and Development Division) Guidance Notes on Road Testing (RD/GN/009) (Sep 1989) Hong Kong Housing Authority Specification Library (2018) EXT 1. T710.8 (5) to 720.8 EXT 2.T910.8 to T1010.8 Hong Kong Housing Authority Specification Library (2022) EXT 1. T710.9 (5) to 720.9 EXT 2.T910.9 to T1010.9 Mass Transit Railway Corporation Specification, D/MTRCL/NW/CIV/M&W/002/A3, App. 16.1
	Surface regularity of carriageways (by 3 metre straightedge method)	General Specification for Civil Engineering Works (2006) Vol. 1 Cl. 10.55 General Specification for Civil Engineering Works (2020) Vol. 1 Cl. 10.55 Hong Kong Housing Authority Specification Library (2018) EXT 2.T810.8 to T850.8 Hong Kong Housing Authority Specification Library (2022) EXT 2.T810.9 to T850.9
	Skid resistance of road surfaces/markings using a portable pendulum tester	Highways Department (Research and Development Division) Guidance Notes on Road Testing (RD/GN/009) (Sep 1989)
	Slip resistance of pedestrian surface using a pendulum tester	BS 7976: Part 2: 2002 + A1: 2013

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Rock	Preparation of rock core specimens and determination of dimensional and shape tolerances	ASTM D4543-85 (Re-approved 1991) ASTM D4543-01 ASTM D4543-04 ASTM D4543-08
	Unconfined compressive strength of intact rock core specimens	ASTM D2938-86 with modifications ASTM D2938-95 with modifications
	Point load strength index of rock by diametral, axial and irregular lump tests	ASTM D5731-95 ASTM D5731-02 ASTM D5731-05 ASTM D5731-08 ASTM D5731-16 International Society for Rock Mechanics (1985) Suggested method for determining point load strength
	Water content of rock	ASTM D2216-98 ASTM D2216-05 ASTM D2216-10 International Society for Rock Mechanics (1979) Part 1 Method 1: Suggested method for determination of water content of a rock sample
	Porosity and density using saturation and caliper techniques	International Society for Rock Mechanics (1979) Part 1 Method 2: Suggested method for porosity/density determination using saturation and caliper techniques
	Porosity and density using saturation and buoyancy techniques	International Society for Rock Mechanics (1979) Part 1 Method 3: Suggested method for porosity/density determination using saturation and buoyancy techniques
	Proof load test of rock dowels and bolts	In-house method RDB-S3 Mass Transit Railway Corporation Specification D/MTRCL/NW/CIV/M&W/003/A3 Cl. 22.20
	Proof load test of expandable rock bolts	Mass Transit Railway Corporation Specification D/MTRCL/NW/CIV/M&W/003/A3 Cl. 22.20

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Soil (Chemical analysis)	Total sulphate content (as SO_3)	GEOSPEC 3: 2001 Test 9.3 GEOSPEC 3: 2017 Test 9.3 BS 1377: Part 3: 1990 Cl. 5 ***< Excluding the following >*** C1. 5.6
	Water-soluble sulphate content (as SO_3)	GEOSPEC 3: 2001 Test 9.3 GEOSPEC 3: 2017 Test 9.3 BS 1377: Part 3: 1990 Cl. 5 ***< Excluding the following >*** C1. 5.6
	Acid-soluble chloride content	BS 1377: Part 3: 1990 Cl. 7.3
	Water-soluble chloride content	GEOSPEC 3: 2001 Test 9.4 GEOSPEC 3: 2017 Test 9.4 BS 1377: Part 3: 1990 Cl. 7.2
	Organic matter content	GEOSPEC 3: 2001 Test 9.1 GEOSPEC 3: 2017 Test 9.1 BS 1377: Part 3: 1990 Cl. 3
	Loss-on-ignition	GEOSPEC 3: 2001 Test 9.2 GEOSPEC 3: 2017 Test 9.2 BS 1377: Part 3: 1990 Cl. 4
	Carbonate content (as CO_2)	BS 1377: Part 3: 1990 Cl. 6.3
	pH value	GEOSPEC 3: 2001 Test 9.5 GEOSPEC 3: 2017 Test 9.5 BS 1377: Part 3: 1990 Cl. 9
Structural fixings (spiders)	Proof load test of spiders in the force range 1 kN – 50 kN	Buildings Department Code of Practice for the Structural Use of Steel (2005) Cl. 16.2.1 Buildings Department Code of Practice for the Structural Use of Steel (2011) Cl. 16.2.1

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Carbon steel (Chemical analysis)	Carbon content	In-house Method CAR-C7 (Carbon and sulphur analyzer)
	Sulphur content	In-house Method CAR-C8 (Carbon and sulphur analyzer)
	Chromium content	In-house Method CAR-C1 (ICP – OES)
	Manganese content	In-house Method CAR-C2 (ICP – OES)
	Molybdenum content	In-house Method CAR-C3 (ICP – OES)
	Nickel content	In-house Method CAR-C4 (ICP – OES)
	Silicon content	In-house Method CAR-C5 (ICP – OES)
	Phosphorus content	In-house Method CAR-C6 (Photometric method)
	Copper content	In-house method CAR-C9 (ICP – OES)
	Vanadium content	In-house method CAR-C10 (ICP – OES)
	Niobium content	In-house method CAR-C11 (ICP – OES)
	Aluminium content	In-house method CAR-C12 (ICP – OES)
	Titanium content	In-house method CAR-C13 (ICP – OES)
Carbon steel (Chemical analysis)	Aluminium, Carbon, Chromium, Copper, Manganese, Molybdenum, Nickel, Nitrogen, Phosphorus, Silicon, Sulphur, Vanadium	In-house Method STE-C8 (Spark-OES)
Low alloy steel (Chemical analysis)	Aluminium, Carbon, Chromium, Copper, Manganese, Molybdenum, Nickel, Nitrogen, Phosphorus, Silicon, Sulphur, Vanadium	In-house Method STE-C8 (Spark-OES)
Carbon steel and low alloy steel	Carbon equivalent value (CEV)	In-house Method STE-C8 (by calculation)

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香港九龍新蒲崗七寶街三號振發工廠大厦地下 C2, 四樓 G 室及七樓 E 室

Construction Materials 建築材料		
ITEM TESTED OR MEASURED 測試或量度項目	**SPECIFIC TEST OR PROPERTY MEASURED** 特定測試或量度的特性	**SPECIFICATION, STANDARD METHOD OR TECHNIQUE USED** 規範、標準方法或應用技術
Stainless steel (Chemical analysis)	Chromium content	In-house Method STA-C1 (ICP – OES)
	Manganese content	In-house Method STA-C2 (ICP – OES)
	Molybdenum content	In-house Method STA-C3 (ICP – OES)
	Nickel content	In-house Method STA-C4 (ICP – OES)
	Silicon content	In-house Method STA-C5 (ICP – OES)
	Phosphorus content	In-house Method STA-C6 (Photometric method)
	Carbon content	In-house Method STA-C7 (Carbon and sulphur analyzer)
	Sulphur content	In-house Method STA-C8 (Carbon and sulphur analyzer)
	Copper content	In-house Method STA-C9 (ICP – OES)
Unalloyed and low alloy steel (Chemical analysis)	Chromium, Copper, Manganese, Molybdenum, Nickel, Vanadium	BS EN 10351: 2011
Steel (Chemical analysis)	Total carbon content	BS EN ISO 15350: 2010 (Method A) ISO 15350: 2000 (Method A)
	Sulfur content	BS EN ISO 15350: 2010 (Method A) ISO 15350: 2000 (Method A)
	Nitrogen content	BS EN ISO 15351: 2010 ISO 15351: 1999
	Phosphorous content	ASTM E350-95 (Reapproved 1997) Cl. 18-29
	Carbon equivalent value (CEV) (by calculation)	CS2: 2012 Cl. 1.5.1

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		CS2: 2012 Cl. 1.5.1 in conjunction with SCCT Technical Note No. 3
Steel reinforcing bar (Product analysis grade 250, 500B & 500C) (chemical analysis)	Total carbon	*Test procedure for compliance testing:* BS EN ISO 15350: 2010 (Method A) ISO 15350: 2000 (Method A) In-house Method CAR-C7 (Carbon and sulphur analyzer)
	Sulphur	*Test procedure for compliance testing:* BS EN ISO 15350: 2010 (Method A) ISO 15350: 2000 (Method A) In-house Method CAR-C8 (Carbon and sulphur analyzer)
	Nitrogen	*Test procedure for compliance testing:* BS EN ISO 15351: 2010 ISO 15351: 1999
	Nitrogen binding element (Vanadium)	*Test procedure for compliance testing:* In-house Method CAR-C10 (ICP-OES) BS EN 10351: 2011 (ICP-OES)
	Phosphorus	*Test procedure for compliance testing:* In-house Method CAR-C6 (Photometric method) ASTM E350-95 (Reapproved 1997) Cl. 18-29 (Photometric method)
	Copper	*Test procedure for compliance testing:* In-house Method CAR-C9 (ICP-OES) BS EN 10351: 2011 (ICP-OES)
	Carbon Equivalent Value	*Test procedure for compliance testing:* CS2: 2012 Cl. 1.5.1

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Ground water (Chemical analysis)	Sulphate content	GEOSPEC 3: 2001 Test 9.3 GEOSPEC 3: 2017 Test 9.3 BS 1377: Part 3: 1990 Cl. 5 ***< Excluding the following >*** C1. 5.6
	pH value	GEOSPEC 3: 2001 Test 9.5 GEOSPEC 3: 2017 Test 9.5 BS 1377: Part 3: 1990 Cl. 9
Water (Chemical analysis)	Total dissolved solids	APHA 18e 2540C APHA 21e 2540C
	Chloride ion content	APHA 18e 4500-CT B APHA 21e 4500-CT B BS EN 1008: 2002 Cl. 6.1.3 & BS EN 196-21: 1992 Cl. 4
	Sulphate content (SO_3)	BS 1377: Part 3: 1990 Cl. 5.4 & 5.5 BS EN 1008: 2002 Cl. 6.1.3 & BS EN 196-2: 1995 Cl. 8
	Alkalinity (carbonate and bicarbonate contents)	APHA 18e 2320B APHA 21e 2320B
	pH value	In-house Method WAT-C5: 2003
	Sodium content (Na)	In-house Method WAT-C6: 2003
	Potassium content (K)	In-house Method WAT-C6: 2003
	Acid-soluble alkali content (equivalent Na_2O)	In-house Method WAT-C6: 2003
	Sodium oxide content (Na_2O)	BS EN 1008: 2002 Cl. 6.1.3 & BS EN 196-21: 1992 Cl. 7
	Potassium oxide content (K_2O)	BS EN 1008: 2002 Cl. 6.1.3 & BS EN 196-21: 1992 Cl. 7
	Alkali content (equivalent Na_2O)	BS EN 1008: 2002 Cl. 6.1.3 & BS EN 196-21: 1992 Cl. 7

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Welds (destructive)	Bend test of fusion welded joints	BS 709: 1983 + Amd. 8909, 9146 & 9378 Cl. 6 BS EN 910: 1996 BS EN ISO 5173: 2010 + A1: 2011
	Charpy V-notch impact test of fusion welded joints	BS 709: 1983 + Amd. 8909, 9146 & 9378 Cl. 11 BS EN 875: 1995
	Fracture test on welds in metallic materials	BS 709: 1983 + Amd. 8909, 9146 & 9378 Cl. 7 & 8 BS EN 1320: 1997 BS EN ISO 9017: 2013
	Longitudinal tensile test of fusion welded joints	BS 709: 1983 + Amd. 8909, 9146 & 9378 Cl. 5.3 BS EN 876: 1995
	Macro-etch test on welded reinforcing steel for concrete	BS 7123: 1989 Cl. 12.3.4.2 & 12.3.6
	Macroscopic examination of fusion welded joints	BS 709: 1983 + Amd. 8909, 9146 & 9378 Cl. 9 BS EN 1321: 1997 BS EN ISO 17639: 2013
	Tensile test on welded reinforcing steel for concrete	BS 7123: 1989 Cl. 12.3.4.1 & 12.3.5 BS EN ISO 17660-1: 2006 Cl. 14.2
	Transverse tensile test of fusion welded joints	BS 709: 1983 + Amd. 8909, 9146 & 9378 Cl. 5.1 BS EN 895: 1995
	Vickers hardness test of fusion welded joints in scale range of HV5 and HV10	BS 709: 1983 + Amd. 8909, 9146 & 9378 Cl. 10 BS EN 1043-1: 1996

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Environmental Testing 環境測試		
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Water and Wastewater	Physical Examination :-	
	- Conductivity	APHA 21e 2510 B
	- pH value	APHA 21e 4500-H^+ B
	- Total solids dried at 103 - 105°C	APHA 20e 2540 B APHA 21e 2540 B
	- Total dissolved solids dried at 180°C	APHA 20e 2540 C APHA 21e 2540 C
	- Total suspended solids dried at 103 - 105°C	APHA 20e 2540 D APHA 21e 2540 D
	- Turbidity	APHA 21e 2130 B
	Trace Metals:-	
	- Digestion procedure	APHA 21e 3030F
	- Iron	APHA 21e 3120B
	Organic Pollutants :-	
	- Chemical oxygen demand	APHA 20e 5220 D APHA 21e 5220 D

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Cement stabilised soil	Unconfined compressive strength of cement stabilised soil cores (with / without capping)	Interim Guidelines on Testing of Unconfined Compressive Strength of Cement Stabilised Soil Cores in Hong Kong (Oct 2017) App. B published by Geotechnical Division of The Hong Kong Institution of Engineers