

**NO: SAMM 505**

(Issue 06, 18 November 2021 replacement of SAMM 505 dated 11 May 2021)

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**LABORATORY LOCATION:**  
(PERMANENT LABORATORY)
**BUILDTEST LABORATORY SDN. BHD.**  
**NO. 12, JALAN PS 8/1**  
**TAMAN PRIMA SELAYANG**  
**68100 BATU CAVES**  
**SELANGOR**  
**MALAYSIA**
**FIELD(S) OF TESTING:****MECHANICAL & NON-DESTRUCTIVE TEST****FIELD(S) OF CALIBRATION:****MASS**

This laboratory has demonstrated its technical competence to operate in accordance with MS ISO/IEC 17025:2017 (ISO/IEC 17025:2017).

This laboratory's fulfillment of the requirements of ISO/IEC 17025 means the laboratory meets both the technical competence requirements and management system requirements that are necessary for it to consistently deliver technically valid test results and calibrations. The management system requirements in ISO/IEC 17025 are written in language relevant to laboratory operations and operate generally in accordance with the principles of ISO 9001 (see Joint ISO-ILAC-IAF Communiqué dated April 2017).

**SCOPE OF TESTING: MECHANICAL**

<b>Materials/ Products Tested</b>	<b>Type of Test/ Properties Measured/ Range of Measurement</b>	<b>Standard Test Methods/ Equipment/Techniques</b>
Hardened Concrete	Compressive Strength Test (Cubes, Cores & Cylinders)	BS EN 12390-3: 2019 (Test at ambient conditions)
	Water Absorption of Concrete Specimens	BS 1881-122: 2011 (Test at ambient conditions)
	Density of Hardened Concrete	BS EN 12390-7: 2019 (Volume by Water Displacement Method)
	Secant Modulus of Elasticity in Compression (Method A)	BS EN 12390-13: 2013
	Water Penetration in Hardened Concrete	BS EN 12390-8: 2019
	Loss of Ignition	BS 1881-124: 2015 Clause 6.6
	Initial Surface Absorption Test	BS 1881-208: 1996
	Drying Shrinkage	ISO 1920-8:2009
Rapid Chloride Penetration Test	ASTM C 1202-19	

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<b>Materials/ Products Tested</b>	<b>Type of Test/ Properties Measured/ Range of Measurement</b>	<b>Standard Test Methods/ Equipment/Techniques</b>
Aggregates	Flakiness Index of Coarse Aggregates	BS 812: Part 105: Sect 105.1: 1989
	Elongation Index of Coarse Aggregates	BS 812: Part 105: Sect 105.2: 1990
	Aggregate Crushing Value (ACV)	BS 812: Part 110: 1990 (Test at Dry Conditions)
	Aggregate Impact Value (AIV)	BS 812 : Part 112 : 1990 Clause 7.1 (Test at Dry Conditions)
	Ten Percent Fines Value (TFV)	BS 812 : Part 111 : 1990 (Test at Dry Conditions)
	Shape Index	BS EN 933-4 : 2008
	Clay Lumps and Friable Particles in Aggregates	ASTM C 142 / C 142 M-17
	pH Value	BS 1377-3 : 2018 Clause 12
	Los Angeles Abrasion (LA) of Small-Size Coarse Aggregates	ASTM C131/C131M-20
	Los Angeles Abrasion (LA) of Large-Size Coarse Aggregates	ASTM C535-16
	Particle Size Distribution by Sieving Method	BS EN 933-1 : 2012
	Determination of Materials Finer than 75 µm by Washing	ASTM C 117-17 (Procedure A - Washing with Plain Water)
	Particle Density and Water Absorption of Coarse Aggregates	BS 812 : Part 2 : 1995 Clause 5.3 - Wire Basket Method (Test at Ambient Conditions)
	Particle Density and Water Absorption of Fine Aggregates	BS 812 : Part 2 : 1995 Clause 5.5 - Glass Jar Method (Test at Ambient Conditions)
	Organic Impurities in Fine Aggregates for Concrete	ASTM C40/C40M-20
Shell Content	BS EN 933-7 : 1998	
Loss of Ignition	BS EN 1744-1 : 2009 + A1 : 2012 Clause 17	
Drying Shrinkage	MS EN 1367-4: 2012	

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**SCOPE OF TESTING: MECHANICAL**

Materials/ Products Tested	Type of Test/ Properties Measured/ Range of Measurement	Standard Test Methods/ Equipment/Techniques
Aggregates	Potential Alkali Reactivity of Aggregates (Mortar-Bar Method)  Particle Density and Water Absorption	ASTM C 1260 - 14  BS EN 1097-6: 2013 Clause 8 and Clause 9
Soil	Moisture Content  Dry Density / Moisture Content Relationship of Soils by 2.5kg Rammer Method  Dry Density / Moisture Content Relationship of Soils by 4.5kg Rammer Method  Dry Density / Moisture Content Relationship of Granular Soils by Vibrating Hammer Method  Liquid Limit  Plastic Limit and Plasticity Index  Laboratory California Bearing Ratio (CBR)  pH Value  Loss of Ignition	BS 1377 : Part 2 : 1990 Clause 3.2 (Oven-drying Method)  BS 1377 : Part 4 : 1990 Clause 3.3  BS 1377 : Part 4 : 1990 Clause 3.5  BS 1377: Part 4: 1990 Clause 3.7  BS 1377: Part 2: 1990 Clause 4.3  BS 1377: Part 2: 1990 Clause 5  BS 1377 : Part 4 : 1990 Clause 7  BS 1377-3 : 2018 Clause 12  BS 1377-3 : 2018 Clause 6
Steel Reinforcing Bar	Tensile Tests for determination of:  - Yield strength - Tensile strength - Mass per meter - Percentage elongation after fracture - Percentage total extension at maximum force  Force range: up to 1500kN	BS EN ISO 15630-1 : 2019 Clause 5  ISO 6892-1 : 2019  MS 146:2014

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**SCOPE OF TESTING: MECHANICAL**

<b>Materials/ Products Tested</b>	<b>Type of Test/ Properties Measured/ Range of Measurement</b>	<b>Standard Test Methods/ Equipment/Techniques</b>
Steel Reinforcing Bar	Bend Test	BS EN ISO 15630-1 : 2019 Clause 6 ASTM E 290 – 14 MS 146:2014 ISO 7438:2016
	Rebend Test	BS EN ISO 15630-1 : 2019 Clause 7 MS 146 : 2014 Clause 7.3.5 MS 145 : 2014 Clause 7.2.5
Steel Wire	Tensile Tests for determination of: - Mass per metre - Yield strength (determined from 0.2% proof strength) - Tensile strength - Tensile/yield strength ratio - Percentage total elongation at maximum force	BS EN ISO 15630-1 : 2019 Clause 5  ISO 6892-1 : 2019  MS 144:2014
	Bend Test	BS EN ISO 15630-1 : 2019 Clause 6 ASTM E 290 – 14 MS 146 : 2014 ISO 7438 : 2016
	Rebend Test	BS EN ISO 15630-1 : 2019 Clause 7 MS 146 : 2014 Clause 7.3.5 MS 145 : 2014 Clause 7.2.5
Steel Fabric	Tensile Tests for determination of: - Yield strength (determined from 0.2% proof strength) - Tensile strength - Tensile/yield strength ratio - Percentage total elongation at maximum force	ISO 15630-2 : 2019 Clause 5  ISO 6892-1 : 2019  MS 145:2014
	Bend Test	BS EN ISO 15630-1 : 2019 Clause 6 ASTM E 290 – 14 MS 146 : 2014 ISO 7438 : 2016
	Rebend Test	BS EN ISO 15630-1 : 2019 Clause 7 MS 146 : 2014 Clause 7.3.5 MS 145 : 2014 Clause 7.2.5
	Weld Shear Force	ISO 15630-2 : 2019 Clause 7.1 MS 145 : 2014 Clause 9

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**SCOPE OF TESTING: MECHANICAL**

<b>Materials/ Products Tested</b>	<b>Type of Test/ Properties Measured/ Range of Measurement</b>	<b>Standard Test Methods/ Equipment/Techniques</b>
Steel Fabric	Measurement of The Geometrical Characteristics – Welded Fabric (Bar Spacing)	ISO 15630-2 : 2019 Clause 10.1
Reinforcement Couplers for Mechanical Splices of Bars	Tensile Strength Tensile and Slip Test	ISO 6892 – 1 : 2019 ISO 6892 – 1 : 2019 ISO 15835 – 2 : 2018 Clause 5.3 and 5.4
Multi-Wire Steel Prestressing Stand	Tensile Test	BS EN ISO 15630 – 3 : 2019 Clause 5 MS 1138 PART 4 : 2020

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**SCOPE OF TESTING: MECHANICAL**

<b>Materials/ Products Tested</b>	<b>Type of Test/ Properties Measured/ Range of Measurement</b>	<b>Standard Test Methods/ Equipment/Techniques</b>
Masonry Units	Compressive Strength Test (Clay, Calcium Silicate and Aggregate Concrete Masonry Units)	BS EN 772-1 : 2011 + A1 : 2015
	Water Absorption	BS EN 772 – 7: 1998
Bitumen	Sampling Compacted Asphalt Mixtures for Laboratory Testing	ASTM D 5361 / D 5361 M-16
	Thickness or Height of Compacted Bituminous Paving Mixture Specimens	ASTM D 3549 / D 3549 M-18 (Method A)
	Bulk Specific Gravity and Density of Non-absorptive Compacted Asphalt Mixtures	ASTM D 2726 / D 2726 M-19
Water	pH Value	BS 1377-3 : 2018 Clause 12
Cement	Flexural Strength	BS EN 196 – 1: 2016 Clause 9.1
	Compressive Strength	BS EN 196 – 1: 2016 Clause 9.2
	Compressive Strength (50 mm Cube Specimens)	ASTM C 109 / C 109 M – 20a
	Loss of Ignition	BS EN 196 – 2: 2013 Clause 4.4.1

**Signatory(ies):**

1. Ip Kwok Khuen
2. Tang Wei Luen
3. Ip Kar Mun
4. Nor Fatimah Binti Mohd Fauzi
5. Nur Azhani Binti Mohamed Alang

**IKM No. L/2530/7547/16 (pH Value and Loss  
of Ignition Only)**

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**SCOPE OF TESTING: MECHANICAL****SITE: CATEGORY I**

Materials/ Products Tested	Type of Test/ Properties Measured/ Range of Measurement	Standard Test Methods/ Equipment/Techniques
Soil	In-situ California Bearing Ratio (CBR)	BS 1377 : Part 9 : 1990 Clause 4.3
	In-situ Density Test by Small Pouring Cylinder Method	BS 1377 : Part 9 :1990 Clause 2.1 – Small Pouring Cylinder Method
	In-situ Density Test by Large Pouring Cylinder Method	BS 1377 : Part 9 :1990 Clause 2.2 – Large Pouring Cylinder Method
	Mackintosh Probe Test	MS 2038 : 2006 Clause 5.3.2.2
	JKR Probe Test	MS 2038 : 2006 Clause 5.3.2.2
Concrete	Ultrasonic Pulse Velocity Test	BS EN 12504 – 4 : 2004

**Signatory(ies):**

1. Ip Kwok Khuen
2. Tang Wei Luen
3. Ip Kar Mun
4. Nor Fatimah Binti Mohd Fauzi

**(Mackintosh Probe Test , JKR Probe & Ultrasonic  
Pulse Velocity Test Only)**

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**SCOPE OF TESTING: NON-DESTRUCTIVE TEST****SITE TESTING: CATEGORY I**

<b>Materials/ Products Tested</b>	<b>Type of Test/ Properties Measured/ Range of Measurement</b>	<b>Standard Test Method/ Equipment/Technique</b>
Hardened Concrete	Surface Hardness Testing by Rebound Hammer in the range of 20 to 55 rebound number, R	BS EN 12504 – 2 : 2012

**Signatory(ies):**

1. Ip Kwok Khuen
2. Tang Wei Luen



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\* The expanded uncertainties are based on an estimated confidence probability of not less than 95% and have a coverage factor of  $k=2$  unless stated otherwise

**SCOPE OF CALIBRATION: MASS****SITE CALIBRATION: CATEGORY I**

Instrument Calibrated/ Measurement Parameter	Range	Calibration and Measurement Capability Expressed as an Uncertainty( $\pm$ )*	Remarks
Balance	Up to 30 kg	0.1 g	ASTM E 898 – 20 (Calibrated Using Standard Weights)

**Signatory(ies):**

1. Ip Kwok Khuen
2. Ip Kar Mun