

# Schedule

Element Construction Testing (S) Pte. Ltd.  
58 Sungei Kadut Loop  
Singapore 729501

Certificate No. : LA-2013-0540-G

Issue No. : 14

Date : 08 August 2023

Certificate Expiry Date : 11 June 2025

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FIELD OF TESTING : Mechanical Testing

MATERIALS / PRODUCTS TESTED	TESTS / PROPERTIES	STANDARD METHODS / TECHNIQUES / EQUIPMENT
<b>A. Metal &amp; Metal Products</b>	1. Tensile Test	ISO 6892-1:2019 ASTM A370-22 ASTM E8/E8M-22 JIS Z 2241:2020 AS 1391:2020 ASTM B557-15(2023) * SS 456:1999
	2. Hardness Test (i) Brinell	ASTM E10-18 BS EN ISO 6506-1:2014
	(ii) Vickers	ASTM E384-22 ASTM E92-17 BS EN ISO 6507-1:2018
	(iii) Rockwell	ASTM E18-22 BS EN ISO 6508-1:2016
<b>B. Reinforcement Bar</b>	1. Tensile Testing	BS EN ISO 15630-1:2019 & ISO 6892-1:2019 (BS 4449:2005+A3:2016) (BS 4482:2005) (SS 560:2016) (SS 566:2011) * SS 456:1999 (SS 2: Part 1:1999) (SS 2: Part 2:1999) (SS 2: Part 3:1987)

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<b>B. Reinforcement Bar</b>	2. Bend and Re-bend Test	BS EN ISO 15630-1:2019 (BS 4449:2005+A3:2016) (BS 4482:2005) (SS 560:2016) (SS 566:2011) * SS 427:1998 (SS 2: Part 1:1999) (SS 2: Part 2:1999) (SS 2: Part 3:1987)
	3. Measurement of the geometrical characteristics & Determination of the relative rib or indentation area (Surface Geometry)	BS EN ISO 15630-1:2019 (BS 4449:2005+A3:2016) (SS 560:2016)
	4. Determination of deviation from nominal mass per metre	BS EN ISO 15630-1:2019 (BS 4449:2005+A3:2016) (SS 560:2016)
	<b>C. Zn and Zn Alloy Coating on Steel or Iron Articles</b>	1. Stripping Test for Determination of Coating Weight
<b>D. Steel Wire / Fabric</b>	1. Tensile Test	BS EN ISO 15630-2:2019 & ISO 6892-1:2019 (BS 4483:2005) (SS 561:2010(2022)+A2:2022)) * SS 456:1999 (SS 18: Part 1:1999) (SS 18: Part 2:1970) (SS 32: Part 1:1999) (SS 32: Part 2:1986)
	2. Bend and Re-bend Test	BS EN ISO 15630-2:2019 (BS 4483:2005) (SS 561:2010(2022)+A2:2022)) * SS 427:1998 (SS 18: Part 1:1999) (SS 18: Part 2:1970) (SS 32: Part 1:1999) (SS 32: Part 2:1986)

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<b>D. Steel Wire / Fabric</b>	3. Weld Shear Test	BS EN ISO 15630-2:2019 (BS 4483:2005) (SS 561:2010(2022)+A2:2022) (SS 32: Part 1:1999)
<b>E. Seven Wire Prestressing Strand / High Tensile Steel Wire / Prestressing Steel</b>	1. Tensile Strength Test (Yield Strength Elongation & Tensile Strength)	BS EN ISO 15630-3:2019 & ISO 6892-1:2019 (BS 5896:2012) BS EN 10218-1:2012 & ISO 6892-1:2019 ASTM A1061/A1061M-20a(e1) (ASTM A416/A416M-18)
<b>F. Reinforcement Steel with Coupler</b>	1. Tension Load Test and Permanent Set Measurement (Slip Test)	ISO 15835-2:2018 BS 8597:2015 ISO 6892-1:2019 (* BS 8110: Part 1:1997, Clause 3.12.8.16.2)
	2. Low Cycle Loading Test	ISO 15835-2:2018
<b>G. Structural Steel</b>	1. Tensile Test	ISO 6892-1:2019 (BS EN 10025-1:2004) (BS EN 10025-2:2019) (BS EN 10210-1:2006) ASTM A370-22 & ASTM E8/E8M-22 (ASTM A20/A20M-20) (ASTM A36/A36M-19) (ASTM A500/A500M-21a) (ASTM A516/A516M-17) GB/T 228.1-2010 (GB/T 2975-2018)
	2. Bend Test	ASTM A370-22 BS EN ISO 7438:2020 GB/T 232-2010
<b>H. Bolts &amp; Nuts</b>	1. Tensile Test (Bolts)	BS EN ISO 898-1:2013 (BS 3692:2014) (BS 4190:2014) ASTM F606/F606M-21 (ASTM F3125/F3125-22)

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<b>H. Bolts &amp; Nuts</b>	2. Proof Load Test (Nuts)	BS EN ISO 898-2:2022 (BS 3692:2014) (BS 4190:2014) ASTM F606/F606M-21 (ASTM F3125/F3125-22)
<b>I. Timber</b>	1. Moisture Content	SS 572:2012 BS 373:1957
	2. Static Bending Test	BS 373:1957
	3. Compression Test: a. Parallel to grain b. Perpendicular to grain	BS 373:1957 BS 373:1957
	4. Janka Indentation Test	BS 373:1957
	5. Bond quality of plywood (chisel test)	AS/NZS 2098.2:2012 (AS/NZS 2754.1:2016)
	6. Shear Parallel to Grain	BS 373:1957
	7. Tension Parallel to Grain	BS 373:1957
<b>J. Epoxy Coated Rebar</b>	1. Coating Flexibility (Bend Test)	ASTM A775/A775M-22
	2. Coating Continuity (Holiday Test)	ASTM A775/A775M-22
	3. Coating Thickness	ASTM A775/A775M-22
<b>K. Laminated Safety Glass for Fixed Panel Below Cill Height</b>	1. Boil Test	SS 341:2001 (2012)+C1:2018
	2. Overall Bow & Warp (Flatness) Test	SS 341:2001 (2012)+C1:2018
	3. Dimensional (Thickness and Squareness Test)	SS 341:2001 (2012)+C1:2018
	4. Impact test	SS 341:2001 (2012)+C1:2018
<b>L. Glazing Glass</b>	1. Dimensional (Length, Width, Thickness, Squareness)	BS 952-1:1995 EN 572-2:2012 (E)
<b>M. Plastic</b>	1. Durometer Hardness (Shore D)	ASTM D2240-15(2021)
	2. Nail Pull Out Test	ASTM D1037-12(2020) Section 14

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<b>M. Plastic</b>	3. Density / Specific Gravity (Method A)	ASTM D792-20
	4. Water Absorption	ASTM D1037-12(2020) Section 23
	5. Wet and Dry Cycle Test	EMT-M-OP-CMT-MD070 based on HDB In-House Method
	6. Door Handle Cyclic Test/ Lockset	EMT-M-OP-CMT-MD071 based on HDB In-House Method
<b>N. Scaffolding</b> <b>1. Frame Scaffolding</b>	1. Dimensional Measurement	SS 280 Part 1:2006 (Clause 5)
	2. Vertical Frame (Horizontal Member of Frame) a. Load Test on Horizontal Tubes - Annex C1 b. Compressive Test on Vertical Tubes (Standard or Leg) - Annex C2	SS 280 Part 1:2006
	3. Cross Base a. Load Test - Annex D	SS 280 Part 1:2006
	4. Horizontal Frame a. Deflection and Bending Test - Annex E1 b. Load Test on Clamp (Hook) - Annex E2	SS 280 Part 1:2006
	5. Tread board (Catwalk) a. Deflection and Bending Test - Annex F1 b. Load Test on Clamp - Annex F2 c. Deflection and "Punching" Test on Expanded Metal - Annex F3	SS 280 Part 1:2006
	6. Adjustable Base Plate (Jack Base) a. Load Test - Annex G	SS 280 Part 1:2006
	7. Arm Lock a. Load Test - Annex H	SS 280 Part 1:2006

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<b>2. Modular Scaffolding</b>	8. Wall Tie a. Tensile Test - Annex I.1 b. Compression Test - Annex I.2	SS 280 Part 1:2006
	9. Cross Brace Pin a. Load Test - Annex K	SS 280 Part 1:2006
	1. Dimensional Measurement	SS 280 Part 2:2009 Clause 5
	2. Adjustable Base Plate a. Load Test - Annex C	SS 280 Part 2:2009
	3. Node of vertical Standard a. Load Test - Annex D	SS 280 Part 2:2009
<b>3. Steel Tubes and Fittings Used in Tubular Scaffoldings</b>	4. Metal Decking a. Deflection and Bending Test - Annex E1	SS 280 Part 2:2009
	5. Wall Tie a. Tensile Test - Annex F.1 b. Compression Test - Annex F.2	SS 280 Part 2:2009
	1. 1. Right-Angle Couplers a. Slip Test - Annex C1 b. Maximum Load Test - Annex C2	SS 311: 2005
	2. Swivel Couplers a. Slip Test - Annex D1 b. Maximum Load Test - Annex D2	SS 311: 2005
	3. End-to End Couplers a. Load Test - Annex E	SS 311: 2005
<b>O. Flexible Loop Connector</b>	4. Dimensional Measurement of Tube	SS 311: 2005 Clause 4.3
	5. Material Test of Tube a. Flattening Test – Annex B	SS 311: 2005
	1. Direct Tensile Test	EL-A-OP-MEC-SIN-MD070 (HDB Method)

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<b>P. External Retractable Clothes Drying Rack</b>	2. In-Plane Shear Test	EL-A-OP-MEC-SIN-MD071 (HDB Method)
	3. Out of Plane Shear Test	EL-A-OP-MEC-SIN-MD072 (HDB Method)
	4. Material Tensile Test	EL-A-OP-MEC-SIN-MD073 (HDB Method)
	1. Ultimate Load Test	EL-A-OP-MEC-SIN-MD074 (HDB S60 Method)
	2. Cyclical Test	EL-A-OP-MEC-SIN-MD075 (HDB S60 Method)

#### Approved Signatories

##### **S/N Name**

1. Ms Sherly Wijaya
2. Mr Jason Foo
3. Mr Salim Suwignjo
4. Mr Chuo Chung Sam

##### **Scope**

- For all accredited tests.
- For all accredited tests
- For K, L, M
- For K, L

#### Note :

This laboratory is accredited in accordance with the recognised International Standard ISO/IEC 17025:2017. A laboratory's fulfilment of the requirements of ISO/IEC 17025:2017 means the laboratory meets both the technical competence requirements and **management system requirements** that are necessary for it to consistently deliver technically valid calibrations. The **management system requirements** in ISO/IEC 17025:2017 are written in language relevant to laboratory operations and operate generally in accordance with the principles of ISO 9001.