

Laboratory Stedrant Technoclinic Pvt. Ltd., 39/5, Govardhan Garden, J.C.
Industrial Area, Yelachenahalli, Bangalore, Karnataka

Accreditation Standard ISO/IEC 17025: 2005

Certificate Number TC-6899

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Validity 07.02.2018 to 06.02.2020

Last Amended on 29.04.2019

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CHEMICAL TESTING

I.	METALS & ALLOYS			
1.	Ferrous Materials Base-Low Alloy	C	Optical Emission	0.05 % to 1.56 %
		Si	Spectrometric Method as per	0.02 % to 1.15 %
		Mn	IS 8811:1998 (RA 2018)	0.18 % to 1.6 %
		P		0.005 % to 0.12 %
		S		0.005 % to 0.09 %
		Cr		0.05 % to 2.40 %
		Mo		0.02 % to 1.20 %
		Ni		0.08 % to 5.00 %
		Al		0.01 % to 0.5 %
		Cu		0.01 % to 0.85 %
		V		0.01 % to 0.50 %

Ram Ashray
Convenor

Birendra Prasad Murmu
Program Manager

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MECHANICAL TESTING

I.	BUILDING MATERIAL			
1.	Aggregate Coarse	Sieve Analysis	IS 2386 (Part 1)	0.1% to 100% (4.75 mm to 40 mm)
		Specific gravity	IS 2386 (Part 3)	2.0 to 4.0
		Bulk Density (Loose & Rodded)	IS 2386 (Part 3)	0.5 kg/L to 3.0 kg/L
		Flakiness Index	IS 2386 (Part 1)	1 % to 70 %
		Elongation Index	IS 2386 (Part 1)	1 % to 70 %
		Water Absorption	IS 2386 (Part 3)	0.01 % to 5 %
		Agg. Impact value	IS 2386 (Part 4)	1 % to 50 %
		Los Angeles abrasion value	IS 2386 (Part 4)	1 % to 50 %
		Agg. Crushing value	IS 2386 (Part 4)	1 % to 50 %
		10% fines value	IS 2386 (Part 4)	50 kN to 200 kN
2.	Aggregate Fine	Particle finer than 75 µm	IS 2386 (Part 2)	0.01 % to 25 %
		Sieve analysis	IS 2386 (Part 1)	75 µm to 6.3 mm
		Specific gravity	IS 2386 (Part 3)	2.0 to 4.0
		Bulk density (Loose & Rodded)	IS 2386 (Part 3)	0.5 kg/L to 3.0 kg/L
		Bulking	IS 2386 (Part 3)	1 % to 50 %
		Water Absorption	IS 2386 (Part 3)	0.01 % to 5 %
		Particle finer than 75 µm	IS 2386 (Part 2)	0.1 % to 20 %
3.	Concrete Admixture	Clay lumps	IS 2386 (Part 2)	0.1 % to 5 %
		Workability (slump)	IS 1199	10 mm to 250 mm
		Setting time	IS 8142	3 hour to 20 hour
		Bleeding	IS 9103	0.5 % to 10 %
		Water content	IS 9103	5 % to 30 %
		Compressive strength	IS 516	15 N/mm ² to 60 N/mm ²
		Flexural strength	IS 516	1 N/mm ² to 10 N/mm ²
Length change	IS 1199	0.0001 % to 0.5 %		
Air content	IS 1199	0.1 % to 10 %		

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4.	Burnt Clay Hollow Bricks & Blocks for walls and Partitions	Compressive Strength	IS 3952 (Annexure A)	0.1 N/mm ² to 10 N/mm ²
		Water Absorption	IS 3952 (Annexure B)	5 % to 30 %
5.	Building Bricks	Water absorption	IS 3495 (Part 2)	1 % to 25 %
		Compressive strength	IS 3495 (Part 1)	1 N/mm ² to 50 N/mm ²
		Efflorescence	IS 3495 (Part 3)	Qualitative
6.	Integral Cement water proofing compound	Permeability Test	IS 2645	0.1 % to 100 %
		Setting time	IS 2645	20 minutes to 450 minutes
		Compressive strength	IS 2645	1 N/mm ² to 75 N/mm ²
7.	Concrete Cube/core	Compressive strength	IS 516	5 N/mm ² to 80 N/mm ²
8.	Beams	Flexural strength	IS 516	1 N/mm ² to 15 N/mm ²
9.	Concrete Cylinders/ Cubes	Water Permeability	DIN 1048 Part 5	1 mm to 40 mm
		Splitting tensile strength	IS 5816	0.5 N/mm ² to 12 N/mm ²
10.	Ceramic tiles	Water absorption	IS 13630 (Part 2)	0.01% to 20%
		Crazing test	IS 13630 (Part 9)	Qualitative
		Warpage in tile (up to 300 mm x 300 mm)	IS 13630 (Part 1)	0.01% to 6.0%
		Hardness by Moh's scale	IS 13630 (Part 13)	1 to 8
		Bulk density	IS 13630 (Part 2)	1.5 g/cc to 2.5g/cc
		Flexural strength	IS 13630 (Part 6)	1.5 N/mm ² to 50 N/mm ²
		11.	Bonding Epoxy	Pot life
		Open Time	FIP/9/2 March 1978	Qualitative
		Thixotrophy	FIP/9/2 March 1978	0.1 mm to 50 mm
		Squeezability	FIP/9/2 March 1978	3000 mm ² to 15000 mm ²
		Curing rate by compressive strength @ 24 hours	FIP/9/2 March 1978	10 N/mm ² to 80 N/mm ²
		Tensile Bending	FIP/9/2 March 1978	Qualitative
		Heat Resistance	FIP/9/2 March 1978	1 N/mm ² to 25 N/mm ²
		Shrinkage	FIP/9/2 March 1978	0.01 % to 3 %
		Slant Shear Test	FIP/9/2 March 1978	1 N/mm ² to 25 N/mm ²
		Instantaneous modulus in compression	FIP/9/2 March 1978	100 N/mm ² to 1500 N/mm ²
		Deferred modulus in compression	FIP/9/2 March 1978	100 N/mm ² to 1500 N/mm ²

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		Water absorption	FIP/9/2 March 1978	0.01 % to 0.5 %
		Solvability	FIP/9/2 March 1978	0.01 % to 0.2 %
		Colour	FIP/9/2 March 1978	Qualitative
12.	Hydraulic Cement	Consistency	IS 4031 (Part 4)	20 % to 50 %
		Initial setting time	IS 4031 (Part 5)	5 minutes to 400 minutes
		Final setting time	IS 4031 (Part 5)	35 minutes to 700 minutes
		Fineness (Blaine's method)	IS 4031 (Part 2)	100 m ² /kg to 600 m ² /kg
		Compressive strength	IS 4031 (Part 6)	1 N/mm ² to 80 N/mm ²
		Soundness by Le-Chatelier	IS 4031 (Part 3)	0.5 mm to 10 mm
		Soundness by Autoclave	IS 4031 (Part 3)	0.01 % to 2 %
		Density	IS 4031 (Part 11)	2.7 g/cc to 3.5 g/cc
13.	Pozzolana-Flyash, Silica fume	Fineness by Blaine's Method	IS 1727	100 N/mm ² to 700 m ² /kg
		Comparative Compressive strength	IS 1727	5 N/mm ² to 80 N/mm ²
		Soundness (by autoclave)	IS 1727	0.01 % to 2 %
		Specific gravity	IS 1727	1 to 3
		Residue on 45 µm sieve	IS 1727	0.1 % to 50 %
14.	Masonry Units-Hollow/Solid Concrete Blocks	Water absorption	IS 2185 (Part 1)	1 % to 10 %
		Compressive Strength	IS 2185 (Part 1)	0.5 N/mm ² to 25 N/mm ²
		Block Density	IS 2185 (Part 1)	1000 kg/m ³ to 2200 kg/m ³
		Drying shrinkage	IS 2185 (Part 1)	0.001 % to 0.05 %
		Moisture movement	IS 2185 (Part 1)	0.001 % to 0.05 %
15.	Curing compound	Curing efficiency	BS 7542	0.1 % to 100 %
		Reflectance	ASTM C 309-98a	25 % to 100 %
16.	Cement concrete flooring tiles (Mosaic Tiles)	Wet Transverse Strength	IS 1237	0.1 N/mm ² to 10 N/mm ²
		Water Absorption	IS 1237	0.1 % to 20 %
		Resistance to Wear (Abrasion)	IS 1237	0.1 mm to 6 mm
17.	Pavers Block	Water Absorption	IS 15658	1 % to 10 %
		Split tensile Strength	IS 15658	0.1 N/mm ² to 10 N/mm ²
		Compressive Strength	IS 15658	15 N/mm ² to 70 N/mm ²
		Flexural strength	IS 15658	0.1 N/mm ² to 15 N/mm ²
		Abrasion Resistance	IS 15658	0.1 mm 5.0 mm

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18.	Masonry Units- Autoclaved Aerated Concrete Blocks	Block Density	IS 6441 (Part 1)	450 kg/m ³ to 1000 kg/m ³
		Compressive Strength	IS 6441 (Part 5)	0.5 N/mm ² to 10 N/mm ²
		Drying Shrinkage	IS 6441 (Part 2)	0.001 % to 0.05 %
II.	SOIL & ROCK			
1.	Soil	Liquid Limit	IS 2720 (Part 5)	20 % to 100 %
		Plastic Limit	IS 2720 (Part 5)	10 % to 40 %
		Shrinkage limit	IS 2720 (Part 6)	5 % to 30 %
		Water content	IS 2720 (Part 2)	1 % to 40 %
		Grain size analysis	IS 2720 (Part 4)	0.075 mm to 4.75 mm
		Particle Size Analysis by Hydrometer method	IS 2720 (Part 4)	0.002 mm to 0.075 mm
		Specific gravity	IS 2720 (Part 3/Section 1)	2.0 to 3.0
		Light compaction	IS 2720 (Part 7)	6 % to 30 % 1.2 g/cc to 2.2 g/cc
		Heavy compaction	IS 2720 (Part 8)	5 % to 25 % 1.3 g/cc to 2.4 g/cc
		Direct shear	IS 2720 (Part 13)	0.01 kg/cm ² to 1.0 kg/cm ² $\phi = 1^\circ$ to 45°
		CBR	IS 2720 (Part 16)	1 % to 60 %
		Free swell index	IS 2720 (Part 40)	0.001 % to 200 %
		Unconfined Compressive Strength	IS 2720 (Part 10)	0.01 kg/cm ² to 3.0 kg/cm ²
		Swelling Pressure	IS 2720 (Part 41)	0.05 kg/cm ² to 8 kg/cm ²
		Triaxial shear with pore pressure	IS 2720 (Part 12)	0.01 kg/cm ² to 1.0 kg/cm ² $\phi = 1^\circ$ to 40°
Triaxial shear without pore pressure	IS 2720 (Part 11)	0.01 kg/cm ² to 1.0 kg/cm ² $\phi = 1^\circ$ to 40°		
Consolidation	IS 2720 (Part 15)	0.05 to 0.4		
2.	Natural Building stone	Compressive strength	IS 1121 (Part 1)	10 N/mm ² to 120 N/mm ²
		Moisture absorption	IS 1124	1 % to 10 %
		Hardness by moh' s scale	IS 13630 (Part 13)	Qualitative (1 to 9)
		True specific gravity	IS 1122	1 to 4

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3.	Rock	Point Load Index	IS 8764	1 kN/m ² to 3500 kN/m ²
		Uniaxial Compressive Strength	IS 9143	1.0 kg/cm ² to 2100 kg/cm ²
4.	Marble	Moisture absorption	IS 1124	1 % to 20 %
		Hardness by moh's scale	IS 13630 (Part 13)	1 to 9
		Specific Gravity	IS 1122	1 to 4
III.	METAL AND METAL ALLOYS			
1.	Coating on Aluminum	Coating Thickness	IS 6012	10 µm to 500 µm
2.	Zinc Coated Ferrous Item	Coating Thickness	IS 3203	10 µm to 500 µm
3.	Steel Tubes	Yield Stress	IS 1608	100 N/mm ² to 1000 N/mm ²
		Tensile Strength	IS 1608	100 N/mm ² to 1000 N/mm ²
		Elongation	IS 1608	2 % to 50 %
		Mass per meter run	IS 1161 IS 1239 (Part 1)	0.1 kg/m to 15 kg/m
		Flattening	IS 2328	50 mm to 200 mm Nominal Bore, Qualitative
4.	High Strength Deformed Steel Bars & Wires for Concrete Reinforcement	Weight / meter	IS 1786	0.1 kg/m to 15 kg/m
		Mean projected area of Rib	IS 1786	0.3 mm ² /mm to 16.0 mm ² /mm
		0.2% Proof Stress	IS.1608	100 N/mm ² to 700 N/mm ²
		Tensile Strength	IS.1608	100 N/mm ² to 900 N/mm ²
		Elongation	IS.1608	2% to 60%
		Bend	IS 1599	Qualitative (Mandrel Dia. in mm: 16, 20, 24, 30, 32, 36, 40, 44, 50, 56, 60, 64, 70, 75, 84, 100, 108, 120, 125, 140, 150, 160, 175, 192, 224 and 256)

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		Rebend	IS 1786	Qualitative (Mandrel Dia. In mm: 32, 40, 44, 50, 56, 60, 70, 84, 100, 108, 120, 140, 150, 160, 175, 192, 224, 256 and 288)
5.	Hot Rolled Medium and High Tensile Structural Steel / Hollow Steel Section	Weight / meter	IS 808 IS 1730 IS 1732 IS 4923	0.3 kg/m to 100 kg/m
		Yield Stress	IS 1608	100 N/mm ² to 1000 N/mm ²
		Tensile Strength	IS 1608	10 N/mm ² to 1000 N/mm ²
		Elongation	IS 1608	2 % to 50 %
		Bend	IS 1599	Qualitative (Mandrel Dia. in mm): 10, 12, 16, 18, 20, 24, 30, 32, 36, 40, 44, 50, 56, 60, 64, 70, 75, 84 and 100)
6.	Uncoated Stress Relieved Low Relaxation 7-Ply Strand for Prestressed Concrete	Unit weight	IS 14268	0.4 kg/m to 2.0 kg/m
		0.2% Proof load		50 kN to 1000 kN
		Breaking load		50 kN to 1000 kN
		Elongation		2 % to 20 %
		Modulus of Elasticity		100 kN/mm ² to 215 kN/mm ²
		Lay length		150 mm to 260 mm
		Nominal area		90 mm ² to 160 mm ²

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MECHANICAL TESTING

<u>AT SITE</u>				
I.	SOIL & ROCK			
1.	Soil	Field density (by core cutter method)	IS 2720 (Part 29)	1.3 g/cc to 2.4 g/cc
		Field density (by sand replacement method)	IS 2720 (Part 28)	1.3 g/cc to 2.5 g/cc

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NON-DESTRUCTIVE TESTING

I.	BUILDING MATERIAL			
1.	Reinforced Concrete	Ultrasonic Pulse Velocity	IS 13311 (Part 1)	1.0 km/s to 5.0 km/s
		Rebound Hammer	IS 13311 (Part 2)	10 R Number to 70 R Number
		Cover Meter	BS 1881 (Part 204)	5 mm to 90 mm
		Half-cell Potential Measurement	ASTM C876-91	(+) 100 mV to (-) 700 mV
		Carbonation	BS EN 14630	Upto 80 mm
		Load Test		
		Deflection	IS 456	0.01 mm to 25 mm
		Crack Width		0.1 mm to 10 mm
		Pole Test		
		Deflection / Displacement	IS 2905	100 mm to 1000 mm
		Crack Width	IS 456	0.1 mm to 10 mm
II.	METAL & ALLOYS			
1.	Welded Joints	Liquid Penetrant	IS 3658	Qualitative
2.	Steel Members	Thickness Measurement	IS 15435	1 mm to 50 mm