

Laboratory **Renuka Consultants (Renuka Engineering Research Laboratories),
L-139, MIDC, Talaja, Dist. Raigad, Maharashtra**

Accreditation Standard **ISO/IEC 17025: 2005**

Certificate Number **TC-7015**

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Validity **12.03.2018 to 11.03.2020**

Last Amended on --

Sl.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
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MECHANICAL TESTING

I. BUILDING MATERIALS						
1.	Coarse Aggregates	Sieve Analysis	IS 2386 (Part-1)	Up to 100 % (125 mm to 4.75 mm)		
		Specific Gravity	IS 2386 (Part-3)	1 to 4		
		Water Absorption	IS 2386 (Part-3)	0.1 % to 7%		
		Flakiness Index	IS 2386 (Part-1)	1 % to 50 %		
		Elongation Index	IS 2386 (Part-1)	1 % to 50 %		
		Aggregate Impact Value	IS 2386 (Part-4)	1 % to 50 %		
		Aggregate Crushing Value	IS 2386 (Part-4)	1 % to 50 %		
2.	Fine Aggregates	Sieve Analysis	IS 2386 (Part-1)	0.01 % to 100 % (10 mm to 150 µm)		
		Specific Gravity	IS 2386 (Part-3)	1 to 4		
		Water Absorption	IS 2386 (Part-3)	0.1 % to 17 %		
3.	Bricks	Dimension Length Breadth Height	IS 1077	4000 mm to 5000 mm 1500 mm to 4000 mm 1000 mm to 3000 mm		
		Compressive Strength	IS 3495 (Part-1)	2 N/mm ² to 40 N/mm ² (Up to 2000 kN)		
		Water Absorption	IS 3495 (Part-2)	1 % to 30 %		
		4.	Cement	Consistency	IS 4031 (Part-4)	20 % to 40%
				Initial Setting Time	IS 4031 (Part-5)	5 minutes to 300 minutes
		Final Setting Time	IS 4031 (Part-5)	30 minutes to 600 minutes		
		Compressive Strength	IS 4031 (Part-6)	10 N/mm ² to 80 N/mm ² (Up to 2000 kN)		
		Soundness (Le-chatelier method)	IS 4031 (Part-3)	0.1 mm to 10 mm		

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		Fineness (by Dry Sieving) (% retained)	IS 4031 (Part-1) Cl. 5	0.1 % to 10 %
5.	Hardened Concrete	Compressive Strength	IS 516	5 N/mm ² to 85 N/mm ² (Up to 2000 kN)
6.	Fresh Concrete	Slump	IS 1199	Up to 250 mm
II. MECHANICAL PROPERTIES OF METALS				
1.	Reinforcement Steel	Tensile Strength	IS 1608	100 kN to 700 kN
		Yield Stress	IS 1608	100 kN to 700 kN
		Elongation	IS 1608	1 % to 40%
		Bend Test	IS 1599	Qualitative (Mandrel Diameter: 16, 20,24,30,32,36,40, 48,50,56,60,64,70, 72, 75, 80,84,96,100,108, 112, 120, 125, 128, 140, 144,150,160, 168,175, 180, 192, 196, 200,216, 224,240, 252, 256,280, 288,and 320, mm)
III. SOIL AND ROCK				
1.	Soil	Particle Size Analysis	IS 2720 (Part-4)	Up to 100% (4.75 mm to 75 µm)
		Moisture Content	IS 2720 (Part-2)	Up to 40 %
		Bulk Density	IS 2720 (Part-2)	1 g/cm ³ to 2 g/cm ³
		Plastic Limit	IS 2720 (Part-5)	15 % to 80 %
		Liquid Limit	IS 2720 (Part-5)	10 % to 90%
		Light Compaction	IS 2720 (Part-7)	0.01 g/cm ³ to 2.5 g/cm ³ 0.1 % to 50 %
		Maximum Dry Density		
		Optimum Moisture Content		

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		Heavy Compaction	IS 2720 (Part-8)	1.4 g/cm ³ to 3.5 g/cm ³
		Maximum Dry Density		
		Optimum Moisture Content		
		Tri Axial	IS 2720 (Part-11)	C = 0 to 3 kg/cm ² Ø = 5° to 30 °
		Free Swell Index	IS 2720 (Part-40)	Up to 80 %
		Direct Shear	IS 2720 (Part-13)	C = 0 to 5 kg/cm ² Ø = 1° to 45 °
		Consolidation	IS 2720 (Part-15)	0.1 kg/cm ² to 8 kg/cm ²
		Unconfined Compression Strength	IS 2720 (Part-10)	0.025 kg/cm ² to 20 kg/cm ² (Up to 2000 kN)
2.	Rock	Dry Density	IS 13030	1.5 g/cm ³ to 3.5 g/cm ³
		Porosity	IS 13030	0.01 % to 10 %
		Water Absorption	IS 1124	0.001 % to 50 %
		Specific Gravity	IS 1124	1 to 5
		Unconfined Compressive Strength	IS 9143	20 kN to 1800 kN (Up to 2000 kN)
		Point Load Index	IS 8764	1 kN to 100 kN

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NON-DESTRUCTIVE TESTING

I.	BUILDING MATERIALS - REINFORCED CONCRETE STRUCTURES			
1.	Non-destructive testing	Ultrasonic Pulse Velocity	IS 13311 (Part-1)	1.5 km/s to 5 Km/s
		Rebound Hammer	IS 13311 (Part-2)	15 RN to 50 RN (10 N/mm ² to 70 N/mm ²)