

Laboratory

**Geo Engineering Services, Plot No. 78 to 80 & 95 to 97, Amar Nagar,
Vadodara, Gujarat**

**Location 1: Plot No. 78 to 80 & 95 to 97, Amar Nagar, Vadodara, Gujarat
Location 2: Plot No. 37 to 39, Amar Nagar, New VIP Road, Vadodara, Gujarat**

Accreditation Standard ISO/IEC 17025: 2005

Certificate Number

TC-6779

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Validity

29.01.2018 to 28.01.2020

Last Amended on 23.05.2019

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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CHEMICAL TESTING

LOCATION 1				
I.	WATER			
1.	Water (Construction Water, Domestic Water, Bore Water, Surface Water)	pH	IS 3025 (Part 11) (Clause 2.0)	1 to 13
		Sulphate as (SO ₄)	IS 3025 (Part 24) (Clause 40.0)	2 mg/l to 2000 mg/l
		Chloride as (Cl)	IS 3025 (Part 32) (Clause 2.0)	2 mg/l to 3000 mg/l
		Electrical Conductivity (EC) @ 25 °C	IS 3025 (Part 14)	0.5 mS/cm to 200 mS/cm
		Magnesium	IS 3025 (Part 46) (Clause 6.0)	1 mg/l to 200 mg/l
		Calcium	IS 3025 (Part 40) (Clause 5.0)	3 mg/l to 500 mg/l
		Total Hardness	IS 3025 (Part 21) (Clause 5.0)	5 mg/l to 1000 mg/l
2.	Water (Domestic Water, Bore Water, Distilled Water)	Acidity	IS 3025 (Part 22)	Upto 20 mg/l
		Alkalinity	IS 3025 (Part 23) IS 456	5 mg/l to 200 mg/l
		Total Dissolved Solid	IS 3025 (Part 16)	1 mg/l to 3000 mg/l
		Silica	IS 3025 (Part 35)	0.01 mg/l to 25 mg/l
3.	Water (Construction Water)	Acidity	IS 3025 (Part 23) IS 456	0.1 ml to 5 ml
		Alkalinity	IS 3025 (Part 23) IS 456	0.1ml to 50 ml

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MECHANICAL TESTING

LOCATION 1				
I.	BUILDING MATERIALS			
1.	Coarse Aggregates	Grading (Sieve Analysis)	IS:2386 (Part-1)	4.75 mm to 80 mm
		Abrasion Value	IS:2386 (Part-4)	5 % to 50 %
		Impact Value	IS:2386 (Part-4)	5 % to 50 %
		Crushing Value	IS:2386 (Part-4)	5 % to 50 %
		Specific Gravity	IS:2386 (Part-3)	1.5 to 3.5
		Water Absorption	IS:2386 (Part-3)	0.1 % to 20%
		Flakiness Index	IS:2386 (Part-1)	5% to 40%
		Elongation Index	IS:2386 (Part-1)	5% to 40%
		10% Fine Value	IS:2386 (Part-4)	50 kN to 400 kN
		Soundness	IS:2386 (Part-5)	1 % to 30%
		Bulk Density	IS:2386 (Part-3)	1 Kg/l to 4 Kg/l
2.	Fine Aggregates	Grading (Sieve Analysis)	IS:2386 (Part-1)	0.075 mm to 4.75 mm
		Specific Gravity	IS:2386 (Part-3)	1.5 to 3.5
		Water Absorption	IS:2386 (Part-3)	0 to 20 %
		Bulk Density	IS:2386 (Part-3)	1 kg/l to 4 kg/l
		Surface Moisture	IS:2386 (Part-3)	Up to 20%
		Soundness	IS:2386 (Part-3)	1% to 30%
3.	Burnt Clay Building Bricks	Compressive Strength	IS:3495 (Part-1)	1 N/mm ² to 20 N/mm ²
		Water Absorption	IS:3495 (Part-2)	5% to 30%
		Sizes and Shapes (Dimension)	IS:1077	1000 mm to 5000 mm
		Efflorescence	IS:3495 (Part-3)	Qualitative

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4.	Hardened Concrete			
a.	Cube (15cm x 15cm x 15cm)	Compressive Strength	IS:516	5 N/mm ² to 80 N/mm ²
b.	Paver Block	Compressive Strength	IS:15658 Annexure D	15 N/mm ² to 80 N/mm ²
		Water Absorption	IS:15658 Annexure C	4% to 20%
5.	Concrete (Fresh)	Slump Test	IS:516 and IS:1199	0 to 200 mm
		Accelerated testing of concrete for compressive strength	IS:9013	5 N/mm ² to 80 N/mm ²
6.	Cement	Consistency	IS:4031(Part4), Ammdt 02	20% to 40%
		Initial Setting Time	IS:4031(Part5), Ammdt 02	30 Minutes to 200 Minutes
		Final Setting Time	IS:4031(Part5) Ammdt 02	100 Minutes to 600 Minutes
		Soundness (Le Chatelier Method)	IS:4031(Part3)	0.1 mm to 15 mm
		Compressive Strength	IS:4031(Part6) Ammdt 03	5 N/mm ² to 70 N/mm ²
		Fineness by Blain's air permeability	IS 4031 (Part-2) Ammdt 01	100 m ² /kg to 400 m ² /kg
		Density	IS 4031 (Part-11)	2 g/cc to 5 g/cc
7.	Fly Ash	Particles retained 45 micron sieve	IS 1727	1% to 35%
		Fineness by Blain's air permeability	IS 1727	100 m ² /kg to 400 m ² /kg
		Compressive Strength at 28 days	IS 1727	50% to 95%
		Specific Gravity (Density)	IS 1727	1.5 g/cc to 2.5 g/cc
8.	Bitumen	Specific Gravity	IS 1202	1 to 3.0
		Penetration	IS 1203	1 to 120

**Pankaj Goyal
Convenor**

**Sunita Rawat
Program Manager**

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		Softening Point Test	IS 1205	10 °C to 100 °C
		Ductility Test	IS 1208	10 cm to 100 cm
		Flash Point	IS 1209	20 °C to 500 °C
		Absolute Viscosity Size 12	IS 1206 (Part II)	100 poise/sec to 8000 poise/sec
		Kinematic Viscosity Size 6	IS 1206 (Part III)	60 cSt to 1000 cSt
		Viscosity ratio on residue from TFO	IS 1206	1 to 4
		Solubility Trichloroethylene	IS 1212	95 % to 100 %
		Fire Point	IS 1209	100 °C to 500 °C
9.	Chequered / Plain Cement Concrete Tiles	Water Absorption	IS 1237	1 % to 20 %
		Wet Transverse Strength	IS 1237	1 N/mm ² to 20 N/mm ²
10.	Ceramic Tiles	Modulus of Rupture	IS 13630 (Part 6)	2 MPa to 50 MPa
		Flatness	IS 13630 (Part 1)	0.01 mm to 10 mm
		Straightness	IS 13630 (Part 1)	0.1 % to 5 %
		Crazing Resistance	IS 13630 (Part 11)	Qualitative
		Water Absorption	IS 13630 (Part 2)	0.01 % to 10 %
11.	Asphalt Mix	Binder Content	IRC SP 11	1 % to 6 %
II.	SOIL & ROCK			
1.	Soil	Laboratory CBR Test		
		Soaked	IS:2720 (Part 16)	0.5 % to 50 %
		Unsoaked	IS:2720 (Part 16)	0.5 % to 50 %
		Swell Pressure Test	IS:2720 (Part 41)	Upto 3 kg/cm ²
2.	Rock	Uniaxial Compressive Strength	IS 9143	10 N/mm ² to 90 N/mm ²
		Water Content	IS 13030	0.5 % to 10 %

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		Porosity	IS 13030	1 % to 50 %
		Density	IS 13030	1 g/cc to 4 g/cc
		Tensile Strength - Brazilian Method	IS 13030	1 N/mm ² to 15 N/mm ²
III.	WOOD & WOOD PRODUCTS			
1.	Flush Door Shutter	Adhesion of Plies (Knife Test)	IS 4020 (Part 14)	Qualitative
		Slamming Test	IS 4020 (Part 10)	Qualitative
		Glue Adhesion Test	IS 4020 (Part 15)	Qualitative
2.	Wood	Moisture Content	IS 1708 (Part 1)	1 % to 13 %
		Specific Gravity (Density)	IS 1708 (Part 2)	0.4 g/cc to 1.0 g/cc
3.	Wooden Flush Door Shutter	End Immersion Test	IS 4020 (Part 13)	Qualitative
		Shock Resistance Test	IS 4020 (Part 8)	Qualitative
IV.	MECHANICAL PROPERTIES OF METALS			
1.	Steel (Reinforcing and Structural) Steel)	Yield Strength	IS 1608	10kN to 900kN (160 N/mm ² to 800 N/mm ²)
		Ultimate Strength	IS 1608	10 kN to 900 kN (160 N/mm ² to 900 N/mm ²)
		Elongation	IS 1608	5 to 30%
		Nominal Mass	IS 1786	Upto 10 kg/m
		Bend Test	IS:1599	Qualitative 8 mm to 20 mm (Mandrel: 16, 20, 24, 30, 32, 36, 40, 48, 50)

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				56, 60, 64, 75, 80, 96, 100, 125, 128, 150, 160, 192)
		Re Bend Test	IS 1786	Qualitative 8 mm to 20 mm (Mandrel: 32, 40, 48, 50, 56, 60, 72, 84, 96, 112, 120, 140, 150, 160)

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MECHANICAL TESTING

LOCATION 2				
1.	SOIL & ROCK			
1.	Soil	Atterberg's Limit	IS 2720 (Part 5)	
		Liquid Limit		Upto 400 %
		Plastic Limit		Upto 50 %
		Light Compaction (Standard Proctor)	IS 2720 (Part 7)	
		MDD		1.5 g/cc to 3.0 g/cc
		OMC		5 % to 30 %
		Heavy Compaction (Modified Proctor)	IS 2720 (Part 7)	
		MDD		MDD:
		OMC		1.5 g/cc to 3.0 g/cc
		Specific Gravity	IS 2720 (Part 3/Sec.I)	OMC: 5 % to 30 %
		Free Swell Index	IS 2720 (Part 40)	1.2 to 4
		Grain Size analysis	IS 2720 (Part 4)	Upto 100 %
		Moisture content	IS 2720 (Part 2)	75 um to 20 mm
		Direct Shear Test –UU Test		1 % to 30 %
		Cohesion (C)	IS 2720 (Part 13)	
		Angle of internal friction (phi)	IS 2720 (Part 13)	0.0 to 3 kg/cm ²
		Unconfined Compressive Strength	IS 2720 (Part 10)	0 to 45 ⁰
		Oedometer Consolidation Test –	IS 2720 (Part 15)	0.1 to 3kg/cm ²
				0 to 1

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		Compression Index (Cc)		
		Laboratory Permeability Test		
		Constant Head Method	IS 2720 (Part 17)	10^{-1} to 10^{-5} cm/s
		Falling Head Method	IS 2720 (Part 17)	10^{-3} to 10^{-7} cm/s
		Triaxial		
		Cohesion (C)	IS 2720 (Part 11)	0.01 kg/cm ² to 4 kg/cm ²
		Angle of Internal Friction		0 to 45 °
		Shrinkage Limit	IS 2720 (Part 06)	0 to 25 %
2.	Field Test	Plate Load Test	IS 1888	1 t/m ² to 30 t/m ²
		Pile Load Test	IS 2911	1 T to 250 T
		Standard Penetration Test	IS 2131	1 to 100
		Field CBR	IS 2720 (Part 31)	1 % to 60 %
		K Value	IS 9214	0.1 kg/cm ² to 10 kg/cm ²
		Collection of Undisturbed Sample	IS 1892	Qualitative
		Load Test for Bridge and Slab	IRC SP-51 IS 456	0 to 50 mm
		Field Density test Sand replacement method	IS 2720 (Part 28)	1.5 g/cc to 3 g/cc
		Field Moisture test Sand replacement method	IS 2720 (Part 28)	1 % to 20 %
		Field Density test core cutter method	IS 2720 (Part 29)	1.5 g/cc to 3 g/cc
		Field Moisture test core cutter method	IS 2720 (Part 29)	5 % to 30 %

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NON DESTRUCTIVE TESTING

LOCATION 1				
I.	BUILDING MATERIALS - REINFORCED CONCRETE STRUCTURES			
1.	Reinforced Concrete	Ultrasonic Pulse Velocity	IS 13311 (Part 1)	0.5 km/s to 5 km/s
		Rebound Hammer Test	IS 13311 (Part 2)	10 N/mm ² to 70 N/mm ² (20 to 80 Rebound Number)
		Half-cell Potential	ASTM C-876	Qualitative (Reported in -100 mV to -600 mV)
		Carbonation	BS-EN14630	Upto 100 mm
		Pile Integrity Test	IS 14893	3000m/sec to 4500m/sec

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