Laboratory	**Geo Engineering Services, 1542, Pashupatinath Nagar, Godi Road, Dahod, Gujarat**	
Accreditation Standard	**ISO/IEC 17025: 2005**	
Certificate Number	**TC-7474** ***(in lieu of T-2966 & T-4003)***	**Page 1 of 5**
Validity	**24.05.2018 to 23.05.2020**	**Last Amended on 22.06.2018**

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

CHEMICAL TESTING

I.	**WATER**			
1.	**Water (Construction Water, Domestic Water, Irrigation Water, Bore Water, Distilled Water, Waste Water)**	pH @ 25^0C	IS 3025 (Part 11):1983, (RA 2017)	1 to 13
		Sulphate as SO_4	IS 3025 (Part 24):1986 (RA 2014)	1 mg/1 to 2000 mg/l
		Chloride as Cl	IS 3025 (Part 32):1988 (RA 2014)	0.5 mg/1 to 3000 mg/l

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MECHANICAL TESTING

I.	**MECHANICIAL PROPERTIES OF METALS**			
1.	**Reinforcing Steel (Up to 20mm Diameter)**	Yield Strength	IS 1608:2005, (RA 2017)	4 kN to 600 kN(Load)
		Ultimate Strength	IS 1608:2005, (RA 2017)	4 kN to 600 kN(Load)
		Elongation, %	IS 1608:2005, (RA 2017)	5 % to 30 %
		Nominal Weight of Steel	IS 1608:2005, (RA 2017)	0.1 Kg/m to 10 Kg/m
		Bend	IS 1599-2012, (RA 2017)	8 mm to 20 mm
		Rebend	IS 1786-2008, (RA 2013)	8 mm to 20 mm
II.	**BUILDING MATERIAL**			
1.	**Coarse Aggregates**	Sieve Analysis, %	IS 2386 (Part 1):1963 (RA 2016), Amndt 04	(0 to 100%) Sieve Size- 4.75 mm to 90 mm
		Abrasion value (Loss Angeles Machine)	IS 2386 (Part 4):1963 (RA 2016), Amndt 03	2 % to 50 %
		Impact value	IS 2386 (Part 4):1963 (RA 2016), Amndt 03	2 % to 50 %
		Crushing value	IS 2386 (Part 4):1963 (RA 2016), Amndt 03	2 % to 50 %
		Specific Gravity	IS 2386 (Part 3):1963 (RA 2016)	1.5 to 3.5
		Water absorption	IS 2386 (Part 3):1963 (RA 2016)	0.1 % to 10 %
		Flakiness Index	IS 2386 (Part 1):1963 (RA 2016), Amndt 04	1 % to 45 %
		Elongation Index	IS 2386 (Part 1):1963 (RA 2016), Amndt 04	1 % to 45 %
		Bulk Density	IS 2386 (Part 3):1963 (RA 2016)	1 kg/l to 2.5 kg/l

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		Soundness	IS 2386 (Part 5):1963 (RA 2016)	1 % to 30 %
2.	**Fine Aggregates**	Sieve Analysis, %	IS 2386 (Part 1):1963 (RA 2016), Amndt 04	(0 to 100%) Sieve Size- 0.075 mm to 4.75 mm
		Specific Gravity	IS 2386 (Part 3):1963 (RA 2016)	1.5 to 3.5
		Water absorption	IS 2386 (Part 3):1963 (RA 2016)	0.5 % to 10 %
		Bulk Density	IS 2386 (Part 3):1963 (RA 2016)	1 kg/l to 2.5 kg/l
		Soundness	IS 2386 (Part 5):1963 (RA 2016)	1 % to 20 %
3.	**Burnt Clay Building Bricks**	Compressive Strength	IS 3495 (Part 1):1992 (RA 2016)	1.5 N/mm^2 to 15 N/mm^2
		Water absorption	IS 3495 (Part 2):1992 (RA 2016)	5 % to 30 %
		Dimension Test	IS 1077:1992 (RA 2016) Amndt 01	500 mm to 5000 mm
		Efflorescence	IS 3495(Part 3):1992 (RA 2016)	Qualitative
4.	**Hardened Concrete**	Compressive Strength	IS 516:1959 (RA 2013), Amndt 2	5 N/mm^2 to 80 N/mm^2
5.	**Cement (OPC, PPC, PSC)**	Fineness by Blain Air Permeability	IS 4031 (Part 2):1999 (RA 2013), Amndt 01	200 m^2/kg to 400 m^2/kg
		Consistency	IS 4031 (Part 4):1988 (RA 2014), Amndt 01	20 % to 40 %
		Initial Setting Time	IS 4031(Part 5):1988 (RA 2014), Amndt 02	5 min to 300 min
		Final Setting Time		30 min to 700 min
		Soundness (By Le Chatelier Method)	IS 4031 (Part 3):1988 (RA 2014), Amndt 02	0.5 mm to 10 mm
		Compressive Strength	IS 4031(Part 6):1988 (RA 2014), Amndt 04	10 N/mm^2 to 70 N/mm^2

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		Density	IS 4031 (Part 11):1988 (RA 2014)	2.5 g/cc to 3.5 g/cc
6.	**Paver Block**	Compressive Strength	IS 15658:2006 (RA 2017), Annex-D	5 N/mm^2 to 60 N/mm^2
		Water absorption	IS 15658:2006 (RA 2017), Annex-C	1.0 % to 15 %
7.	**Bitumen**	Specific Gravity	IS 1202:1978 (RA 2013)	0.5 to 1.5
		Penetration Test	IS 1203:1978 (RA 2013)	1 to 400(1/10mm)
		Softening Point Test	IS 1205:1978 (RA 2014)	10°C to 100 °C
		Ductility Test	IS 1208:1978 (RA 2014)	1 cm to 100 cm
		Flash Point	IS 1209:1978 (RA 2014)	70°C to 500 °C
		Absolute Viscosity	IS 1206(Part 2):1978 (RA 2014)	100 poises to 8000 poises
		Kinematic Viscosity	IS 1206(Part 3):1978 (RA 2014)	60 cSt to 1000 cSt
		Marshall Stability	ASTM D-6927-15	1 kN to 25 kN
		Marshall Flow Value	ASTM D-6927-15	0.5 mm to 30 mm
		Binder content	IRC SP-11-1984 Appendix-5(C)	0.5 % to 10 %
8.	**Fresh Concrete**	Slump Test	IS 1199:1959 (RA 2013)	10 mm to 200 mm
II.	**SOIL AND ROCK**			
1.	**Soil**	Atterberg's Limit Liquid Limit	IS 2720(Part 5):1985 (RA 2015)	10 % to 100 %
		Plastic Limit	IS 2720(Part 5):1985 (RA 2015)	10 % to 100 %
		Light Compaction Test MDD	IS 2720 (Part 7):1980 (RA 2016), Amndt 2	1.5 g/cc to 2.5 g/cc
		OMC		1 % to 30 %
		Heavy Compaction Test MDD	IS 2720 (Part 8):1983 (RA 2015)	1.5 g/cc to 2.5 g/cc
		OMC		1 % to 30 %

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		Specific Gravity	IS 2720(Part 3) (Sec:1):1980 (RA 2016)	1.1 to 3.0
		Free Swell Index	IS 2720 (Part 40):1977 (RA 2016)	Upto 500 %
		Grain Size Analysis	IS 2720 (Part 4):1985 (RA 2015)	(0 to 100 %) 75micron to 10 mm
		Direct Shear Test (Undrained) Cohesion	IS 2720 (Part 13):1986 (RA 2016) Amndt 01	Upto 1kg/cm^2
		Angle of internal friction		Upto 45 degree
		Laboratory Permeability Test Constant Head Permeability	IS 2720 (Part 17):1986 (RA 2016)	10^{-1} cm/s to 10^{-5} cm/s
		Falling Head Permeability		10^{-4} cm/s to 10^{-7} cm/s
		CBR-Soaked	IS 2720 (Part 16):1987 (RA 2016)	0.5 % to 50 %
		CBR-Un soaked		0.5 % to 50 %
		Unconfined Compressive Strength	IS 2720 (Part 10):1991 (RA 2015)	0.25 kg/cm^2 to 3 kg/cm^2
2.	**Soil (Field Test)**	Field Density test Core Cutter Method	IS 2720 (Part 29):1975 (RA 2015)	1.5 g/cc to 2.5 g/cc
		Field Moisture test by Core Cutter Method	IS 2720 (Part 29):1974 (RA 2015)	1 % to 20 %
		Field Density test Sand Replacement Method	IS 2720 (Part 28):1974 (RA 2015) Amndt 01	1.5 g/cc to 2.5 g/cc
		Field Moisture test by Sand Replacement Method	IS 2720 (Part 28):1974 (RA 2015)	1 % to 20 %
3.	**Rock**	Unconfined Compressive Strength	IS 9143:1979, (RA 2016)	10 N/mm^2 to 90 N/mm^2
		Water Content	IS 13030:1991, (RA 2016)	0.5 % to 10 %
		Porosity	IS 13030:1991, (RA 2016)	1 % to 50 %
		Density	IS 13030:1991, (RA 2016)	1 g/cc to 4 g/cc

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