

Laboratory Jayshree Engineering Services, Katpur Road, Rajpur Ta. & Dist.  
Patan, Gujarat

Accreditation Standard ISO/IEC 17025: 2005

Certificate Number TC-6748

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Validity 12.01.2018 to 11.01.2020

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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**CHEMICAL TESTING**

I.	WATER			
1.	Construction Water	Total Alkalinity	IS 3025 (Part-23) 1984, (RA 2003) Titrimetric Method	5 mg/l to 1000 mg/l
		Acidity as CaCO <sub>3</sub>	IS 3025 (Part-22) 1986, (RA 2003) Indicator Method	5 mg/l to 1000 mg/l
		pH	IS 3025 (Part-11) 1983, (RA 2002) Potentiometric Method	4.0 to 12.0
		Chloride content as Cl	IS 3025 (Part-32) 1988 (RA 2007) Argentometric Method	05 mg/l to 5000 mg/l
		Fixed Residues (In organic Solids)	IS 3025 (Part-18) 1984, (RA 2002)	10 mg/l to 10000 mg/l
		Volatile Residues (Organic Solids)	IS 3025 (Part-18) 1984, (RA 2002)	10 mg/l to 10000 mg/l
		Total Suspended Solids	IS 3025 (Part-17) 1984, (RA 2002)	01 mg/l to 10000 mg/l
		Sulphate content as SO <sub>3</sub>	IS 3025 (Part-24) 1984, (RA 2002) Turbidity Method	10 mg/l to 2000 mg/l

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### MECHANICAL TESTING

<b>I. BUILDING MATERIALS</b>				
1.	<b>Concrete</b>	Compressive strength of cubes	IS 516 :1959, (RA 2013)	10 N/mm <sup>2</sup> to 45 N/mm <sup>2</sup>
		Accelerated cured Concrete (Compressive Strength)	IS 9013 : 1978, (RA 2013)	10 N/mm <sup>2</sup> to 45 N/mm <sup>2</sup>
		Slump Test (Workability of Fresh Concrete)	IS 1199 :1959, (RA 2013)	Up to 300 mm.
2.	<b>Hollow, Solid Block</b>	Compressive strength	IS 2185 (Part-1) 2005, (RA 2010)	1 N/mm <sup>2</sup> to 15 N/mm <sup>2</sup>
		Dimensions: Length Width Height	IS 2185 (Part-1) 2005, (RA 2010)	100 to 700mm 100 to 700mm 100 to 300mm
		Block Density	IS 2185 (Part-1) 2005, (RA 2010)	1000 Kg/m <sup>3</sup> to 2500 Kg/m <sup>3</sup>
		Water Absorption	IS 2185 : 2005, (RA 2010)	0.10% to 15 %
3.	<b>Burnt Clay Bricks</b>	Compressive strength	IS 3495 (Part-1) 1992, (RA 2011)	1 N/mm <sup>2</sup> to 15.0 N/mm <sup>2</sup>
		Efflorescence	IS 3495 (Part-3) 1992, (RA 2011)	Visual Observation
		Water absorption	IS 3495 (Part-2) 1992, (RA 2011)	2 % to 25 %
		Dimension: Length Width Height	IS 1077 : 1992, (RA 2011)	4500 to 4700 mm 2100 to 2300 mm 1300 to 1500 mm
		4.	<b>Fine Aggregates</b>	Sieve analysis
Specific Gravity	IS 2386 (Part-3) 1963, (RA 2016)			1.5 to 4.0

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		Water absorption	IS 2386 (Part-3) 1963, (RA 2016)	1 % to 10 %
		Bulk Density	IS 2386 (Part-3) 1963, (RA 2016)	1.2 kg/l to 2.5 kg/l
		Soundness	IS 2386 (Part-5) 1963, (RA 2016)	1 % to 20 %
		Material Finer than 75 micron	IS 2386 (Part-1) 1963, (RA 2016)	1 % to 10 %
		Silt Content	IS 2386 (Part-2) 1963, (RA 2016)	0.01% to 10 %
5.	<b>Coarse Aggregates</b>	Sieve analysis	IS 2386 (Part-1) 1963, (RA 2016)	75 $\mu$ to 125 mm (0.1% to 100 %)
		Flakiness Index	IS 2386 (Part-1) 1963, (RA 2016)	5 % to 60 %
		Elongation Index	IS 2386 (Part-1) 1963, (RA 2016)	5 % to 60 %
		Specific Gravity	IS 2386 (Part-3) 1963, (RA 2016)	1.5 to 4.0
		Water absorption	IS 2386 (Part-3) 1963, (RA 2016)	1 % to 10 %
		Crushing Value	IS 2386 (Part-4) 1963, (RA 2016)	5 % to 60 %
		Impact Value	IS 2386 (Part-4) 1963, (RA 2016)	5 % to 60 %
		Los angels' Abrasion value	IS 2386 (Part-4) 1963, (RA 2016)	5 % to 60 %
		10 % Fine Value	IS 2386 (Part-4) 1963, (RA 2016)	1 kN to 500 kN
		Bulk Density	IS 2386 (Part-3) 1963, (RA 2016)	1.2 kg/lit to 2.5 kg/l
		Soundness	IS 2386 (Part-5) 1963, (RA 2016)	1 % to 20 %
6.	<b>Bitumen</b>	Softening Point	IS 1205 : 1978, (RA 2014)	40°C to 60 °C
		Penetration	IS 1203 : 1978, (RA 2014)	1 (1/10) to 350 (1/10)

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		Ductility	IS 1208 : 1978, (RA 2014)	40 cm to 100 cm
		Specific gravity	IS 1202 : 1978, (RA 2014)	0.99 to 1.102
		Absolute Viscosity	IS 1206 : 1978, (RA 2009)	360 Poise to 3500 Poise
		Kinematic viscosity	IS 1206 : 1978, (RA 2009)	150 Cst to 500 Cst
		Loss on heating	IS 1212 : 1978, (RA 2014)	0.1 % to 10 %
7.	<b>Bituminous Mix</b>	Marshall Stability	ASTM D 1559, (Part-7), 1989	0.1 kN to 25 kN
		Marshall Flow	ASTM D 1559, (Part-7), 1989	0.1 mm to 6.0 mm
		Binder Content	ASTM D 2172, (RA 2011)	1 % to 9 %
		Density	ASTM D 1559, 1979, (RA 2004)	1 g/cc to 5 g/cc
8.	<b>Cement (OPC/PPC)</b>	Standard Consistency	IS 4031 (Part-4) 1988, (RA 2016)	25 % to 40 %
		Initial Setting Time	IS 4031 (Part-5) 1988, (RA 2014)	30 min to 400 min
		Final Setting time	IS 4031 (Part-5) 1988, (RA 2014)	100 min to 600 min
		Compressive strength	IS 4031 (Part-6) 1988, (RA 2014)	10 to 80 N/mm <sup>2</sup>
		Soundness by Le-Chattalier	IS 4031 (Part-3) 1988, (RA 2014)	0.05 to 10 mm
		Fineness by blain air permeability	IS 4031 (Part-2) 1999, (RA 2014)	100 m <sup>2</sup> /kg to 600 m <sup>2</sup> /kg
9.	<b>Building Stone, Rubble</b>	Water Absorption	IS 1124 : 1974, (RA 2013)	0.1 % to 10 %
		Specific Gravity	IS 1124 : 1974, (RA 2003)	1 to 3
		Compressive Strength	IS 1123 : 1975, ( RA 2003)	50 N/mm <sup>2</sup> to 90 N/mm <sup>2</sup>
II.	<b>MECHANICAL PROPERTIES OF METALS</b>			
1.	<b>Steel Reinforcement bars, Wire,</b>	Weight per Meter	IS 1786 : 2008	0.1 kg/m to 8 kg/m
		Yield Stress	IS 1608 : 2010 IS 1786 : 2005	200 N/mm <sup>2</sup> to 800 N/mm <sup>2</sup>

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		Tensile Strength	IS 1608 :2010 IS 1786 : 2005	200 N/mm <sup>2</sup> to 900 N/mm <sup>2</sup>
		% of Elongation	IS 1608 : 2010 IS 1786 : 2005	8 % to 40%
		Bend	IS 1599 :1985, (RA 2012) IS 1786 : 2005	Qualitative (Mandrel Size 8,10,12,16,20,25, 32,40,50 & 120 mm)
		Rebend	IS 1786 : 2008	Qualitative (Mandrel Size 8,10,12,16,20,25, 32,40,50 & 120 mm)
<b>III.</b>	<b>SOIL AND ROCK</b>			
<b>1.</b>	<b>Soil</b>	Liquid Limit	IS 2720 (Part-5) 1985, (RA 2015)	25 % to 120 %
		Plastic Limit	IS 2720 (Part-5) 1985, (RA 2015)	15 % to 40 %
		Shrinkage Limit	IS 2720 (Part-6) 1985, (RA 2011)	0.5% to 100 %
		Moisture content	IS 2720 (Part-2) 1985, (RA 2015)	0.1 % to 30 %
		Light compaction MDD OMC	IS 2720 (Part-7) 1980, (RA 2011)	1.3 g/cc to 2.10 g/cc 5 % to 30.0 %
		Heavy compaction MDD OMC	IS 2720 (Part-8) 1983, ( RA 2011)	1.4 g/cc to 2.60 g/cc 5 % to 30.0 %
		California Bearing ratio	IS 2720 (Part-16)1987, (RA 2011)	1 % to 60 %
		Direct shear test C Φ	IS 2720 (Part-13) 1986, (RA 2015)	0.02 to 0.40 kg/cm <sup>2</sup> , 20 to 50 °

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		Permeability	IS 2720 (Part-27) 1986, (RA 2011)	$10^{-4}$ to $10^{-9}$ cm/see
		Specific Gravity	IS 2720 (Part-3) 1980, (RA 2011)	1.5 to 3
		Unconfined compression	IS 2720 (Part-10) 1985, (RA 2010)	0.01 Kg / cm <sup>2</sup> to 5 kg / cm <sup>2</sup>
		Grain Size (Gravel, Sand, Clay + silt)	IS 2720 (Part 4) 1985 (RA 2015)	75 $\mu$ to 4.75 mm
		Free Swell Index	IS 2720 (Part-40) 1977, (RA 2011)	10 % to 200 %
		Swelling Pressure	IS 2720 (Part-41) 1977, (RA 2011)	0.01 kg/cm <sup>2</sup> to 2.0 kg/cm <sup>2</sup>
		Consolidation	IS 2720 (Part 15) 1986, (RA 2011)	0.1 kg/cm <sup>2</sup> to 8.0 kg/cm <sup>2</sup>

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**MECHANICAL TESTING**

AT SITE				
I.	<b>SOIL &amp; ROCK</b>			
1.	<b>Soil</b>	Standard Penetration N. value	IS 2131 : 1981	0 to 100
		Dry Density (Core Cutting Method)	IS:2720 (Part-29) 1974, (RA 2010)	0.5 g/cm <sup>3</sup> to 3.0 g/cm <sup>3</sup>
		Dry Density (Sand Replacement Method)	IS:2720 (P-28) 1974, (RA 2005)	0.5 g/cm <sup>3</sup> to 3.0 g/cm <sup>2</sup>
		Benkelman Beam Deflection Test (Bituminous Section)	ASTM D 4695 - 03	0 to 15 mm
		Plate Load Test (Soil & Sub Grade)	IS 1888 : 1982, (RA 1997)	5 tone to 50 tone

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