

Laboratory **Span Material Testing & Consultancy Services Limited, Plot No. 35-36, Palanpur-Deesa Highway, Palanpur, Dist. Banaskantha, Gujarat**

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

Certificate Number **TC-5136**

Page 1 of 6

Validity **05.11.2018 to 02.03.2019**

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	pH	IS 3025 (Part-11):1983, (RA 2017)	3 to 11
		Acidity	IS 3025 (Part-22):1986, (RA 2014) (Indicator Method)	0.5 mg/l to 500 mg/l
		Alkalinity	IS 3025 (Part-23):1986, (RA 2014) (Indicator Method)	0.5 mg/l to 5000 mg/l
		Sulphates	IS 3025 (Part-24):1986, (RA 2014) (Turbidity Method)	10 mg/l to 1000 mg/l
		Chlorides	IS 3025 (Part-32):1988, (RA 2014) (Argentometric Method)	10 mg/l to 5000 mg/l
		Suspended Matter	IS 3025 (Part-18):1984, (RA-2017)	10 mg/l to 5000 mg/l
		Organic (Volatile) Residue	IS 3025 (Part-18):1984, (RA 2017)	1 mg/l to 10000 mg/l
		Inorganic (Fixed) Residue	IS 3025 (Part-18):1984, (RA 2017)	1 mg/l to 10000 mg/l
		Total Hardness	IS 3025 (Part-21):2009, (RA 2014)	10 mg/l to 10000 mg/l
		Total Dissolved Solids	IS 3025 (Part-16):1984, (RA 2017)	5 mg/l to 15000 mg/l

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Page 2 of 6

Validity 05.11.2018 to 02.03.2019

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MECHANICAL TESTING

I.	SOIL AND ROCK			
1.	Soil	Grain size analysis	IS 2720 (Part-4):1985, (RA 2010)	0.01% to 100.0%
		Atterberg's limit (Plasticity index)	IS 2720 (Part-5):1985, (RA 2010)	5% to 150%
		Proctor (by Light compaction)	IS 2720 (Part-7):1980 (RA 2011)	
		MDD		0.01 g/cc to 3.00 g/cc
		OMC		0.1% to 30.0%
		Proctor (by Heavy compaction)	IS 2720 (Part-8):1983 (RA 2010)	
		MDD		0.01 g/cc to 3.00 g/cc
		OMC		0.1% to 30.0%
		Free swell index	IS 2720 (Part-40):1985, (RA 2011)	10% to 100%
		Specific gravity	IS 2720 (Part-3, Sec1):1980, (RA 2011)	0.50 to 3.00
		Shrinkage Limit	IS 2720 (Part-6):1972, (RA 2016)	10% to 50%
		Swelling Pressure	IS 2720 (Part-41):1977, (RA 2016)	0.01 kg/cm ² to 3.00 kg/cm ²
		Water Content / Moisture Content	IS 2720 (Part 2):1973, (RA 2015)	0.5% to 30%
		California Bearing Ratio	IS 2720 (Part-16):1985, (RA 2016)	1% to 90%
Direct shear	IS 2720:1986 (Part -13), (RA 2016)	C = Upto 0.2 kg/cm ² φ = 15° to 40°		
Consolidation	IS 2720:1986 (Part-15), (RA 2016)	a _v =0.01 cm ² /kg to 5.0 cm ² /kg c _v =0.1 mm ² /min to 50 mm ² /min		

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Certificate Number

TC-5136

Page 3 of 6

Validity

05.11.2018 to 02.03.2019

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II.	BUILDING MATERIALS			
1.	Fine Aggregate	Sieve analysis	IS 2386 (Part-1):1963, (RA 2011)	Upto 100.0%
		Fineness Modulus By Gradation	IS 2386 (Part-1):1963, (RA 2011)	1 to 5
		Silt Content	IS 2386 (Part-1):1963, (RA 2011)	Upto 5%
		Specific gravity	IS 2386 (Part-3):1963 (RA 2011)	1.00 to 4.00
		Water absorption	IS 2386 (Part-3):1963 (RA 2011) Cl. 02	0.1% to 10%
2.	Coarse Aggregate	Sieve analysis	IS 2386 (Part-1):1963, (RA 2011)	Upto 100.0%
		Specific gravity	IS 2386 (Part-3):1963 (RA 2011)	1.00 to 4.00
		Water absorption	IS 2386 (Part-3):1963 (RA 2011) Cl. 02	0.1% to 10%
		Flakiness index	IS 2386 (Part-1):1963 (RA 2011) Cl. 04	1.00% to 70.00%
		Elongation index	IS 2386 (Part-1):1963, (RA 2011) Cl. 05	1.00% to 70.00%
		Impact value	IS 2386 (Part-4):1963, (RA 2011)	1.00% to 50.00%
		Abrasion value	IS 2386 (Part-4):1963, (RA 2011) (by Los angeles)	1.00% to 70.00%
		Crushing value	IS 2386 (Part-4):1963, (RA 2016)	5% to 60%
		10% Fines value	IS 2386 (Part-4):1963, (RA 2016)	5 T to 70 T
		Soundness	IS 2386 (Part-5):1963, (RA 2016)	0.1% to 25%
	Bulk Density	IS 2386 (Part-3):1963 (RA 2016)	1 kg/l to 4 kg/l	

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Certificate Number **TC-5136**

Page 4 of 6

Validity **05.11.2018 to 02.03.2019**

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3.	Cement (OPC & PPC)	Consistency	IS 4031 (Part-4):1988 (RA 2013)	20% to 40%	
		Initial setting time	IS 4031 (Part-5):1988, (RA 2013)	5 minute to 300 minute	
		Final setting time		30 minute to 600 minute	
		Fineness by blaine air permeability	IS 4031 (Part-2):1999, (RA 2013)	150 m ² /kg to 600 m ² /kg	
		Compressive Strength	IS 4031 (Part-6):1988, (RA 2014)	10 N/mm ² to 80 N/mm ²	
		Fineness by dry sieving	IS 4031 1996, (Part-1), Clause No.5, (RA.2005)	0.1% to 40%	
		Soundness by Le-chatelier methods	IS 4031 (Part-3):1988, Clause No.5, (RA 2014)	0.01 mm to 10 mm	
	Density	IS 4031 (Part-11):1988 (RA 2014)	2 g/cc to 4 g/cc		
4.	Hardened Concrete	Compressive strength	IS 516 1959 (RA 2004)	1 N/mm ² to 18 N/mm ²	
		Flexural Strength	IS 516 1959 (RA 2013)	1 N/mm ² to 10 N/mm ²	
5.	Fresh concrete	Weight per cubic meter	IS 1199 2005 (RA 2008)	1500 kg/m ³ to 3000 kg/m ³	
		Slump	IS 1199 1959 (RA 2004)	1 mm to 300 mm	
6.	Bitumen	Penetration	IS 1203 1978	1 to 400 (1/10 mm)	
		Ductility	IS 1208 1978	1 cm to 100 cm	
		Softening Point	IS 1205 1978	5 °C to 100 °C	
		Specific gravity	IS 1202 1978 (RA 2009)	0.9 to 1.10	
		Loss on heating	IS 1212 1978, RA 2014	0.1% to 100.0%	
		Absolute Viscosity	IS1206 1978 (RA 2009)	100 to 8000 poise	
		Kinematic Viscosity	IS 1206 1978 (RA 2009)	100 cSt to 1000 cSt	
7.	Bituminous Mix / Core	Bitumen content	ASTM D 2172 2017	0.1% to 10.0%	
		Marshal Stability	ASTM D 6927 2015	0.1 kN to 25 kN	
		Marshal Flow	ASTM D 6927 2015	0.5 to 10 mm	
		Density of mix	ASTM D 2726 2017	1.50 g/cc to 3.50 g/cc	
8.	Bricks	Dimension	Length	IS 1077 1982 (RA 1994)	1 mm to 5000 mm
			Width		1 mm to 5000 mm
			Height		1 mm to 5000 mm

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Certificate Number **TC-5136**

Page 5 of 6

Validity **05.11.2018 to 02.03.2019**

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		Water absorption	IS 3495 (Part-2):1992 (RA 2011)	1.0% to 30.0%
		Compressive strength	IS 3495 (Part-1):1992 (RA 2011)	1 kg/cm ² to 100 kg/cm ²
		Efflorescence	IS 3495 (Part-3):1992 (RA 2016)	Qualitative
9.	Paver block	Compressive strength	IS 156582006, Amd. 2011	20 kN/mm ² to 60 kN/mm ²
		Water absorption	IS 156582006 (RA 2017)	1% to 15%
10.	Fly Ash	Density	IS 4031 (Part-11):1988 (RA 2014)	2 g/cc to 4 g/cc
		Residue on 45 micron	IS 1727 1967 (RA 2013)	5% to 50%
11.	Pavement	Deflection using Benkelman Beam Deflection	IRC 81 1997	Upto 10 mm
III.	MECHANICAL PROPERTIES OF METALS			
1.	Reinforcement Steel	Ultimate Tensile Strength	IS 1608 2005 (RA 2011)	30 N/mm ² to 750 N/mm ²
		Elongation	IS 1608 2005 (RA 2011)	5% to 50%
		Mass per meter	IS 1786 2008 (RA 2013)	100 g/m to 10 kg/m
		Yield stress	IS 1786 2008 (RA 2011)	30 N/mm ² to 750 N/mm ²
		Bend	IS 1599 2012 (RA 2012)	Qualitative (Mandrel Dia. 16, 20, 24, 30, 36, 40, 48, 60, 72, 80, and 96 mm)

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Page 6 of 6

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MECHANICAL TESTING

AT SITE				
I.	SOIL AND ROCK			
1.	Soil	Standard Penetration	IS 2131 1981, RA 2011	Upto 100 (N-Value)
		Dry Density	IS 2720 (Part-28):1974 (Section-1 & 2) (RA 2015) (Sand replacement Method)	1.0 g/cc to 2.5 g/cc
		Dry Density	IS 2720 (Part-29):1975 (Section-1 & 2) (RA 2015) (Core cutter Method)	1.0 g/cc to 2.0 g/cc
		Field Moisture Content	IS 2720 (Part 2):1973, (RA 2015)	1% to 50%