

**Laboratory**                      **Infra Support Engineering Consultants Private Limited, # 828, 1st Cross, 1st Block, HRBR Layout, Kalyana Nagar, Bangalore, Karnataka**

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

**Certificate Number**        **TC-7854**

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**Validity**                        **11.09.2018 to 10.09.2020**

**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.	<b>WATER</b>			
1.	<b>Water</b>	pH	IS 3025 (Part-11)-1983 (RA 2012)	5 to 12
		Water Neutralization: To Neutralize 100 ml sample of water, using phenolphthalein as an indicator, using 0.02N NaOH.	IS 3025 (Part-22)-1986, (RA 2014)	0.1 ml to 10 ml
		Water Neutralization: To Neutralize 100 ml sample of water, using mixed indicator, using 0.02N H <sub>2</sub> SO <sub>4</sub> .	IS 3025 (Part-23)-1986, (RA 2014)	0.1 ml to 50 ml
		Sulphates (as SO <sub>4</sub> )	IS 3025 (Part-24)-1986, (RA 2014) (By Turbidity method)	1 mg/l to 1000 mg/l
		Chloride (as Cl)	IS 3025 (Part-32)-1988 (RA 2014)	1 mg/l to 5000 mg/l
		Organic Solids	IS 3025 (Part-18)-1984 (RA 2012)	10 mg/l to 1000 mg/l
		Inorganic Solids	IS 3025 (Part-18)-1984 (RA 2012)	10 mg/l to 5000 mg/l
		Total Suspended matter	IS 3025 (Part-17)-1984 (RA 2012)	10 mg/l to 5000 mg/l

**Venugoapl C**  
Convenor

**N. Venkateswaran**  
Program Manager

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**MECHANICAL TESTING**

<b>I. BUILDING MATERIALS</b>				
<b>1.</b>	<b>Fine Aggregate</b>	Sieve Analysis	IS 2386 (Part-1):1963 (RA 2016)	0 to 100% (75 µ to 4.75 mm)
		Specific gravity	IS 2386 (Part-3):1963 (RA 2016)	2.00 to 3.00
		Water Absorption	IS 2386(Part-3):1963 (RA 2016)	0.1% to 10%
		Bulk Density	IS 2386(Part-3):1963 (RA 2016)	1.00 kg/litre to 3.00 kg/litre
<b>2</b>	<b>Coarse Aggregate</b>	Sieve Analysis	IS 2386(Part-1):1963 (RA 2016)	0 to 100% (4.75 mm to 80 mm)
		Specific gravity	IS 2386(Part-3):1963 (RA 2016)	2.0 to 4.0
		Water Absorption	IS 2386(Part-3):1963 (RA 2016)	0.1% to 10%
		Flakiness Index	IS 2386(Part-1):1963 (RA 2016)	1.0% to 70.0%
		Elongation Index	IS 2386(Part-1):1963 (RA 2016)	1.0% to 70.0%
		Impact Value	IS 2386(Part-4):1963 (RA 2016)	1.0% to 50.0%
		Crushing Value	IS 2386(Part-4):1963 (RA 2016)	1.0% to 50.0%
<b>3.</b>	<b>Concrete Cube</b>	Compressive Strength	IS 516-1959, (RA 2013)	5.0 N/mm <sup>2</sup> to 44.0 N/mm <sup>2</sup>
<b>4.</b>	<b>Concrete Solid Blocks</b>	Block Density	IS 2185(Part-1)-2015	1500 kg/m <sup>3</sup> to 2500 kg/m <sup>3</sup>
		Water Absorption	IS 2185(Part-1)-2015	1.00% to 20.0%
		Compressive Strength	IS 2185(Part-1)-2015	1.0 N/mm <sup>2</sup> to 25.0 N/mm <sup>2</sup>
<b>5.</b>	<b>Bricks</b>	Compressive strength	IS:3495 (Part-1)-1992, (RA 2011)	2.0 N/mm <sup>2</sup> to 40.0 N/mm <sup>2</sup>

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		Water absorption	IS 3495 (Part-2)-1992, (RA 2011)	1.0% to 30.0%
<b>6.</b>	<b>Paver Block</b>	Water Absorption	IS 15658: 2006 (RA 2011)	0.1% to 40%
		Compressive Strength	IS 15658: 2006 (RA 2011)	5.0 N/mm <sup>2</sup> to 80.0 N/mm <sup>2</sup>
<b>7.</b>	<b>Tar &amp; Bituminous Materials</b>	Flash & Fire Point	IS 1209-1978 (RA 2014) A1	80°C to 360°C
		Softening Point	IS 1205-1978 (RA 2014) A1	30°C to 100°C
		Penetration	IS 1203-1978 (RA 2014) A3	40 mm to 90 mm
		Ductility	IS 1208-1978 (RA 2014) A2	1 cm to 100 cm
		Stripping value	IS 6241-1971 (RA 2013)	50% to 95%
		Specific gravity	IS 1202:1978 (RA 2014)	0.5 to 1.5
<b>8.</b>	<b>Bituminous Mix</b>	Marshall stability Test	ASTM D6927-15	0.1 kN to 30 kN
		Density	ASTM D2726-17	1.5 g/cc to 2.9 g/cc
		Flow	ASTM D6927-15	0.1 mm to 5 mm
<b>II.</b>	<b>SOIL AND ROCK</b>			
<b>1.</b>	<b>Clays &amp; Soils</b>	Grain Size Analysis ( Dry and Wet)	IS 2720 (Part-4)-1985 (RA 2015)	0 to 100% (75 μ to 4.75 mm)
		Liquid limit	IS 2720 (Part-5)-1985, (RA 2015)	10% to 80%
		Plastic limit	IS 2720 (Part-5)-1985, (RA 2015)	1% to 45%
		Light Compaction	IS 2720 (Part-7)-1980, (RA 2011)	MDD: 1 to 3.0 g/cc OMC: 0.1% to 30%

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		Heavy Compaction	IS 2720 (Part-8)-1983 (RA 2015)	MDD: 1 to 3.0 g/cc OMC: 0.1% to 30%
		California Bearing Ratio	IS 2720 (Part-16)-1987, (RA 2011)	1.0% to 50.0%
		Specific gravity	IS 2720 (Part-3/Section2): 1980 RA 2011	2.0 to 3.0
		Free Swell Index of Soil	IS 2720(Part-40):1977 (RA 2011)	0% to 200%
		Moisture Content	IS 2720(Part-2):1973 (RA 2015)	0.1 to 35%
		Triaxial Compression Test	IS 2720 Part 12 (1981) (RA 2011)	C: 0:1 kg/cm <sup>2</sup> to 4 kg/cm <sup>2</sup> Ø: 1° to 10°
		Direct Shear Test (Undrained)	IS 2720 Part 13 (1986) (RA 2011)	C:0:1 kg/cm <sup>2</sup> to 1 kg/cm <sup>2</sup> Ø: 1° to 40°
		Consolidation Test	IS 2720 Part 15 (1986) (RA 1997)	0.05 kg/cm <sup>2</sup> to 0.4 kg/cm <sup>2</sup> e° 0.1 to 1
		Hydrometer Analysis	IS 2720 Part 4 (1985) (RA 1995)	0.002 mm to 0.075 mm
<b>2.</b>	<b>Rock</b>	Uniaxial Compressive Strength	IS 9143 (1979), (RA 2016)	0 to 400 N/mm <sup>2</sup>
		Point Load Test	IS 8764 (1998) (RA 2014)	0.02 N/mm <sup>2</sup> to 35 N/mm <sup>2</sup>