

Laboratory **Quality Test Lab Pvt. Ltd., Krrish Palace, Krishna Chowk, Gola Road, Danapur, Patna, Bihar**

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

Certificate Number **TC-6656 (in lieu of T-2759)**

Page 1 of 9

Validity **17.12.2017 to 16.12.2019**

Last Amended on **19.11.2018**

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**CHEMICAL TESTING**

<b>I. BUILDING MATERIALS</b>				
<b>1.</b>	<b>Admixture</b>	Dry material Content	IS 9103:1999, (RA 2013)	0.5 % to 40 %
		Ash Content	IS 9103:1999, (RA 2013)	0.5 % to 12 %
		Relative density	IS 9103:1999, (RA 2013)	0.5 to 1.80
		Chloride	IS 6925:1973, (RA 2008)	0.005 % to 1 %
		pH	IS 9103:1999, (RA 2013)	2 to 12
<b>2.</b>	<b>Cement</b>	Loss on ignition	IS 4032:1985, (RA 2014)	0.2 % to 6.0 %
		Sulphuric anhydride (SO <sub>3</sub> )	IS 4032:1985, (RA 2014)	0.1 % to 5.0 %
		Insoluble residue	IS 4032:1985, (RA 2014)	0.5 % to 45 %
		Silica	IS 4032:1985, (RA 2014)	0.3 % to 40 %
		Ferric Oxide	IS 4032:1985, (RA 2014)	0.4 % to 10 %
		Alumina	IS 4032:1985, (RA 2014)	0.1 % to 25 %
		Calcium Oxide	IS 4032:1985, (RA 2014)	20 % to 65 %
		Magnesium Oxide	IS 4032:1985, (RA 2014)	0.5 % to 10 %
<b>3.</b>	<b>Bitumen</b>	Solubility in trichloroethylene	IS 1216:1978, (RA 2009)	80 % to 100 %
		Mineral materials (Ash)	IS 1217:1978, (RA 2009)	0.1 % to 10 %
<b>II. WATER</b>				
<b>1.</b>	<b>Drinking Water</b>	Turbidity	IS3025P-10:1984, (RA 2017)	1 NTU to 100 NTU
		Conductivity	IS3025P-14:2013, (RA 2013)	0.1 µs/cm to 1000 µs/cm
		Total dissolve solid	IS3025P-16:1984, (RA 2017)	5 mg/l to 1000 mg/l

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Page 2 of 9

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		Total suspended solid	IS3025P-17:1984, (RA 2017)	5 mg/l to 1000 mg/l
		Total Hardness as CaCO <sub>3</sub>	IS 3025P-21:2009, (RA 2014)	5 mg/l to 500 mg/l
		Acidity as CaCO <sub>3</sub>	IS3025P-22:1986, (RA 2014)	1 mg/l to 500 mg/l
		Alkalinity as CaCO <sub>3</sub>	IS3025P-23:1986, (RA 2014)	1 mg/l to 500 mg/l
		Sulphate as SO <sub>3</sub>	IS3025P-24:1986, (RA 2014)	1 mg/l to 200 mg/l
		Chloride	IS 3025P-32:1988, (RA 2014)	1 mg/l to 400 mg/l
		Phosphorus	IS 3025P-31:1988, (RA 2014)	0.001 mg/l to 5 mg/l
		Arsenic	IS 3025P-37:1988, (RA 2014)	0.0001 mg/l to 20 mg/l
		Calcium	IS 3025P-40:1991, (RA 2014)	0.1 mg/l to 200 mg/l
		Magnesium	IS 3025P-46:1994, (RA 2014)	0.1 mg/l to 200 mg/l
		Iron	IS 3025P-53:2003, (RA 2014) Cl. 6.1	0.005 mg/l to 10 mg/l
		pH	IS 3025P 11:1983, (RA 2017)	2 to 12
2.	Construction Water	Volatile Residue (Organic Solid)	IS3025P-18:1984, (RA 2012)	1 mg/l to 500 mg/l
		Fixed Residue (Inorganic Solid)	IS3025P-18:1984, (RA 2012)	1 mg/l to 500 mg/l
		Non-filterable residue (Total Suspended solid)	IS3025P-17:1984, (RA 2017)	1 mg/l to 1000 mg/l
		Acidity	IS3025P-22:1986, (RA 2014)	0.1 ml to 25 ml
		Alkalinity	IS3025P-23:1986, (RA 2014)	0.1 ml to 50 ml

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Convenor

Battal Singh  
Program Manager

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Certificate Number **TC-6656 (in lieu of T-2759)**

Page 3 of 9

Validity **17.12.2017 to 16.12.2019**

Last Amended on **19.11.2018**

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		Sulphate as SO <sub>3</sub>	IS3025P-24:1986, (RA 2014) Cl.2	1 mg/l to 400 mg/l
		Chloride	IS 3025P-32:1988, (RA 2014) Cl.2	1 mg/l to 400 mg/l
		Iron	IS 3025P-53:2003, (RA 2014) Cl.6.1	0.005 mg/l to 10 mg/l
		pH	IS 3025P 11:1983, (RA 2017) Cl.2	1 to 12
<b>III.</b>	<b>METAL &amp; ALLOYS</b>			
<b>1.</b>	<b>Low Carbon &amp; Alloy Steel</b>	Carbon	IS 228P-1:1987, (RA 2018)	0.05 % to 0.5 %
		Phosphorus	IS 228 P-3:1987, (RA 2018)	0.05 % to 0.5 %
		Sulphur	IS 228 P-9:1989, (RA 2014)	0.05 % to 0.5 %
		Silicon	IS 228 P 8:1987, (RA 2014)	0.1 % to 1.0 %
		Manganese	IS 228P 2:1987, (RA 2012)	0.1 % to 1.5 %
<b>2.</b>	<b>Stainless Steel</b>	Carbon	IS 228P-1:1987, (RA 2012)	0.05 % to 0.5 %
		Phosphorus	IS 228 P-3:1987, (RA 2012)	0.01 % to 0.50 %
		Sulphur	IS 228 P-9:1989, (RA 2014)	0.01 % to 0.50 %
		Silicon	IS 228 P 8:1987, (RA 2014)	0.1 % to 1.0 %
		Manganese	IS 228P 2:1987, (RA 2018)	0.1 % to 1.5 %
<b>IV.</b>	<b>METALLIC COATING &amp; TREATMENT SOLUTION</b>			
<b>1.</b>	<b>Aluminum &amp; its alloy</b>	Anodic Coating	IS 5523:1983, (RA 2015) Striping Method (Cl. 2.3)	1.0 um to 100 um

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Accreditation Standard ISO/IEC 17025: 2005

Certificate Number TC-6656 (in lieu of T-2759)

Page 4 of 9

Validity 17.12.2017 to 16.12.2019

Last Amended on 19.11.2018

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**MECHANICAL TESTING**

I.	<b>BUILDING MATERIALS</b>			
1.	<b>Aggregate to Coarse</b>	Sieve Analysis	IS 2386 (Part 1):1963 (RA 2016)	1 % to 100 % (0.075 mm to 125 mm)
		Flakiness Index	IS 2386 (Part 1):1963 (RA 2016)	1 % to 50 %
		Elongation Index	IS 2386 (Part 1):1963 (RA 2016)	1 % to 50 %
		Material Finer than 75 Micron	IS 2386 (Part 1):1963 (RA 2016)	1 % to 20 %
		Clay Lumps	IS 2386 (Part 2):1963 (RA 2016)	1 % to 10 %
		Specific Gravity	IS 2386 (Part 3):1963 (RA 2016)	1 to 5
		Water Absorption	IS 2386 (Part 3):1963 (RA 2016)	1 % to 30 %
		Bulk Density	IS 2386 (Part 3):1963 (RA 2016)	1 kg/L to 5 kg/L
		Crushing Value	IS 2386 (Part 4):1963 (RA 2016)	1 % to 50 %
		10 percent Fines Value	IS 2386 (Part 4):1963 (RA 2016)	1 Ton to 50 Ton
		Impact Value	IS 2386 (Part 4):1963 (RA 2016)	1 % to 50 %
		Abrasion Value to Los Angeles	IS 2386 (Part 4):1963 (RA 2016)	1 % to 60 %
		Soundness by Na <sub>2</sub> SO <sub>4</sub>	IS 2386 (Part 5):1963 (RA 2016)	1 % to 10 %
2.	<b>Aggregate to Fine</b>	Sieve Analysis	IS 2386 (Part 1):1963 (RA 2016)	1 % to 100 % (0.075 mm to 10 mm)

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Certificate Number **TC-6656 (in lieu of T-2759)**

Page 5 of 9

Validity **17.12.2017 to 16.12.2019**

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		Material Finer than 75 Micron	IS 2386 (Part 1):1963 (RA 2016)	Upto 20 %
		Clay Lumps	IS 2386 (Part 2):1963 (RA 2016)	Upto 5 %
		Specific Gravity	IS 2386 (Part 3):1963 (RA 2016)	1.0 to 5.0
		Water Absorption	IS 2386 (Part 3):1963 (RA 2016)	0.01 to 4.00
		Bulk Density	IS 2386 (Part 3):1963 (RA 2016)	1.0 kg/L to 3.0 kg/L
		Percentage of Bulking	IS 2386 (Part 3):1963 (RA 2016)	Upto 30 %
		Soundness by Na <sub>2</sub> SO <sub>4</sub>	IS 2386 (Part 5):1963 (RA 2016)	1 % to 20 %
		Silt Content	CPWD Specification 2009; Cl. 3.1.3.2	Upto 20 %
3.	<b>Blanketing Material/Granular Sub Base/Wet Mix Macadam/Water Bound Macadam</b>	Sieve Analysis	IS 2386 (Part 1):1963 (RA 2016)	1 % to 100 % (0.075 mm to 125 mm)
		Flakiness Index	IS 2386 (Part 1):1963 (RA 2016)	1 % to 50 %
		Elongation Index	IS 2386 (Part 1):1963 (RA 2016)	1 % to 50 %
		Water Absorption	IS 2386 (Part 3):1963 (RA 2016)	0.1 % to 10 %
		Impact Value	IS 2386 (Part 4):1963 (RA 2016)	1 % to 50%
		Abrasion Value to Los Angeles	IS 2386 (Part 4):1963 (RA 2016)	1 % to 60 %
		Soundness to Na <sub>2</sub> SO <sub>4</sub>	IS 2386 (Part 5):1963 (RA 2016)	1 % to 20 %
4.	<b>Paving Bitumen</b>	Specific Gravity	IS 1202:1978 (RA 2013)	0.90 to 1.09
		Penetration	IS 1203:1978 (RA 2013)	10 div to 400 div

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Certificate Number **TC-6656 (in lieu of T-2759)**

Page 6 of 9

Validity **17.12.2017 to 16.12.2019**

Last Amended on **19.11.2018**

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		Softening Point	IS 1205:1978 (RA 2014)	15 °C to 80 °C
		Absolute Viscosity at 60°C	IS 1206 (Part to 2):1978 (RA 2014)	500 Poise to 4800 Poise
		Kinematic Viscosity at 135°C	IS 1206 (Part to 3):1978 (RA 2014)	100 cSt to 1000 cSt
		Ductility	IS 1208:1978 (RA 2014)	10 cm to 100 cm
		Flash Point	IS 1209:1978 (RA 2014)	125 °C to 350 °C
5.	<b>Bitumen Emulsion</b>	Viscosity by Saybolt Furol Viscometer at 50°C	IS 3117-2004 (RA 2014)	10 Seconds to 500 Seconds
6.	<b>Bituminous Mix</b>	Marshall Stability	ASTM D 6927-15	1 kN to 30 kN
		Marshall Flow	ASTM D 6927-15	Upto 10 mm
		Binder Content	IRC SP-11 1984 Appendix 5 Clause C	0.5 % to 20 %
		Stripping Value	IS 6241:1971 (RA 2017)	50 % to 100 %
7.	<b>Bricks (Burnt Clay/ Pulverised Fuel Fly Ash)</b>	Compressive Strength	IS 3495 (Part 1):1992 (RA 2016)	1 N/mm <sup>2</sup> to 35 N/mm <sup>2</sup>
		Water Absorption	IS 3495 (Part 2):1992 (RA 2016)	1 % to 50 %
		Efflorescence	IS 3495 (Part 3):1992 (RA 2016)	Qualitative
		Dimensions to Burnt Clay Bricks	IS 1077:1992 (RA 2016)	L:4400 mm to 5100 mm W:2000 mm to 2500 mm H:1200 mm to 1500 mm
		Dimensions to Fly Ash Bricks	IS 12894:2002 (RA 2017)	L:4520 mm to 5000 mm W:2160 mm to 2500 mm H:1360 mm to 1500 mm

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Certificate Number **TC-6656 (in lieu of T-2759)**

Page 7 of 9

Validity **17.12.2017 to 16.12.2019**

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8.	<b>Precast Concrete Paving Block</b>	Water Absorption	IS 15658:2006 (RA 2017), Annex C	1 % to 50 %
		Compressive Strength	IS 15658:2006 (RA 2017), Annex D	5 N/mm <sup>2</sup> to 60 N/mm <sup>2</sup>
		Flexural Strength	IS 15658:2006 (RA 2017), Annex E	1 N/mm <sup>2</sup> to 15 N/mm <sup>2</sup>
		Abrasion Resistance	IS 15658:2006 (RA 2017), Annex G	Upto 8000 mm <sup>3</sup>
9.	<b>Cement (OPC/PPC/PSC)</b>	Fineness by Blaine's Method	IS 4031 (Part 2):1999 (RA 2016)	200 m <sup>2</sup> /kg to 500 m <sup>2</sup> /kg
		Soundness by Le to Chatelier Method	IS 4031 (Part 3):1988 (RA 2014)	0.5 mm to 15 mm
		Soundness by Autoclave Method	IS 4031 (Part 3):1988 (RA 2014)	Upto 2 %
		Standard Consistency	IS 4031 (Part 4):1988 (RA 2014)	20 % to 50 %
		Initial Setting Time	IS 4031 (Part 5):1988 (RA 2014)	30 minute to 300 minute
		Final Setting Time	IS 4031 (Part 5):1988 (RA 2014)	100 minute to 720 minute
		Compressive Strength	IS 4031 (Part 6):1988 (RA 2014)	10 N/mm <sup>2</sup> to 75 N/mm <sup>2</sup>
10.	<b>Concrete</b>	Compressive Strength to Cube	IS 516:1959 (RA 2013)	5 N/mm <sup>2</sup> to 75 N/mm <sup>2</sup>
		Flexural Strength	IS 516:1959 (RA 2013)	1 N/mm <sup>2</sup> to 40 N/mm <sup>2</sup>
11.	<b>Ceramic Tiles</b>	Dimensions	IS 13630 (Part 1):2006 (RA 2017)	L:100 mm to 600 mm W:100 mm to 600 mm T:5 mm to 10 mm
		Water Absorption	IS 13630 (Part 2):2006 (RA 2017)	Upto 20 %
		Resistance to Thermal Shock	IS 13630 (Part 5):2006 (RA 2017)	Qualitative

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**Page 8 of 9**

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		Breaking Strength	IS 13630 (Part 6):2006 (RA 2017)	500 N to 4500 N
		Modulus of Rupture	IS 13630 (Part 6):2006 (RA 2017)	1 N/mm <sup>2</sup> to 60 N/mm <sup>2</sup>
		Chemical Resistance to Methylene Blue	IS 13630 (Part 8):2006 (RA 2017)	Qualitative
		Chemical Resistance to Household Chemicals	IS 13630 (Part 8):2006 (RA 2017)	Qualitative
		Crazing Resistance	IS 13630 (Part 9):2006 (RA 2017)	Qualitative
		Scratch Hardness of Surface (Moh's Scale)	IS 13630 (Part 13):2006 (RA 2017)	Qualitative
<b>II.</b>	<b>SOIL &amp; ROCK</b>			
<b>1.</b>	<b>Soil</b>	Specific Gravity	IS 2720 (Part 3/Sec 1): 1980, (RA 2016)	1.0 to 4.0
		Grain Size Analysis (Wet & Dry)	IS 2720 (Part 4):1985 (RA 2015)	1 % to 100 % (0.075 mm to 20 mm)
		Liquid Limit	IS 2720 (Part 5):1985 (RA 2015)	10 % to 50 %
		Plastic Limit	IS 2720 (Part 5):1985 (RA 2015)	5 % to 40 %
		Heavy Compaction	IS 2720 (Part 8):1983 (RA 2015)	MDD:1 g/cc to 4 g/cc OMC:1 % to 30 %
		Triaxial Compression Test	IS 2720 (Part 11):1986 (RA 2016)	Φ:Upto 50° C:Upto 0.2kg/cm <sup>2</sup>
		Direct Shear (Undrained)	IS 2720 (Part 13):1986 (RA 2016)	Φ:Upto 50° C:Upto 0.2kg/cm <sup>2</sup>
		California Bearing Ratio	IS 2720 (Part 16):1987 (RA 2016)	1 % to 60 %
		Sand Equivalent Values of Soils	IS 2720 (Part 37):1976 (RA 2016)	80 % to 100 %



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Page 9 of 9

Validity **17.12.2017 to 16.12.2019**

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		Free Swell Index	IS 2720 (Part to 40):1977 (RA 2016)	1 % to 100 %
2.	<b>Blanketing Material/Granular Sub Base/Wet Mix Macadam/Water Bound Macadam</b>	Liquid Limit	IS 2720 (Part 5):1985 (RA 2015)	10 % to 50 %/0.1%
		Plastic Limit	IS 2720 (Part 5):1985 (RA 2015)	5 % to 40 %/0.1 %
		Heavy Compaction	IS 2720 (Part 8):1983 (RA 2015)	MDD:1 g/cc to 4 g/cc OMC:1 % to 30 %
		California Bearing Ratio	IS 2720 (Part 16):1987 (RA 2016)	1 % to 60 %
<b>III.</b>	<b>MECHANICAL PROPERTIES OF METALS</b>			
1.	<b>Metallic Material</b>	Mass per meter	IS 1786:2008 (RA 2013)	0.001 kg/m to 15 kg/m
		Tensile Strength	IS 1608 (Part 1):2018	100 N/mm <sup>2</sup> to 740 N/mm <sup>2</sup>
		Yield Stress	IS 1608 (Part 1):2018	100 N/mm <sup>2</sup> to 600 N/mm <sup>2</sup>
		Elongation	IS 1608 (Part 1):2018	5 % to 50 %
		Bend	IS 1786:2008 (RA 2013) & IS 1599:2012 (RA 2017)	Qualitative (Mandrel Diameter in mm:24, 30, 32, 36, 40, 48, 60, 64, 80, 100, 112, 125, 128, 140, 160 mm)
		Rebend	IS 1786:2008 (RA 2013)	Qualitative (Mandrel Diameter in mm:32, 40, 50, 84, 96, 112, 120, 140, 150, 168, 175, 192, 196, 224)