Laboratory	**Material Testing House (India) Limited, 50-96-4, North Extension, Seetammadhara, Visakhapatnam, Andhra Pradesh**		
Accreditation Standard	**ISO/IEC 17025: 2005**		
Discipline	**Mechanical Testing**	**Issue Date**	**14.11.2014**
Certificate Number	**T-1148**	**Valid Until**	**13.11.2016**
Last Amended on	**-**	**Page**	**1 of 7**

S.No.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
I.	**BUILDING MATERIALS**			
1.	**Burnt Clay/ Fly ash Bricks**	Compressive Strength	IS 3495 (Part 1): 1992 (RA 2002)	0.1 MPa to 40 MPa
		Water Absorption	IS 3495 (Part 2): 1992 (RA 2002)	1.0 % to 50 %
		Efflorescence	IS 3495 (Part 3): 1992 (RA 2002)	Qualitative
		Dimensions	IS 1077 : 1992 (RA 2002) IS 12894 : 2002	L: 100 mm to 600 mm W: 50 mm to 300 mm D: 50 mm to 400 mm
2.	**Glazed/Ceramic/ Vitrified Tiles**	Dimensions and Surface Quality	IS 13630 (Part 1): 2006 ISO 10545-2 : 1995 (E)	1 mm to 600 mm
		Water Absorption, Apparent porosity, Bulk density	IS 13630 (Part 2): 2006 ISO 10545-3 : 1995 (E)	0.01 % to 30 %
		Resistance to Thermal shock	IS 13630 (Part 5): 2006 ISO 10545-9 : 1994 (E)	Qualitative
		Crazing resistance	IS 13630 (Part 9): 2006 ISO 10545-11 : 1994 (E)	Qualitative
		Moh's hardness	IS 13630 (Part 13): 2006	1 to 9
		Modulus of rupture/Breaking Strength	IS 13630 (Part 6): 2006 ISO 10545-4 : 1994 (E)	0.5 MPa to 100 MPa

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Certificate Number	**T-1148**		**Valid Until**	**13.11.2016**
Last Amended on	**-**		**Page**	**2 of 7**

S.No.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
3.	**Cement Concrete (Cubes/Cylinders)**	Compressive strength	IS 516 : 1959 (RA 2004)	1 MPa to 88 MPa
4.	**Coarse Aggregate**	Sieve analysis	IS 2386 (Part 1): 1963 (RA 2007)	4.75 mm to 125 mm
		Bulk density	IS 2386 (Part 3): 1963 (RA 2007)	1.0 kg/L to 2.0 kg/L
		Specific gravity	IS 2386 (Part 3): 1963 (RA 2007)	1.0 to 3.5
		Water Absorption	IS 2386 (Part 3): 1963 (RA 2007)	0.1 % to 50 %
		Impact Value	IS 2386 (Part 4): 1963 (RA 2007)	3 % to 50 %
		Crushing Value	IS 2386 (Part 4): 1963 (RA 2007)	3 % to 50 %
		Elongation index	IS 2386 (Part 1): 1963 (RA 2007)	2 % to 60 %
		Flakiness Index	IS 2386 (Part 1): 1963 (RA 2007)	2 % to 60 %
		Voids	IS 2386 (Part 3): 1963 (RA 2007)	3 % to 80 %
		Los Angeles Abrasion	IS 2386 (Part 4): 1963 (RA 2007)	2 % to 80 %
		Soundness	IS 2386 (Part 5): 1963 (RA 2007)	0.1 % to 20 %
		10 % fines value	IS 2386 (Part 4): 1963 (RA 2007)	10 kN to 600 kN

S.No.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
	Coarse Aggregate	Deleterious Material:		
		Coal and lignite	IS 2386 (Part 2): 1963 (RA 2007)	(0 to 50) %
		Clay lumps	IS 2386 (Part 2): 1963 (RA 2007)	(0 to 50) %
		Materials finer than 75 micron	IS 2386 (Part 2): 1963 (RA 2007)	(0 to 50) %
5.	**Fine Aggregate**	Sieve analysis	IS 2386 (Part 1): 1963 (RA 2007)	75 Microns to 10 mm
		Bulk Density	IS 2386 (Part 3): 1963 (RA 2007)	1 kg/L to 2.5 kg/L
		Specific gravity	IS 2386 (Part 3): 1963 (RA 2007)	1 to 3.5
		Water Absorption	IS 2386 (Part 3): 1963 (RA 2007)	0.1 % to 20 %
		Soundness	IS 2386 (Part 5): 1963 (RA 2007)	0.01 % to 20 %
		Deleterious material:		
		Coal and lignite	IS 2386 (Part 2): 1963 (RA 2007)	(0 to 50) %
		Clay lumps	IS 2386 (Part 2): 1963 (RA 2007)	(0 to 50) %
		Materials finer than 75 micron	IS 2386 (Part 2): 1963 (RA 2007)	(0 to 50) %
		Shale	IS 2386 (Part 2): 1963 (RA 2007)	(0 to 50) %
6.	**Cement**	Specific gravity	IS 4031 (Part 11): 1988 (RA 2005)	2.6 to 3.20
		Consistency	IS 4031 (Part 4): 1988 (RA 2005)	15 % to 50 %
		Initial setting	IS 4031 (Part 5): 1988 (RA 2005)	(5 to 600) Minutes

S.No.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
	Cement	Final setting	IS 4031 (Part 5): 1988 (RA 2005)	(15 to 600) Minutes
		Fineness by Blaines Air permeability	IS 4031 (Part 2): 1999 (RA 2004)	100 m^2/kg to 600 m^2/kg
		Soundness by Le-Chatelier	IS 4031 (Part 3): 1988 (RA 2005)	0.01mm to 15 mm
		Soundness by Autoclave	IS 4031 (Part 3): 1988 (RA 2005)	0.002 % to 2 %
		Compressive strength	IS 4031 (Part 6): 1988 (RA 2005)	0.1 MPa to 80 MPa
7.	**Timber /wood**	Moisture content	IS 1708 (Part 1): 1986	1 % to 50 %
		Specific gravity	IS 1708 (Part 2): 1986	0.1 to 3.0
8.	**Fly ash**	Fineness by Blaines Air permeability	IS 1727 : 1967	100 m^2/kg to 600 m^2/kg
		Particles retained on 45 microns IS sieve	IS 1727 : 1967	(0 to 80) %
		Lime reactivity	IS 1727 : 1967	0.5 N/mm^2 to 10 N/mm^2
		Compressive strength (28 days)	IS 1727 : 1967	1 MPa to 100 MPa
		Soundness by autoclave expansion	IS 1727 : 1967	0.01 mm to 15 mm
		Specific gravity	IS 1727 : 1967	1.5 to 2.6

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Certificate Number	**T-1148**	**Valid Until**	**13.11.2016**	
Last Amended on	**-**	**Page**	**5 of 7**	

S.No.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
9.	**Bitumen**	Penetration	IS 1203 : 1978 (RA 2009)	25 to 100
		Absolute Viscosity	IS 1206 (Part 2): 1978 (RA 2009)	100 poises to 5000 poises
		Kinematic Viscosity	IS 1206 (Part 3): 1978 (RA 2009)	50 cSt to 1000 cSt
		Flash point (Cleveland open cup)	IS 1448 (Part 69): 2013	30 $^{\circ}$C to 300 $^{\circ}$C
		Softening Point	IS 1205 : 1978 (RA 2009)	0.5 $^{\circ}$C to 150 $^{\circ}$C
		Ductility	IS 1208 : 1978 (RA 2009)	1 mm to 1000 mm
10.	**Bitumen mix**	Marshal Stability	ASTM D 6927-06	0.1 kN to 25 kN
		Density	ASTM D 1559-07	1.5 g/cc to 2.9 g/cc
		Flow	ASTM D 6927-06	0.1 mm to 5 mm
		Bitumen extraction	ASTM D 2172-11	0.1 % to 10 %
II.	**SOIL AND ROCK**			
1.	**Soil**	Grain size analysis	IS 2720 (Part 4): 1985 (RA 2001)	
		Sieve analysis	Clause 3	4.75 mm to 63 mm
		Sieve analysis	Clause 4	75 µ to 4.75 mm
		Hydro meter method	Clause 5.2	2 µ to 75 µ

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Certificate Number	**T-1148**	**Valid Until**	**13.11.2016**	
Last Amended on	**-**	**Page**	**6 of 7**	

S.No.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
	Soil	Moisture content	IS 2720 (Part 2): 1973 (RA 2002)	0.1 % to 50 %
		Specific gravity	IS 2720 (Part 3): 1980 (RA 2002)	1 to 3
		Atterberg Limits:		
		Liquid Limit	IS 2720 (Part 5): 1985 (RA 2006)	1 % to 600 %
		Plastic Limit	IS 2720 (Part 5): 1985 (RA 2006)	1 % to 80 %
		Heavy compaction	IS 2720 (Part 8): 1983 (RA 2006)	MDD: 1 g/cc to 2.8 g/cc OMC: 1 % to 40 %
		Light compaction	IS 2720 (Part 7): 1980 (RA 2002)	MDD: 1 g/cc to 2.5 g/cc OMC: 1 % to 40 %
		California bearing ratio	IS 2720 (Part 16): 1987 (RA 2002)	1 % to 100 %
		Free swell index	IS 2720 (Part 40): 1977 (RA 2002)	1 % to 500 %
		Swelling pressure	IS 2720 (Part 41): 1977 (RA 2002)	0.5 kN/m^2 to 40 kN/m^2
		Permeability	IS 2720 (Part 17): 1977 (RA 2002)	10^{-1} cm/s to 10^{-9} cm/s
		Maximum & Minimum Density of cohesion less soils	IS 2720 (Part 14): 1983	1 g/cc to 2.5 g/cc

S.No.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
2.	**Rock**	Compressive strength	IS 9143 : 1970	5 N/mm^2 to 120 N/mm^2
		Water content	IS 13030 : 1991 (RA 2001)	0.1 % to 6 %
III.	**MECHANICAL PROPERTIES OF MATERIALS**			
1.	**High Strength Deformed Bars/ Round bars Structural Steel/ Pipes**	Ultimate Tensile strength	IS 1608 : 2005	(200 to 800) N/mm^2
		0.2 % Proof stress	IS 1608 : 2005	(200 to 700) N/mm^2
		Elongation	IS 1608 : 2005	1 % to 40 %
		Weight per Meter	IS 1786 : 2008 IS 1239 : 2004 IS 2062 : 2006	0.001 kg to 15 kg
		Bend	IS 1599 : 2012 IS 2062 : 2006	Qualitative (Mandrel Dia: 24, 30, 36, 48, 80, 96, 100 mm)
		Re bend	IS 1786 : 2008	Qualitative (Mandrel Dia: 40, 50, 60, 80, 100, 125, 160 mm)

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