Laboratory	**ANULAB Industrial Testing & Analytical Laboratories, 33, Gandhi Nagar, Agra, Uttar Pradesh**			
Accreditation Standard	**ISO/IEC 17025: 2005**			
Discipline	**Mechanical Testing**	**Issue Date**	**31.01.2014**	
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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.	**Rocks, Stone, Coarse & Fine Aggregates**	Particle Shape & Size	IS 2386 (Part 1): 1963, RA 2007	0.075 to 100 mm
		Materials Finer - 0.075 mm	IS 2386 (Part 1): 1963, RA 2007	0.1 to 100 %
		Flakiness & Elongation Indices	IS 2386 (Part 1): 1963, RA 2007	0.1 to 100 %
		Deleterious & Organic Material	IS 2386 (Part 2): 1963, RA 2007	0.05 to 50 %
		Specific Gravity	IS 2386 (Part 3): 1963, RA 2007	0.5 to 5.0
		Water Absorption	IS 2386 (Part 3): 1963, RA 2007	0.05 to 100 %
		Bulk Density	IS 2386 (Part 3): 1963, RA 2007	0.5 to 5.0 g/cm^3
		Aggregate Impact Value	IS 2386 (Part 4): 1963, RA 2007	0.5 to 100 %
		Los Angeles Abrasion Value	IS 2386 (Part 4): 1963, RA 2007	0.5 to 100 %
		Aggregate Crushing Value	IS 2386 (Part 4): 1963, RA 2007	0.5 to 100 %
		Soundness by Na_2SO_4	IS: 2386 (Part 5): 1963 RA 2007	0.5 to 10 %
		Soundness by $MgSO_4$	IS: 2386 (Part 5): 1963 RA 2007	0.5 to 100 %
		Mortar Making Properties	IS 2386 (Part 6): 1963, RA 2007	0.1 to 100 %
		Alkali Aggregate Reactivity	IS 2386 (Part 7): 1963, RA 2007	Reactivity
		Petrographic Examination	IS 2386 (Part 8): 1963, RA 2007	Qualitative

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		10 % Fines Value	BS 812 (Part 111): 1990	1.0 to 400 kN
		Polished Stone Value-PSV	BS 812 (Part 114): 1989	02 to 150
		Stripping Value Test	IS 6241:1971, RA 2008	0.1 to 100 %
		Retained Tensile Strength	AASHTO T 283-07 (2011)	1.0 to 100 %
		Marshall Stability Test	AASHTO T245-97/ ASTM D6927-06/ ASTM D5581-07	1.0 to 100 kN
		Binder Content Test	Appendix 5C, IRC SP 11:1984	0.1 to 30 %
		Sand Equivalent Value	IS 2720 (Part 37):1976, RA 2007	0.1 to 100 %
		Cerchar Abrasiveness	ASTM D7625-10/ ISRM Method	0.5 to 10 %
		Fractured Faces	ASTM D 5821-01 (2006)	1.0 to 100 %
2.	**Soil, Fly Ash, Moorum, GSB & WMM**	Moisture Content	IS 2720 (Part 2): 1973, RA 2010	0.1 to 50 %
		Grain Size Analysis	IS 2720 (Part 4): 1985, RA 2010	0..001 to 100 mm
		Atterberg's Limits- LL, PL	IS 2720 (Part 5): 1985, RA 2010	5 to 80 %
		California Bearing Ratio	IS 2720 (Part 16): 1987 / AASHTO T 193-13	0.5 to 100 %
		Light Compaction	IS 2720 (Part 7): 1980, RA 2007	0.5 to 3.0 g/cm^3

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		Heavy Compaction	IS 2720 (Part 8):1983, RA 2010	0.5 to 3.0 g/cm^3
		Free Swell Index	IS 2720 (Part 40):1977, RA 2007	1.0 to 50 %
		Shrinkage Limit	IS 2720 (Part 6):1972, RA 2007	1.0 to 50 %
		Relative Density	IS 2720 (Part 14):1983 RA 2010	0.5 to 3.0 g/cm^3
		Direct Shear Test	IS 2720 (Part 13):1986 RA 2007	1 to 50º 0.1 to 10 kg/cm^2
		Coefficient of Interface Friction (Modified Direct Shear Technique)	IS 13326 (Part 1):1992 RA 2010	1 to 50º
3.	**Soil Geosynthitics**	Tensile (2%, 5% Strain & UTS)	ISO 10319:2008/ ASTM D6637-11	0.1 to 400 kN
		Elongation at Break	ISO 10319:208/ ASTM D6637-11	1 to 150%
4.	**Bitumen-Paving & Industrial**	Specific Gravity	IS 1202:1978, RA 2009	0.50 to 1.50
		Flash Point	IS 1448 (Part 69): 2004, RA 2008	25 to 400ºC
		Softening Point	IS 1205:1978, RA 2009	30 to 150ºC
		Penetration Test	IS 1203:1978, RA 2009	10 to 150
		Ductility Test	IS 1208:1978, RA 2009	1 to 100 cm

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		Loss on Heating	IS 1212:1983, RA 2009	0.1 to10 %
		Retained Penetration	IS 9382:1979, RA 2009	1 to 250 %
		Matter Soluble in TCE	IS 1216:1978, RA 2009	0.1 to 100 %
		Absolute Viscosity	IS 1206 (Part 2): 1978, RA 2009	0.5 to 5000 Poise
		Kinematic Viscosity	IS 1206 (Part3): 1978, RA 2009	50 to 1000 cSt
		Water Content Test	IS 1211:1978, RA 2009	0.1 to 10 %
		Mineral Matter Ash	IS 1217:1978, RA 2009	0.01 to 10%
5.	**Modified Bitumens & Antistripping Agent**	1. Pour Point	IS 1448 (Part10): 1970, RA 2008	1 to 150 ° C
		2. Separation Test	IS 15462:2004 RA 2009	Qualitative
		3. Boiling Water Test	ASTM D3625-12	Qualitative
		4. Solubility in HSD	IS 14982:2001, RA 2009	0.1 to 100 %
		5. Solubility in LDO	IS 14982:2001, RA 2009	0.1 to 100 %
		6. Thermal Stability	IS 14982:2001, RA 2009	Qualitative
		7. Retained Marshall Stability	IS 14982:2001, RA 2009	0.5 to 100 %
		8. Elastic Recovery	IS 15462:2004, RA 2009	01 to 100 %
		9. Rheological Properties (Complex Modulus-G* and Phase Angle-sin δ)	AASHTO T315-12	0.01 to 100 kPa

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6.	**Bitumen Emulsions**	Residue on 600 micron Sieve	IS 8887:2004, RA 2009	0.01 to 10 %
		Coagulation of Emulsion	IS 8887:2004, RA 2009	Qualitative
		Storage Stability after 24h	IS 8887:2004, RA 2009	0.1 to 80 %
		Particle Charge	IS 8887:2004, RA 2009	+ve/ -ve
		Coating & Water Resistance	IS 8887:2004, RA 2009	Qualitative
		Stability to Mixing with cement	IS 8887:2004, RA 2009	0.01 to 5.0 %
		Miscibility with Water	IS 8887:2004, RA 2009	Qualitative
		Residue by Evaporation	IS 8887:2004, RA 2009	1.0 to 90 %
		Distillation % by Volume	IS 1448 (Part 18): 1991, RA 2000	1.0 to 100 %
		Saybolt Furol Viscosity	IS 3117:2004, RA 2009	5 to 300 SFV
7.	**Cement OPC/ PPC**	Consistency Test	IS 4031 (Part 4): 1988, RA 2009	10 to 40 %
		Setting Time Initial & Final	IS 4031 (Part 5): 1988, RA 2009	10 to 600 Min.
		Compressive Strength	IS 4031 (Part 6): 1988, RA 2009	02 to 120 MPa
		Soundness- Le-Chatilier	IS 4031 (Part 3): 1988, RA 2009	0.01 to 10 mm
		Soundness- Autoclave	IS 4031 (Part 3): 1988, RA 2009	0..01 to 20 %

S.No.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
		Fineness by Blaine's Air Permeability Method	IS 4031 (Part 2): 1999, RA 2008	10 to 500 m^2/kg
		Specific Gravity	IS 4031 (Part 11): 1988, RA 2009	0.5 to 5.0
		Fineness by Dry Sieving	IS 4031 (Part 1): 1996, RA 2009	0.5 to 100 %
8.	**Curing Compound**	Water Retention	ASTM C 156-11	0.5 to 100 %
		Surface Drying Time	ASTM C 309-11	01 to 600 min
		Curing Efficiency	BS 7542:1992	01 to 100 %
9.	**Concrete Admixture**	Dry Material Content	IS 9103:1999, RA 2008	0.5 to 80 %
		Relative Density	IS 9103:1999, RA 2008	0.5 to 1.50
10.	**Thermoplastic Road Marking Material- Hot Applied & Cold Applied**	Binder Content Test	BS 3262 (Part 1) :1989	0.5 to 80 %
		Glass Beads Content Test	BS 3262 (Part 1) :1989	0.5 to 80 %
		Titanium Dioxide Test	ASTM D 4797-12	0.5 to 80 %
		$CaCO_3$ & Inert Fillers	ASTM D 4797-12	0.5 to 80 %
		Luminance Test	AASHTO M249-12/ ASTM E2302-03	1 to 100%
		Drying Time Test	BS 3262 (Part 1): 1989	01 to 90 min

S.No.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
	Thermoplastic Road Marking Material- Hot Applied & Cold Applied	Skid Resistance Test	BS 6044:1987	1 to 100%
		Cracking Resistance Test	AASHTO T250-05 (2009)	Qualitative
		Softening Point- R&B	ASTM D 36-12	30 to 150 ^{O}C
		Flow Resistance Test	AASHTO T250-05 (2009)	01 to 50
		Yellowness Index Test	AASHTO M249/ ASTM E2302-03(2009)	0.01 to 10.0
		Glass Beads- Gradation	BS 3262 P1:1989	1 to 100%
		Roundness Test	BS 6088:1981	01 to 100
		Free Flow Test	BS 6088:1981	Qualitative
		Refractive Index	BS 6088:1981	0.1 to 3.0
		Coeff. of Retro-reflection	ASTM D1710-11	1.0 to 1000 mcd/m^2/lux
11.	**Reinforcement Bar, Prestressing Strands, Structural Steel & Metal Beam Crash Barriers**	Dimensions & Mass per meter	IS1786:2008	4 to 40 mm dia & 0.10 to 9.86 kg/m
		Tensile Strength	IS 1608:2005, ISO 6892:1998	1.0 to 400 kN
		Yield Stress	IS 1608:2005, ISO 6892:1998	1.0 to 400 kN

S.No.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
	Reinforcement Bar, Prestressing Strands, Structural Steel & Metal Beam Crash Barriers	Percentage Elongation	IS 1608:2005, ISO 6892:1998	0.5 to 60 %
		Reduction in Area	IS 1608:2005, ISO 6892:1998	0.5 to 80 %
		Bend Test	IS 1599:2012, ISO 7438:2005	8 to 300 mm Mandrel Dia
		Re-bend Test	IS 1786:2008	16 to 400 mm Mandrel Dia
		Pull-out Test	IS 2770 (Part1): 1967, RA 2007	1.0 to 400 kN
		Load Test on Anchorge	BS 4447:1973	1.0 to 400 kN
12.	**Structural Steel**	Dimensions of Rivets	IS 1929: 1982, IS 10102:1982	1.0 to 350 mm
		Impact Test-Charpy	IS 1757:1988, RA 2009	1.0 to 200 J
		Rockwell Hardness	IS 1586 (Part 1): 2012	50 to 100 HRB & 30 to 100 HRC
		Vickers Hardness	IS 1501: 2002, ISO 6508 (Part 1)	200 to 800 HV 10 & HV 30
		Mass/Thickness of ZinCoating	IS 6745:1972, RA 2006	1 to 900 micron 50 to 900 g/m^2
		Shear Test of Rivets	IS 5242:1979, RA 2006	1.0 to 400 kN

S.No.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
	Structural Steel	Anodized Thickness	IS 5523:1983, RA 2006	05 to 100 micron
		Hot Compression/ Dump Test	IS 1148:2009	Qualitative
		Head Soundness Test	IS 10102: 1982 RA 2005	Qualitative
		Tensile Strength	API 1104:99/ ASME SEC IX:2010	1.0 to 400 kN
		Nick Break	API 1104:99/ ASME SEC IX:2010	1.0 to 400 kN
		Hardness	API 1104:99/ ASME SEC IX:2010	50 to 750 HV 10
		Impact Test- Charpy	API 1104:99/ ASME SEC IX:2010	10 to 200 J
		Bend Test	API 1104:99/ ASME SEC IX:2010	8 to 300 mm Mandrel Dia
13.	**Bridge Bearings- Metalic, Elastomeric & Pot cum PTFE**	Shear Modulus	IRC 83 (Part 2): 1987	0.5 to 20 MPa
		Elastic Modulus	IRC 83 (Part 2): 1987	0.5 to 125 MPa
		Stripping /Adhesion Strength	IRC 83 (Part 2): 1987	Qualitative
		Ultimate Comp. Strength	IRC 83 (Part 2): 1987	05 to 125 MPa
		Axial Load Test	IRC 83 (Part 3): 1987	20 to 5000 kN

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	Bridge Bearings- Metalic, Elastomeric & Pot cum PTFE	Friction Test	IRC 83 (Part 3): 1987	Qualitative
		Rotation Test	IRC 83 (Part 3): 1987	Qualitative
		Density of Elastomer	IS 3400 (Part 9): 2003, RA 2008	0.5 to 2.50 g/cm^2
		Ash Content of Elastomer	IS 3400 (Part 22): 1984, RA 2008	0.1 to 50 %
		Hardness of Elastomer	IS 3400 (Part 2): 2003, RA 2008	10 to 80 IRHD
		Compression Set Test	IS 3400 (Part 10): 1997, RA 2008	0.1 to 30 mm
		Max. Change in Hardness	IS 3400 (Part 2): 2003, RA 2008	10 to 80 IRHD
14.	**Steel Pipe**	Flattening Test	IS 2328:2005 ISO 8492:1998	Qualitative
15.	**Sheathing Ducts- GI Sheet HDPE/PP, DWC & Void Formers**	Dimensions	AASHTO M249-95, IRC 18-2000, Annex A1 fib Bulletin 7	Qualitative
		Workability Test	App. 1800/I Test A MORTH Specs. 2001, IRC 18-2000, Annex A3 fib Bulletin 7-2000	Qualitative
		Transverse Load Rating	App. 1800/I Test B MORTH Specs. 2001, IRC 18-2000, Annex A4 fib Bulletin 7-2000	0.1 to 10.0

S.No.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
		Tension Load Test	App. 1800/I Test C MORTH Specs. 2001, IRC 18-2000, Annex A5 fib Bulletin 7-2000	Qualitative
		Water Loss Test	App. 1800/I Test D MORTH Specs. 2001, IRC 18-2000, Annex A6 fib Bulletin 7-2000	Qualitative
		Bond Strength Test	Cl. 1, App. 1B, IRC 18-2000, Annex A8 fib Bulletin 7-2000	10 to 3000 kN
		Compression Test	Cl. 2, App. 1B, IRC 18-2000, Annex A7 fib Bulletin 7-2000	5 to 80 MPa
		Rodent Repellency Tests	TEC GR No. GR/DWC-34/01 Sep 2007 & Annexure G, RDSO/SPN/204/2011	Qualitative
		Radial Stiffness Rigidity	ASTM D 2412-11	0.1 to 5.0
16.	**Retroreflective Signboards**	Coeff. of Retro-reflection	ASTM E810-03 / ASTM E1709-09	10 to 1000 cd/m^2/lux

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17.	**Concrete Cubes, Beams & Blocks**	Compressive Strength	IS 516:1959, RA 2008	01 to 120 MPa
		Flexural Strength	IS 516:1959, RA 2008	0.5 to 10 MPa
		Rebound Hammer-RH Test	IS 13311 (Part 2): 1992, RA 2008	15 to 80 MPa
		Water Absorption-WA	IS 2185 (Part 2): 1983, RA 2005	0.10 to 100%
18.	**Fresh Concrete Mix**	Slump-Consistency	IS 1199:1959, RA 2008	1.0 to 300 mm
		Compaction Factor	IS 1199:1959, RA 2008	0.1 to 1.0
		Bulk Density-BD	IS 1199:1959, RA 2008	1.5 to 5.0
19.	**Bricks-Common Burnt Clay & Lime/ Flyash**	Dimensions Test	IS:1077:1992, RA 2007	1 to 5000 mm
		Compressive Strength	IS 3495 (Part 1): 1992, RA 2007	5 to 80 MPa
		Water Absorption-WA	IS 3495 (Part 2): 1992, RA 2007	0.5 to 100%
		Efflorescence Test	IS 3495 (Part 3): 1992, RA 2007	Qualitative
		Warpage Test	IS 3495 (Part 4): 1992, RA 2007	0.1 to 15 mm
20.	**Concrete Paver Blocks/ Interlocking Tiles**	Visual Inspection	IS 15658:2006	Qualitative
		Dimensions Test	IS 15658:2006	1.0 to 500 mm
		Water Absorption-WA	IS 15658:2006	0.10 to 100%
		Compressive Strength	IS 15658:2006	5.0 to 80 MPa

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		Abrasion Resistance	IS 15658:2006	0.1 to 10 mm
		Tensile Splitting Strength	IS 15658:2006	Upto 80 MPa
		Flexural Strength	IS 15658:2006	Upto 10 MPa
		Breaking Load	IS 15658:2006	Upto 2000 kN
		Thickness of Wearing Layer	IS 15658:2006	0.1 to 20 mm
21.	**Ceramic Tiles**	Water Absorption & Density	IS 13630 (Part 2): 2006, ISO 10545 (Part 3)	0.5 to 30 %
		Modulus of Rupture	IS 13630 (Part 6): 2006, ISO 10545 (Part 4)	0.1 to 50N/mm^2
		Crazing Resistance	IS 13630 (Part 9): 2006, ISO 10545 (Part 11)	Qualitative
		Chemical Resistance	IS 13630 (Part 7 & 8): 2006, ISO 10545 (Part 13 &14)	Qualitative
		Linear Thermal Expansion	IS 13630 (Part 4): 2006, ISO 10545 (Part 8)	0.01 to 10 mm
		Moisture Expansion	IS 13630 (Part3): 2006, ISO 10545 (Part 10)	0.01 to 10 mm

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22.	**Cement Concrete Tiles**	Dimensions Test	IS 1237:2012	10 to 300 mm
		Flatness of Surface	IS 1237:2012	0.10 to 20 %
		Perpendicularity	IS 1237:2012	0.10 to 10 %
		Straightness	IS 1237:2012	0.10 to 10 %
		Water Absorption-WA	IS 1237:2012	0.10 to 50 %
		Wet Transverse Strength	IS 1237:2012	0.1 to 10MPa
		Resistance to Wear	IS 1237:2012	0.1 to 50 mm
II. PLASTICS & PLASTIC PRODUCTS				
1.	**PVC Pipe**	Visual Appearance	IS 4985:2000, RA 2010	Qualitative
		Outside Diameter-OD	IS 4985:2000, RA 2010	50 to 200 mm
		Wall Thickness	IS 4985:2000, RA 2010	1.0 to 20 mm
		Specific Gravity	IS 13360 (Part 1): 1995, RA 2008	0.50 to 1.50
		Reversion Test	IS 12235 (Part5/Sec.1): 2004, RA 2009	01 to 10 %
		Density	IS 13360 (Part 1): 1995, RA 2008	0.50 to 1.50 g/cm^3
		Ash Content	IS 4985:2000	0.10 to 20 %