

Laboratory **Anulab Industrial Testing and Analytical Laboratories, 212 km
Milestone, NH-2, Nagla Rambaksh, Etmadpur, Agra, Uttar
Pradesh**

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

Certificate Number **TC-7072 (in lieu of T-0197 & T-0198)**

Page 1 of 16

Validity **16.03.2018 to 15.03.2020**

Last Amended on 30.08.2018

Sl.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
-----	----------------------------	-------------------------	---	--

CHEMICAL TESTING

I. BUILDING MATERIALS				
1.	Clays & Soil	pH Value	IS 2720 (Part 26)	1 to 14
		Soluble Sulphates	IS 2720 (Part 27) BS 1377 (Part 3)	10 mg/kg to 1000 mg/kg
		Soluble Chlorides	BS 1377 (Part 3)	10 mg/kg to 1000 mg/kg
		Organic Matter	IS 2720 (Part 22)	10 mg/kg to 1000 mg/kg
		Soluble Solids	IS 2720 (Part 21)	50 mg/kg to 5000 mg/kg
		Calcium Carbonate	IS 2720 (Part 23)	50 mg/kg to 1000 mg/kg
2.	Fly ash	pH Value	Indian Roads Congress Publication SP 58-2001, IS 2720 (Part 26)	1 to 14
		Water Soluble Sulphates	Indian Roads Congress Publication SP 58-2001, IS 2720 (Part 27), BS 1377 (Part 3)	5 mg/kg to 1000 mg/kg
		Water Soluble Chlorides	Indian Roads Congress Publication SP 58-2001, IS 2720 (Part 27), BS 1377 (Part 3)	5 mg/kg to 1000 mg/kg
		Water Soluble Solids	Indian Roads Congress Publication SP 58-2001, IS 2720 (Part 21)	50 mg/kg to 5000 mg/kg
3.	Cement OPC & PPC	Silica as SiO ₂	IS 4032	15.0 % to 35.0 %
		Lime as CaO	IS 4032	30.0 % to 65.0 %
		Loss on Ignition-LOI	IS 4032	0.01 % to 10.0 %
		Insoluble Residue-IR	IS 4032	0.01 % to 35.0 %
		Iron as Fe ₂ O ₃	IS 4032	1.0 % to 6.0 %
		Alumina as Al ₂ O ₃	IS 4032	1.0 % to 10 %

Laboratory **Anulab Industrial Testing and Analytical Laboratories, 212 km Milestone, NH-2, Nagla Rambaksh, Etmadpur, Agra, Uttar Pradesh**

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

Certificate Number **TC-7072 (in lieu of T-0197 & T-0198)**

Page 2 of 16

Validity **16.03.2018 to 15.03.2020**

Last Amended on **30.08.2018**

Sl.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
		Sulphuric Anhydride as SO ₃	IS 4032	0.5 % to 5.0 %
		Magnesia as MgO	IS 4032	0.5% to 10.0 %
		Total Chlorides	IS 4032	0.01 % to 0.5 %
4.	Rock Stone, Coarse & Fine Aggregate	Calcium Carbonate	BS 1377 (Part 3)	25 % to 80.0 %
		Sulphate as SO ₃	BS 1377 (Part 3)/ IS 4032	0.001 to 2.0
		Total Chloride as Cl	IS 14959 (Part 2)/ BS 1377 (Part3)	0.001 to 2.0
II.		WATER		
1.	Potable Ground Water & Drinking Water	pH value	IS 3025 (Part 11)	4.0 to 12.0
		Sulphates as SO ₄	IS 3025 (Part 24)	10 mg/l to 3000 mg/l
		Sulphites as SO ₃	IS 3025 (Part 28)	10 mg/l to 3000 mg/l
		Chloride as Cl	IS 3025 (Part 32)	5 mg/l to 3000 mg/l
		Odour-Smell	IS 3025 (Part 5)	Qualitative
		Taste- Palatability	IS 3025 (Part 7 & 8)	Qualitative
		Total Hardness	IS 3025 (Part 21)	05 mg/l to 3000 mg/l
		Total Dissolved Solids-TDS	IS 3025 (Part 16)	50 mg/l to 5000 mg/l
		Calcium as Ca	IS 3025 (Part 40)	05 mg/l to 300 mg/l
		Magnesium as Mg	IS 3025 (Part 46)	05 mg/l to 300 mg/l
	Total Alkalinity	IS 3025 (Part 23)	25 mg/l to 600 mg/l	
2.	Water for Construction Purposes	pH value	IS 3025 (Part 11)	4.0 to 12.0
		Limits of Acidity	IS 3025 (Part 22)/ 1010 MORTH Specs.1010a	0.1 ml to 10 ml
		Limits of Alkalinity	IS 3025 (Part 23)/ 1010 MORTH Specs.1010b	0.1 ml to 50 ml
		Inorganic Solids	IS 3025 (Part 18)	100 mg/l to 10000 mg/l
		Organic Solids	IS 3025 (Part 18)	10 mg/l to 500 mg/l
		Sulphates as SO ₄	IS 3025 (Part 24)	10 mg/l to 3000 mg/l

Laboratory **Anulab Industrial Testing and Analytical Laboratories, 212 km
Milestone, NH-2, Nagla Rambaksh, Etmadpur, Agra, Uttar
Pradesh**

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

Certificate Number **TC-7072 (in lieu of T-0197 & T-0198)**

Page 3 of 16

Validity **16.03.2018 to 15.03.2020**

Last Amended on **30.08.2018**

Sl.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
		Chloride as Cl	IS 3025 (Part 32)	05 mg/l to 3000 mg/l
		Suspended Matter	IS 3025 (Part 17)	0.1 mg/l to 3000 mg/l
III.	METALS & ALLOYS			
1.	Cast Iron & Pig Iron	Carbon	IS 12308 (Part 11)	1.50% to 4.50 %
		Silicon	IS 12308 (Part 6)	0.50% to 3.50 %
		Manganese	IS 12308 (Part 10)	0.20 %to 5.00 %
		Sulphur	IS 12308 (Part 2)	0.005% to 0.25 %
		Phosphorous	IS 12308 (Part 5)	0.01% to 0.50 %
		Nickel	IS 12308 (Part 7)	0.01% to 30.0 %
		Chromium	IS 12308 (Part 8)	0.01% to 10.0 %
2.	Plain Steel & Alloy Steel	Carbon	ASTM E415	0.01% to 1.1 %
		Silicon	ASTM E415	0.01 to 1.54 %
		Manganese	ASTM E415	0.01% to 2.00 %
		Sulphur	ASTM E415	0.01% to 0.055%
		Phosphorous	ASTM E415	0.01% to 0.85 %
3.	Copper Alloys (Brass)	Copper	IS 3685	50.0 % to 90.0 %
		Lead	IS 3685	0.01% to 10.0 %
		Tin	IS 3685	0.005% to 10.0 %
		Manganese	IS 3685	0.05% to 6.0 %
		Nickel	IS 3685	0.001% to 36.0 %
		Silicon	IS 3685	0.001% to 3.00 %

Laboratory **Anulab Industrial Testing and Analytical Laboratories, 212 km
Milestone, NH-2, Nagla Rambaksh, Etmadpur, Agra, Uttar
Pradesh**

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

Certificate Number **TC-7072 (in lieu of T-0197 & T-0198)**

Page 4 of 16

Validity **16.03.2018 to 15.03.2020**

Last Amended on 30.08.2018

Sl.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
-----	----------------------------	-------------------------	---	--

MECHANICAL TESTING

I.	BUILDING MATERIALS			
1.	Coarse Aggregates	Particle Shape & Size	IS 2386 (Part 1)	0.075 mm to 100 mm
		Materials Finer - 0.075 mm	IS 2386 (Part 1)	0.1 % to 100 %
		Flakiness Index	IS 2386 (Part 1)	0.1% to 100 %
		Elongation Index	IS 2386 (Part 1)	0.1% to 100 %
		Combined Flakiness & Elongation Indices	IS 2386 (Part 1)	0.1% to 100 %
		Deleterious Substances Material	IS 2386 (Part 2)	0.1 % to 50 %
		Specific Gravity	IS 2386(Part 3)	0.5 to 5.0
		Water Absorption	IS 2386 (Part 3)	0.05 % to 100 %
		Bulk Density	IS 2386 (Part 3)	0.5 kg/l to 5.0 kg/l
		Aggregate Impact Value	IS 2386 (Part 4)/ IS 5640	0.5 % to 100 %
		Los Angeles Abrasion Value	IS 2386 (Part 4)	0.5 % to 100 %
		Aggregate Crushing Value	IS 2386 (Part 4)	0.5 % to 100 %
		Soundness by Na ₂ SO ₄	IS 2386 (Part 5)	0.5 % to 10 %
		Soundness by MgSO ₄	IS 2386 (Part 5)	0.5 % to 100 %
Mortar Making Properties	IS 2386 (Part 6)	0.1% to 100 %		

Birendra Prasad Murmu
Convenor

N. Venkateswaran
Program Manager

Laboratory **Anulab Industrial Testing and Analytical Laboratories, 212 km
Milestone, NH-2, Nagla Rambaksh, Etmadpur, Agra, Uttar
Pradesh**

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

Certificate Number **TC-7072 (in lieu of T-0197 & T-0198)**

Page 5 of 16

Validity **16.03.2018 to 15.03.2020**

Last Amended on 30.08.2018

Sl.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
		Alkali Aggregate Reactivity	IS 2386 (Part 7)	10 milimole/l to 1000 milimole/l
		Petrographic Examination	IS 2386 (Part 8)	Qualitative
		10 % Fines Value-TFV	BS 812 (Part 111)	1.0 kN to 450 kN
		Polished Stone Value-PSV	BS 812 (Part 114)/ ASTM E303/ EN 1097	2 SPV to 150SPV
		Stripping Value Test	IS 6241	0.1% to 100 %
		Retained Tensile Strength/Indirect Tensile Test- ITS	AASHTO T 283 ASTM D6931	1.0 % to 100 %
		Marshall Stability Test	AASHTO T245/ ASTM D6927/ ASTM D5581	1.0 kN to 100 kN
		Binder Content Test	Appendix 5C, IRC SP 11/ ASTM D6307	0.01% to 30 %
		Cerchar Abrasiveness Index	ASTM D7625/ ISRM Method	0.5 to 100
		Fractured Faces	ASTM D 5821	1.0 % to 100 %
		Marshall Mix-Resilient Modules Test	Asphalt Institute MS-2 , MORTH Specs 2013 V th Rev/ASTM D4123/ D7369	50 MPa to 30000 MPa
2.	Fine Aggregates	Particle Shape & Size	IS 2386 (Part 1)	0.075 mm to 10 mm
		Materials Finer - 0.075 mm	IS 2386 (Part 1)	0.1 % to 100 %
		Deleterious Substances Material	IS 2386 (Part 2)	0.1 % to 50 %
		Specific Gravity	IS 2386(Part 3)	0.5 to 5.0
		Water Absorption	IS 2386 (Part 3)	0.05 % to 20 %
		Bulk Density	IS 2386 (Part 3)	0.5 kg/l to 5.0 kg/l
		Soundness by Na ₂ SO ₄	IS 2386 (Part 5)	0.5 % to 10 %
		Soundness by MgSO ₄	IS 2386 (Part 5)	0.5 % to 100 %
		Mortar Making	IS 2386 (Part 6)	0.1 % to 100 %

Laboratory **Anulab Industrial Testing and Analytical Laboratories, 212 km
Milestone, NH-2, Nagla Rambaksh, Etmadpur, Agra, Uttar
Pradesh**

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

Certificate Number **TC-7072 (in lieu of T-0197 & T-0198)**

Page 6 of 16

Validity **16.03.2018 to 15.03.2020**

Last Amended on 30.08.2018

Sl.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
		Properties		
		Alkali Aggregate Reactivity	IS 2386 (Part 7)	10 milimole/l to 1000 milimole/l
		Petrographic Examination	IS 2386 (Part 8)	Qualitative
		Sand Equivalent Value	IS 2720 (Part 37)	01 % to 100 %
3.	Bitumen (Paving, Industrial & Modified-PMB/CRMB/HIMA)	Specific Gravity	IS 1202	0.50 to 1.50
		Flash Point	IS 1448 (Part 69)	25 °C to 400 °C
		Softening Point	IS 1205	30 °C to 150 °C
		Penetration Test	IS 1203	Upto 400 div
		Ductility Test	IS 1208	10 cm to 100 cm
		Loss on Heating	IS 1212	0.01 % to 10 %
		TFOT/RTFOT	IS 9382/ ASTM D2872	1% to 100 %
		Matter Soluble in TCE	IS 1216	0.1% to 100 %
		Absolute Viscosity at 60°C	IS 1206 (Part 2)	50 Poise to 6000 Poise
		Kinematic Viscosity at 135°C (for VG) & 150°C (for Modified)	IS 1206 (Part 3)/ ASTM D4402	50 cSt to 1000 cSt
		Water Content Test	IS 1211	0.1% to 10 %
		Mineral Matter Ash	IS 1217	0.01% to 10%
		Elastic Recovery	IS 15462, Annex 2, IRC:SP: 53-2010	01% to 100 %
		Complex Modulus-G* and Shear Modules G/sing-DSR	Annex 1, IRC:SP:53:/ ASTM D7405/ ASTM D7175 AASHTO T315/ IS 15462	0.01kPa to 100 kPa
		Phase Angle-sin DSR	Annex 1, IRC:SP:53/ ASTM D7405/ ASTM D7175 AASHTO T315/ IS 15462	0.005 to 90
		Frass Breaking Point	IS 9381	Upto -30 °C
4.	Antistripping	Pour Point	IS 1448 (Part 10) Sec 2	1.0 °C to 150 °C

Laboratory

Anulab Industrial Testing and Analytical Laboratories, 212 km
Milestone, NH-2, Nagla Rambaksh, Etmadpur, Agra, Uttar
Pradesh

Accreditation Standard ISO/IEC 17025: 2005

Certificate Number TC-7072 (in lieu of T-0197 & T-0198)

Page 7 of 16

Validity 16.03.2018 to 15.03.2020

Last Amended on 30.08.2018

Sl.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
	Agent	Separation Test- Under Water	IS 14982 Annex C	Qualitative
		Boiling Water Test	ASTM D3625/IS 14982 Annex D	Qualitative
		Solubility in H ₂ O	IS 14982, Annex A	0.1 % to 100 %
		Solubility in L ₂ O	IS 14982, Annex A	0.1% to 100 %
		Thermal Stability at 163°C	IS 14982, Annex B	Qualitative
		Retained Stability- Wet Strength	IS 14982, Annex E	0.5 % to 100 %
5.	Bitumen Emulsions	Residue on 600 micron Sieve	Annex B, IS 8887	0.01% to 10 %
		Saybolt Furol Viscosity	IS 3117	05 s to 300 s
		Coagulation of Emulsion	Annex C, IS 8887	Qualitative
		Storage Stability after 24h	Annex D, IS 8887	0.05 % to 80 %
		Particle Charge	Annex E, IS 8887	+ve to -ve
		Coating Ability & Water Resistance	Annex F, IS 8887	Qualitative
		Stability to Mixing with cement	Annex G, IS 8887	0.01 % to 5.0 %
		Miscibility with Water	Annex H, IS 8887	Qualitative
		Residue by Evaporation	Annex J, IS 8887	0.1 % to 90 %
		Distillation % by Volume	IS 1448(Part 18)	0.1 % to 100 %
6.	Cement	Consistency Test	IS 4031 (Part 4)	20 % to 40 %
		Setting Time- Initial	IS 4031 (Part 5)	10 Minute to 120 Minute
		Setting Time-Final	IS 4031 (Part 5)	30 Minute to 600 Minute
		Compressive Strength	IS 4031 (Part 6)	02 MPa to 120 MPa
		Soundness- Le-Chatelier	IS 4031 (Part 3)	0.005 mm to 10 mm
		Soundness- Autoclave	IS 4031 (Part 3)	0.005 % to 20 %
		Fineness by Blaine's Air Permeability Method	IS 4031 (Part 2)	10 m ² /kg to 500 m ² /kg

Laboratory

Anulab Industrial Testing and Analytical Laboratories, 212 km
Milestone, NH-2, Nagla Rambaksh, Etmadpur, Agra, Uttar
Pradesh

Accreditation Standard ISO/IEC 17025: 2005

Certificate Number TC-7072 (in lieu of T-0197 & T-0198)

Page 8 of 16

Validity 16.03.2018 to 15.03.2020

Last Amended on 30.08.2018

Sl.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
		Specific Gravity	IS 4031 (Part 11)	0.5 to 5.0
		Fineness by Dry Sieving	IS 4031 (Part 1)	0.5 % to 100 %
7.	Curing Compound	Water Retention	ASTM C 156	0.5 % to 100 %
		Surface Drying Time	ASTM C 309	01 minute to 600 minute
		Curing Efficiency	BS 7542	01 % to 100 %
8.	Admixture	Dry Material Content	IS 9103	0.5 % to 80 %
		Ash Content	IS 9103	0.1 to 15.0
		Relative Density	IS 9103	0.5 to 1.50
		Chloride Ion Content	IS 9103/ IS 6925	0.01 % to 0.5%
		pH value	IS 9103	4.0 to 12.0
9.	Thermoplastic Road Marking Material- Hot Applied & Cold Applied	Titanium Dioxide Test	ASTM D 4797	0.1 % to 80 %
		CaCO ₃ & Inert Fillers	ASTM D 4797	0.1 % to 80 %
		Luminance Test	AASHTO M249/ ASTM E2302	1 % to 100%
		Skid Resistance Test	BS EN 1436	1 SRV to 100 SRV
		Cracking Resistance Test	AASHTO T250	Qualitative
		Softening Point- R&B	ASTM D 36	30 °C to 150 °C
		Flow Resistance Test	AASHTO T250	01 to 50
		Yellowness Index Test	AASHTO M249/ASTM E2302	0.01 to 10.0
		Coeff. of Retro-reflection	ASTM E1710/BS EN 1436	1.0 mcd/m ² /lux to 1000 mcd/m ² /lux
10.	Retroreflective Signboards/ Road Stud	Coeff. of Retro-reflection (R _L & Q _D)	ASTM E810 / ASTM E1709	10 mcd/m ² /lux to 1000 mcd/m ² /lux
11.	Concrete	Compressive Strength	IS 516	01 MPa to 120 MPa
		Flexural Strength	IS 516	0.5 MPa to 10 MPa
		Water Absorption-WA	BS 1881 (Part 122)	0.10 % to 30%
12.	Fresh Concrete Mix	Slump-Consistency	IS 1199	Upto 300 mm
		Compaction Factor	IS 1199, Cl. 5.2	0.01 to 1.0
		Density	IS 1199	1.5 kg/m ³ to 5.0 kg/m ³

Laboratory

Anulab Industrial Testing and Analytical Laboratories, 212 km
Milestone, NH-2, Nagla Rambaksh, Etmadpur, Agra, Uttar
Pradesh

Accreditation Standard ISO/IEC 17025: 2005

Certificate Number TC-7072 (in lieu of T-0197 & T-0198)

Page 9 of 16

Validity 16.03.2018 to 15.03.2020

Last Amended on 30.08.2018

Sl.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
13.	Bricks-Common Burnt (Clay & Lime/ Flyash)	Length of 20 No.	IS 1077 clause 6.2.1	3000 mm to 5000 mm
		Width of 20 No.	IS 13757 clause 6.2.1	1500 mm to 2500 mm
		Height of 20 No.	IS 12894 clause 6.2.1	500 mm to 2000 mm
		Compressive Strength	IS 3495 (Part 1)	2 MPa to 40 MPa
		Water Absorption	IS 3495 (Part 2)	0.5 % to 60%
		Efflorescence Test	IS 3495 (Part 3)	Qualitative
		Warpage Test	IS 3495 (Part 4)	1.0 mm to 15 mm
14.	Paver Blocks	Visual Inspection	IS 15658 Clause 7	Qualitative
		Dimensions	IS 15658 Annex B	25 mm to 500 mm
		Water Absorption	IS 15658 Annex C	0.10 % to 40%
		Compressive Strength	IS 15658 Annex D	5.0 MPa to 80 MPa
		Abrasion Resistance	IS 15658 Annex E	100 mm ³ to 15000 mm ³
		Tensile Splitting Strength	IS 15658 Annex F	0.1 MPa to 30 MPa
		Flexural Strength	IS 15658 Annex G	Upto 10 MPa
		Breaking Load	IS 15658 Annex G	Upto 2000 kN
	Thickness of Wearing Layer	IS 15658 Clause 6.2.3	0.01 mm to 20 mm	
15.	Ceramic Tiles	Water Absorption	IS 13630 (Part 2)/ ISO 10545 (Part 3)	0.1 % to 30 %
		Modulus of Rupture	IS 13630 (Part 6)/ ISO 10545 (Part 4)	0.1 MPa to 50MPa
		Crazing Resistance	IS 13630 (Part 9)/ ISO 10545 (Part 11)	Qualitative
		Chemical Resistance	IS 13630 (Part 7&8)/ ISO 10545 (Part 13&14)	Qualitative
		Linear Thermal Expansion	IS 13630 (Part 4)/ ISO 10545 (Part 8)	0.005 mm to 10 mm
		Moisture Expansion	IS 13630 (Part 3)/ ISO 10545 (Part 10)	0.01 mm to 10 mm
16.	Cement Concrete Tiles	Dimensions Test	IS 1237 Clause 7	10 mm to 300 mm
		Flatness of Tile Surface	IS 1237 Annex B	0.05 % to 20 %
		Perpendicularity	IS 1237 Annex C	0.05 % to 10 %

Laboratory **Anulab Industrial Testing and Analytical Laboratories, 212 km Milestone, NH-2, Nagla Rambaksh, Etmadpur, Agra, Uttar Pradesh**

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

Certificate Number **TC-7072 (in lieu of T-0197 & T-0198)**

Page 10 of 16

Validity **16.03.2018 to 15.03.2020**

Last Amended on **30.08.2018**

Sl.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
		Straightness	IS 1237 Annex D	0.05 % to 10 %
		Water Absorption-WA	IS 1237 Annex E	0.10 % to 50 %
		Wet Transverse Strength	IS 1237 Annex F	0.1 MPa to 10MPa
		Resistance to Wear	IS 1237 Annex G	100 mm ³ to 15000 mm ³
II.	SOIL & ROCK			
1.	Soil (Fly Ash, GSB, WBM, WMM, CTSB, RAP, Blanket)	Moisture Content	IS 2720 (Part 2)	0.1 % to 50 %
		Grain Size Analysis-Wet	IS 2720 (Part 4)	0.001 mm to 100 mm
		Liquid Limit	IS 2720 (Part 5)	5 % to 80 %
		Plastic Limit	IS 2720 (Part 5)	5 % to 80 %
		California Bearing Ratio-CBR	IS 2720 (Part 16)/ AASHTO T 193-13	0.5 % to 100 %
		Light Compaction	IS 2720 (Part 7)	1.3 g/cm ³ to 3.0 g/cm ³
		Heavy Compaction	IS 2720 (Part 8)	1.3 g/cm ³ to 3.0 g/cm ³
		Free Swell Index	IS 2720 (Part 40)	1.0 % to 50 %
		Shrinkage Limit	IS 2720 (Part 6)	1.0 % to 50 %
		Relative Density	IS 2720 (Part 14)	0.5 g/cm ³ to 3.0 g/cm ³
		Elastic Modulus -EV2 Test (Site Test)	DIN 18134/RDSO GE-14	10 N/mm ² to 400 N/mm ²
		Triaxial Shear Test	IS 2720 (Part 11&12)	∅ = 1 ° to 50° C= Upto 10 kg/cm ²
		Direct Shear Test	IS 2720 (Part 13)	∅ = 1 ° to 50° C= Upto 10 kg/cm ²
		Coefficient of Interface Friction	IS 13326 (Part 1)/ ASTM D5321	1° to 50°
		Pull out Coefficient-Large Shear Box	ASTM D6706	1 kN/m to 100 kN/m
III.	MECHANICAL PROPERTIES OF METALS			
1.	Reinforcement	Diameter	IS 1786 Clause 6.3	4 mm to 40 mm dia

Laboratory **Anulab Industrial Testing and Analytical Laboratories, 212 km
Milestone, NH-2, Nagla Rambaksh, Etmadpur, Agra, Uttar
Pradesh**

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

Certificate Number **TC-7072 (in lieu of T-0197 & T-0198)**

Page 11 of 16

Validity **16.03.2018 to 15.03.2020**

Last Amended on 30.08.2018

Sl.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
	Steel Bar	Mass per meter	IS 1786 Clause 7.1	0.10 kg/m to 9.86 kg/m
		Tensile Strength	IS 1608 (Part 1)	20 kN to 450 kN
		Yield Stress	IS 1608 (Part 1)	20 kN to 450 kN
		Percentage Elongation	IS 1608 (Part 1)	20 mm to 300 mm
		Reduction in Area	IS 1608 (Part 1)	0.5 % to 80 %
		Bend Test	IS 1599	Qualitative (Mandrel Diameter: 8, 10,12, 15, 16,18, 20, 24 , 25 , 28 , 30 , 32, 35, 36, 40, 42, 48, 50, 56, 60, 64 , 70, 72, 75, 80, 84, 96, 100, 108, 112, 120, 125, 128, 135, 140, 144, 150, 160, 168, 175, 180, 192, 196, 200, 216 to 240 in mm)
		Re-bend Test	IS 1786	Qualitative (Mandrel Diameter: 8, 10, 12, 15, 16, 18, 20, 24, 25, 28, 30, 32, 35, 36, 40, 42, 48, 50, 56, 60, 64, 70, 72, 75, 80, 84, 96, 100, 108, 112 , 120, 125, 128, 135, 140, 144, 150, 160, 168, 175, 180, 192, 196, 200, 216, 240 in mm)
		Pull-out Test	IS 2770 (Part 1)	1.0 kN to 500 kN
2.	Prestressing Strands	Diameter	IS 14268, Annex A-2	1.0mm to 20 mm
		Cross Sectional Area	IS 14268, Annex B-1	3.0 mm ² to 360 mm ²
		Mass per Unit/Lay	IS 14268, Annex B-2/A-2	0.1 kg to 15 kg

Laboratory **Anulab Industrial Testing and Analytical Laboratories, 212 km
Milestone, NH-2, Nagla Rambaksh, Etmadpur, Agra, Uttar
Pradesh**

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

Certificate Number **TC-7072 (in lieu of T-0197 & T-0198)**

Page 12 of 16

Validity **16.03.2018 to 15.03.2020**

Last Amended on 30.08.2018

Sl.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
		Length		
		Diameter of Outer Wire	IS 14268, Annex A-3	1.0 kN to 500 kN
		Diameter of Central Wire	IS 14268, Annex A-3	0.01 mm to 20mm
		Breaking Strength	IS 1608 & IS 14268, Clause 6.2.2	1 kN to 500 kN
		Proof Load	IS 1608 & IS 14268, Clause 6.2.3	1 kN to 500 kN
		Load Test on Anchorage-Relaxation Test-100H	BS EN ISO 10138-3 IS 14268:2017 Clause 6.2.4	1.0 kN to 2000kN
3.	Structural Steel, Metal Beam Crash Barriers & Weldment Steel	Thickness	IS 2062, Clause 15 & Clause 15	0.01 mm to 300mm
		Cross sectional Area	IS 2062, Clause 15 & Clause 15	10 mm ² to 2500 mm ²
		Mass per meter	IS 2062, Clause 15 & Clause 18	0.10 kg/m to 40.0 kg/m
		Tensile Strength	IS 1608	1 kN to 500 kN
		Yield Stress	IS 1608	1 kN to 500 kN
		Percentage Elongation	IS 1608	20 mm to 300 mm
		Reduction in Area	IS 1608	0.5 % to 80 %
		Bend Test	IS 1599	Qualitative (Mandrel Diameter: 8, 10, 12, 15, 16, 18, 20, 24, 25, 28, 30, 32, 35, 36, 40, 42, 48, 50, 56, 60, 64, 70, 72, 75, 80, 84, 96, 100, 108, 112, 120, 125, 128, 135, 140, 144, 150, 160, 168, 175, 180, 192, 196, 200, 216, 240 mm)
	Impact Test-Charpy V-Notch	IS 1757(Part 1)	1.0 J to 200 J	

Laboratory **Anulab Industrial Testing and Analytical Laboratories, 212 km
Milestone, NH-2, Nagla Rambaksh, Etmadpur, Agra, Uttar
Pradesh**

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

Certificate Number **TC-7072 (in lieu of T-0197 & T-0198)**

Page 13 of 16

Validity **16.03.2018 to 15.03.2020**

Last Amended on 30.08.2018

Sl.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
		Rockwell Hardness	IS 1586 (Part 1)	20 HRB to 100 HRB & 20 HRC to 70 HRC
		Vickers Hardness	IS 1501 (Part 1)	4.98 HV 10 to 2971 HV 10 13.9 HV 30 to 2964 HV 30
		Galvanization Thickness/Mass of coating	IS 6745	50 g/m ² to 900 g/m ²
		Anodized Thickness	IS 5523	05 micron to 100 micron
		Tensile Strength	API 1104 CL. 5.6.2/ ASME BPVC IX-, QW 150	1.0 kN to 500 kN
		Nick Break	API 1104 CL. 5.6.3/ ASME BPVC IX-, QW 172	1.0 kN to 500 kN
		Hardness	API 1104 CL. B.2.4.4.3/ ASME BPVC IX-, QW 290.5	4.98 HV 10 to 2971 HV 10
		Impact Test- Charpy	API 1104 CL. A.2/ ASME BPVC IX-, QW 171	10 J to 200 J
		Bend Test-Face & Root	API 1104: CL. 5.6.425.65/ ASME BPVC IX, QW 160	Qualitative (Mandrel Diameter: 8, 10, 12, 15, 16, 18, 20, 24, 25, 28, 30, 32, 35, 36, 40, 42, 48, 50, 56, 60, 64, 70, 72, 75, 80, 84, 96, 100, 108, 112, 120, 125, 128, 135, 140, 144, 150, 160, 168, 175, 180, 192, 196, 200, 216 to 240 in mm)
		Transverse Load Test	Cl.10.2.2.1, RDSO Manual for Flash Butt Welding	20 kN to 6000 kN
		Shear Test Rivets/Bars	IS 5242	1.0 kN to 500 kN
		Hot Compression/Dump	IS 1148	Qualitative

Birendra Prasad Murmu
Convenor

N. Venkateswaran
Program Manager

Laboratory

Anulab Industrial Testing and Analytical Laboratories, 212 km
Milestone, NH-2, Nagla Rambaksh, Etmadpur, Agra, Uttar
Pradesh

Accreditation Standard ISO/IEC 17025: 2005

Certificate Number TC-7072 (in lieu of T-0197 & T-0198)

Page 14 of 16

Validity 16.03.2018 to 15.03.2020

Last Amended on 30.08.2018

Sl.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
		Test		
4.	Steel Rivets	Diameter	IS 1929 IS 10102	1.0 mm to 50 mm
		Head Soundness Test	IS 1148	Qualitative
5.	Bridge Bearings- Elastomeric, Pot, Pot-cum-PTFE, Pin Metallic Guide, Spherical & Cylindrical	Shear Modulus	IRC 83 (Part 2)/ ASTM D4014/ EN 1337-3	0.1 MPa to 5.0 MPa
		Elastic Modulus- Compression Stiffness	IRC 83 (Part 2)/ EN 1337-3	1x10 ³ to 40x10 ⁸
		Stripping /Adhesion Strength- Bond Shear Strength	IRC 83 (Part 2)/ EN 1337-3	Qualitative
		Ultimate Comp. Strength	IRC 83 (Part 2)/ EN 1337-3	5 MPa to 125 MPa
		Load Test-Vertical/ Horizontal	IRC 83 (Part 3)/ IRC 83(Part 4) EN 1337-5	20 kN to 6000 kN
		Friction Test	IRC 83 (Part 3)/ IRC 83 (Part 4) EN 1337-5	0.005 to 5.0
		Rotation Test	IRC 83 (Part 3)/ IRC 83(Part4)/ EN 1337-5	0.1° to 10°
		Hardness	IS 3400 (Part 2)	30 IRHD to 80 IRHD
		Tensile Strength	IS 3400 (Part 1)	1 kN to 5 kN
		Elongation at Break	IS 3400 (Part 1)	5 % to 600 %
	Compression Set Test	IS 3400 (Part 10)	0.1 % to 30 %	
	Density	IS 3400 (Part 9)	0.5 g/cm ³ to 2.50 g/cm ³	
	Ash Content	IS 3400 (Part 22)	0.1 % to 50 %	
	Accelerated Ageing	IS 3400 (Part 4)	1 hour to 120 hour	
	Hardness	IS 3400 (Part 2)	30 IRHD to 80 IRHD	
	Tensile Strength	IS 3400 (Part 1)	01 kN to 5 kN	

Birendra Prasad Murmu
Convenor

N. Venkateswaran
Program Manager

Laboratory Anulab Industrial Testing and Analytical Laboratories, 212 km Milestone, NH-2, Nagla Rambaksh, Etmadpur, Agra, Uttar Pradesh

Accreditation Standard ISO/IEC 17025: 2005

Certificate Number TC-7072 (in lieu of T-0197 & T-0198)

Page 15 of 16

Validity 16.03.2018 to 15.03.2020

Last Amended on 30.08.2018

Sl.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
		Elongation at Break	IS 3400 (Part 1)	5 % to 600 %
		Adhesion Strength	IS 3400 (Part 14)	0.1 kN/m to 50 kN/m
6.	Steel Pipe	Flattening Test	IS 2328	Qualitative
7.	Sheathing Ducts- GI Sheet HDPE/ PP, DWC & Void Formers	Dimensions	IRC 18-2000, Annex A1 fib Bulletin 7-2000	20mm to 30mm
		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	1.0 kN to 500kN
		Tension Load Test	App. 1800/I Test C MORTH Specs. 2001, IRC 18-2000, Annex A5 fib Bulletin 7-2000	1.0 kN to 1000kN
		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 kN to 3000 kN
		Compression Test	Cl. 2, App. 1B, IRC 18- 2000, Annex A7 fib Bulletin 7-2000	1.0 kN to 2000 kN
		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	0.1 kN to 50kN
IV.		PLASTIC & POLYMERS		
1.	PVC Pipe	Visual Appearance	IS 4985 Clause 10.1	Qualitative
		Outside Diameter-OD	IS 12235 (Part 1)	50 mm to 200 mm
		Wall Thickness	IS 12235 (Part 2)	0.001 mm to 20 mm

Laboratory Anulab Industrial Testing and Analytical Laboratories, 212 km
Milestone, NH-2, Nagla Rambaksh, Etmadpur, Agra, Uttar
Pradesh

Accreditation Standard ISO/IEC 17025: 2005

Certificate Number TC-7072 (in lieu of T-0197 & T-0198)

Page 16 of 16

Validity 16.03.2018 to 15.03.2020

Last Amended on 30.08.2018

Sl.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
		Reversion Test	IS 12235 (Part 5) Sec.1	0.5 % to 10 %
		Vicat Softening Point	IS 6307	30 °C -250 °C
		Density	IS 13360 (Part 3) Sec1	1.10 g/cm ³ to 1.75 g/cm ³
		Sulphated Ash Content	Annex-B, IS 4985	0.10 % to 20 %
		Hydrostatic Pressure Test at 27 °C for 1 hour	IS 12235 (Part 8) Sec-1	0.5 kg/cm ² to 100kg/cm ²
		Resistance to External Blows at 0 °C	IS 4985 Annex-C	Qualitative