

Laboratory **Structwel Designers and Consultants Pvt. Ltd., "Structwel",
Plot No. 15, Sector-24, Off. Sion-Panvel Highway, Turbhe,
Navi Mumbai, Maharashtra**

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

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Validity **19.12.2016 to 18.12.2018 Last Amended on 17.03.2017**

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.	BUILDING MATERIALS			
1.	Cement			
a.	OPC	Loss on Ignition	IS: 4032 :1985 Reaffirmed 2014	1.0 % to 10.0 %
		Silica (SiO ₂)	IS: 4032 :1985 Reaffirmed 2014	15 % to 30 %
		Ferric oxide (Fe ₂ O ₃)	IS: 4032 :1985 Reaffirmed 2014	3.0 % to 10 %
		Aluminum oxide (Al ₂ O ₃)	IS: 4032 :1985 Reaffirmed 2014	3.0 % to 10 %
		Calcium oxide (CaO)	IS: 4032 :1985 Reaffirmed 2014	40 % to 70 %
		Magnesia (MgO)	IS: 4032 :1985 Reaffirmed 2014	1.0 % to 10 %
		Sulphuric Anhydride (SO ₃)	IS: 4032 :1985 Reaffirmed 2014	1.0 % to 5.0 %
		Insoluble Residue	IS: 4032 :1985 Reaffirmed 2014	0.5 % to 10.0 %
		Total Alkali as Sodium Oxide (Na ₂ O)	IS: 4032 :1985 Reaffirmed 2014	0.05 % to 3.0 %
		Free lime	IS: 4032 :1985 Reaffirmed 2014	0.2 % to 10 %
		Chloride	IS: 4032 :1985 Reaffirmed 2014	0.01 % to 1 %
b.	PSC	Loss on Ignition	IS: 4032 :1985 Reaffirmed 2014	1.0 % to 15 %
		Silica (SiO ₂)	IS: 4032 :1985 Reaffirmed 2014	10 % to 50 %
		Ferric oxide (Fe ₂ O ₃)	IS: 4032 :1985 Reaffirmed 2014	1.0 % to 10 %

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		Aluminum oxide (Al ₂ O ₃)	IS: 4032 :1985 Reaffirmed 2014	1.0 % to 20 %
		Calcium oxide (CaO)	IS: 4032 :1985 Reaffirmed 2014	30 % to 70 %
		Magnesia (MgO)	IS: 4032 :1985 Reaffirmed 2014	1.0 % to 10 %
		Sulphuric Anhydride (SO ₃)	IS: 4032 :1985 Reaffirmed 2014	1.0 % to 5.0 %
		Insoluble Residue	IS: 4032 :1985 Reaffirmed 2014	0.5 % to 40 %
		Total Alkali as Sodium Oxide (Na ₂ O)	IS: 4032 :1985 Reaffirmed 2014	0.05 % to 3.0 %
		Chloride	IS: 4032 :1985 Reaffirmed 2014	0.01 % to 1 %
c.	PPC	Loss on Ignition	IS: 4032 :1985 Reaffirmed 2014	1.0 % to 15 %
		Magnesia (MgO)	IS: 4032 :1985 (Clause -7.2) Reaffirmed 2014	1.0 % to 10 %
		Sulphur Trioxide (SO ₃)	IS: 4032 :1985 Reaffirmed 2014	1.0 % to 5.0 %
		Insoluble Residue	IS: 4032 :1985 Reaffirmed 2014	15.0 % to 50 %
		Chloride	IS: 4032 :1985 Reaffirmed 2005	0.01 % to .3.0 %
2.	Fly Ash	Loss on Ignition	IS :1727: 1967 Reaffirmed 2013	0.1 % to 5.0 %
		Magnesia (MgO)	IS :1727: 1967 Reaffirmed 2013	1.0 % to 10%
		Sulphur Trioxide(SO ₃)	IS :1727: 1967 Reaffirmed 2013	0.10 % to 5%
		Available alkali as Sodium Oxide (Na ₂ O)	IS :3812:2013	0.1% to 1.0%
		Determination of chloride	IS :4032: 1985 Reaffirmed 2014	0.005 % to 0.5%

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3.	Lime	Insoluble matter in Hydrochloric acid	IS :6932:1973 Part I Clause -5 Reaffirmed 2014	1.0 % to 25 %
		Loss on Ignition	IS :6932:1973 Part I Reaffirmed 2014	5.0 % to 30 %
		Insoluble residue including Silicon Dioxide	IS :6932:1973 Part I Clause -3 Reaffirmed 2014	1.0 % to 30 %
		Silica (SiO ₂)	IS :6932:1973 Part I Reaffirmed 2014	0.5 % to 30 %
		Ferric Oxide (Fe ₂ O ₃)	IS :6932:1973 Part I Reaffirmed 2014	0.5 % to 10 %
		Alumina (Al ₂ O ₃)	IS :6932:1973 Part I Reaffirmed 2014	0.5 % to 10 %
		Calcium Oxide (CaO)	IS :6932:1973 Part I Reaffirmed 2014	0.5 % to 70 %
4.	Mineral Gypsum	Free water	IS:1288:1982 Clause 4 Reaffirmed 2016	0.5 % to 10 %
		Combined Water	IS:1288:1982 Clause 6 Reaffirmed 2016	0.5 % to 20 %
		Silica and Acid soluble	IS:1288:1982 Clause 8 Reaffirmed 2016	0.5 % to 20 %
		Iron and Aluminum oxides	IS:1288:1982 Clause 9 Reaffirmed 2016	0.2 % to 5 %
		Calcium Oxide	IS:1288:1982 Clause10.2 Reaffirmed 2016	10 % to 50 %
		Magnesium oxide	IS:1288:1982 Clause11.2 Reaffirmed 2016	1.0 % to 10 %
		Sulphur trioxide (SO ₃)	IS:1288:1982 Clause12 Reaffirmed 2016	10 % to 50 %
5.	Plaster of Paris	Free Moisture	IS : 2333:1992 Annex B - Clause B-2 Reaffirmed 2014	0.5 % to 20 %
		Carbonate (as CaCO ₃)	IS :2333:1992 Annex B - Clause 3.2	1.0 % to 10 %

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		Matter insoluble in hydrochloric acid	IS :2333:1992 Annex B - Clause 4 Reaffirmed 2014	0.5 % to 50 %
		Compound water	IS : 2333:1992 Annex B - Clause -6 Reaffirmed 2014	0.5 % to 25 %
		Calcium Sulphate	IS : 2333:1992 Annex B - Clause – 5 Reaffirmed 2014	10 % to 70 %
6.	Gypsum Plaster	Soluble Magnesium Salt	IS :2547:1976 Part I (App-A) Reaffirmed 2012	0.1 % to 3.0 %
		Soluble Sodium Salt	IS :2547:1976 Part I (App-A) Reaffirmed 2012	0.1 % to 3.0 %
		Loss on Ignition	IS :2547:1976 Part I (App-B) Reaffirmed 2012	0.5 % to 10 %
		Free Lime	IS :2547:1976 Part I (App-C) Reaffirmed 2012	0.1 % to 10 %
		Sulphur trioxide	IS:1288:1982Clause12 Reaffirmed 2006	10 % to 50 %
		Calcium Oxide	IS:1288:1982 Clause10.2 Reaffirmed 2006	10 % to 50 %
7.	Admixture	Dry Material content	IS: 9103 : 1999 Reaffirmed 2013	5.0 % to 60 %
		pH	IS : 9103 :1999 Reaffirmed 2013	4 to 12
		Chloride	IS: 6925 :1973 Reaffirmed 2008	0.01 % to 5 %
		Relative Density	IS : 9103: 1999 Reaffirmed 2013	1.0 % to 1.5
		Ash content	IS :9103 : 1999 Reaffirmed 2013	1 % to 20 %

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8.	Microsilica	Silica content	IS : 1727: 1967 Reaffirmed 2013	70 % to 95 %
		Moisture content	IS : 15388: 2003 Reaffirmed 2012	0.5 % to 4 %
		Loss on Ignition	IS : 1727: 1967 Reaffirmed 2013	0.5 % to 5 %
9.	Ceramic Tile (Unglazed)	Chemical Resistance	IS : 13630 (P – 7) : 2006 Reaffirmed 2012	Visually
10.	Ceramic Tile (Glazed)	Chemical Resistance	IS : 13630 (P – 8) : 2006 Reaffirmed 2012	Visually
11.	Plywood	pH value	IS : 1734 (P – 8) : 1983 Reaffirmed 2013	4 to 12
12.	Aggregate	Alkali Aggregate Reactivity	IS 2386 – 1963 (Part 7) Reaffirmed 2016	
		Dissolved Silica		1 to 700 milimoles/ltr
		Reduction in Alkalinity		1 to 700 milimoles/ltr
II. METALS & ALLOYS				
1.	Rib. Steel	Carbon	IS:228:1987 Part I Reaffirmed 2012	0.05 % to 2.5 %
		Sulphur	IS:6226:1987 Part II Reaffirmed 2014	0.01% to 0.2 %
2.	Mild & Med. Steel	Phosphorous	IS:228:1987 Part III Reaffirmed 2012	0.01 % to 0.2 %
		Manganese	IS:228:1987 Part II Reaffirmed 2012	0.01 % to 1.5 %
III. WATER				
1.	Water (for construction purpose)	pH	IS:3025:2004 Part-2 Reaffirmed 2014	4.0 to 12
		Sulphate as SO ₃	IS:3025:1986 Part-28 (Gravimetric method) Reaffirmed 2014	5mg/l to 2000mg/l

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		Chloride	IS:3025:1988Part- 32 (Argenometric method) Reaffirmed 2014	10mg/l to 2000mg/l
		Total Alkalinity (To neutralize 100 ml water sample, 0.02N, H ₂ SO ₄ required)	IS 456:2000 Reaffirmed 2016 (Indicator method)	0.1ml to 50ml
		Total Acidity (To neutralize 100 ml water sample, 0.02N, NaOH required)	IS 456 2000 Reaffirmed 2016 (Indicator method) Reaffirmed 2014	0.1ml to 5ml
		Total Hardness as CaCO ₃	IS:3025:2009 Part -21 (EDTA method) Reaffirmed 2014	1 mg/l to 10000 mg/l
		Volatile Residue & Fixed Residue	IS:3025:1984Part -18 Reaffirmed 2012	1 mg/l to 1000 mg/l
		Total Suspended solid	IS:3025:1984Part -17 Reaffirmed 2012	10 mg/l to 1000 mg/l

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MECHANICAL TESTING

I.	BUILDING MATERIALS			
1.	Coarse Aggregate	Aggregate Abrasion value	IS 2386 (Part 4) - 1963, Reaffirmed 2016	5 to 50 %
		Specific Gravity	IS 2386 (Part 3) - 1963, Reaffirmed 2016	1 to 4
		Bulk Density	IS 2386 (Part 3) - 1963, Reaffirmed 20116	1 kg/lit to 2 kg/lit
		Ten Percent Fines Value.	IS 2386 (Part 4) - 1963, Reaffirmed 2016	40 kN to 400 kN
		Particle Size Distribution	IS 2386 - 1963 (Part 1), Reaffirmed 2016	125 to 4.75 mm
		Water Absorption	IS 2386 - 1963 (Part 3), Reaffirmed 2016	0.1 % to 10 %
		Impact Value	IS 2386 - 1963 (Part 4), Reaffirmed 2016	5 % to 50 %
		Crushing Value	IS 2386 - 1963 (Part 4), Reaffirmed 2016	5 % to 50 %
		Elongation / Flakiness Index	IS 2386 - 1963 (Part 1), Reaffirmed 2016	5 % to 50 %
		Soundness by a) MgSO ₄ b) Na ₂ SO ₄	IS 2386 - 1963 (Part 5), Reaffirmed 2016	1 % to 20 % 1 % to 15 %
2.	Fine Aggregate	Specific Gravity	IS 2386 - 1963 (Part 3), Reaffirmed 2016	1 to 4
		Determination of Bulkage	IS 2386-1963 (Part 3), Reaffirmed 2016	1 % to 50 %
		Materials Finer than 75 Micron	IS 2386 -1963 (Part 1), Reaffirmed 2016	0.1 to 25 %
		Bulk Density	IS 2386 - 1963 (Part 3), Reaffirmed 2016	1 kg/lit to 2 kg/lit

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Sl.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
		Sieve Analysis	IS 2386 - 1963 (Part 1), Reaffirmed 2016	4.75 mm to 75 µm
		Water Absorption	IS 2386 - 1963 (Part 3), Reaffirmed 2016	0.1 % to 10 %
		Soundness by a) MgSO ₄ b) Na ₂ SO ₄	IS 2386 - 1963 (Part 5), Reaffirmed 2016	1 % to 20 % 1 % to 15 %
3.	Concrete			
a.	Core/ Cylinder/ Cube	Compressive Strength (Including Extraction of core)	IS 456-2000, Reaffirmed 2016 IS-516-1959, Reaffirmed 2013	5 N/mm ² to 100 N/mm ²
		Splitting Tensile Strength	IS 5816 : 1999 Reaffirmed 2013	1 N/mm ² to 10 N/mm ²
b.	Cylinder	Modulus of Elasticity	ASTM C 469-02e1	5 GPa to 60 GPa
c.	Masonry blocks	Moisture Movement	IS 2185 (Part 1) - 2005 Reaffirmed 2010	0.001 % to 1 %
		Density	IS 2185 (Part 1) - 2005 Reaffirmed 2010	1800 kg/m ³ to 2500 kg/m ³
		Drying Shrinkage	IS 2185 (Part 1) - 2005 Reaffirmed 2010	0.001 % to 1 %
		Compressive Strength	IS 2185 (Part 1) - 2005 Reaffirmed 2010	1 N/mm ² to 40 N/mm ²
d.	Autoclaved Cellular Areated Concrete Block	Density	IS 2185 (Part 3) - 2005 Reaffirmed 2010	300 kg/m ³ to 900 kg/m ³
		Drying Shrinkage.	IS 2185 (Part 3) - 2005 Reaffirmed 2010	0.01 % to 1 %
		Compressive Strength.	IS 2185 (Part 3) - 2005 Reaffirmed 2010	1 kg/m ³ to 10 N/mm ²
e.	Concrete Tiles	Water Absorption	IS 13801 - 2013 & IS 1237-2012	0.1 % to 25 %
		Wet Transverse Strength	IS 13801 - 2013 & IS 1237-2012	0.5 kg/m ³ to 5 N/mm ²
		Flatness	IS 13801 - 2013 & IS 1237-2012	0.01 mm to 2 mm

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		Perpendicularity	IS 13801 - 2013 & IS 1237-2012	0.01 mm to 2 mm
		Straightness	IS 13801 - 2013 & IS 1237-2012	0.01 mm to 2 mm
f.	Prism /Cube / Cylinder	Water Permeability	D I N - 1048, 2005	1 mm to 150 mm
g.	Fresh Concrete	Air Content of Freshly mixed Concrete by Pressure method.	IS - 1199 -1959, Reaffirmed 2013	0.1 % to 10 %
h.	Beam (prism)	Flexural Strength	IS -516-1959, Reaffirmed 2013	1 N/mm ² to 10 N/mm ²
i.	Concrete Cube, Core	Rapid Chloride Permeability Test (RCPT)	ASTM C1202 : 2009	50 Coulombs to 6000 Coulombs
		Initial Surface Absorption Test (ISAT)	BS 1881-P-208 : 1996	0.01 ml/m ² /sec to 3.60 ml/m ² /sec
4.	Structural Granite	Water Absorption	IS 1124 -1974, Reaffirmed 2013	0.1 % to 10 %
		Specific Gravity	IS 1122 -1974, Reaffirmed 2013	1 to 3
		Compressive Strength	IS 1121-2013 (Part 1)	10 N/mm ² to 100 N/mm ²
5.	Marble Tiles	Water Absorption	IS 1124 -1974, Reaffirmed 2013	0.1 % to 10%
		Specific Gravity	IS 1122 -1974, Reaffirmed 2013	1 to 3
		Scratch Hardness (Moh's Scale)	IS 13630 - 2006 (Part 13), Reaffirmed 2012	1 to 9 on Mohr's Scale
6.	Ceramic Tiles	Dimensions a)Surface Quality b)Squariness c)Perpendicularity d)Rectangularity	IS 13630-2006 (Part 1) Reaffirmed 2012	150 mm to 600 mm
		Water Absorption	IS 13630-2006 (Part 2) Reaffirmed 2012	0.01 % to 20%

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		Modulus of Rupture	IS 13630-2006 (Part 6) Reaffirmed 2012	5 N/mm ² to 60 N/mm ²
		Scratch Hardness (Moh's Scale)	IS 13630-2006 (Part 13) Reaffirmed 2012	1- 9 on Moh's Scale
7.	Bricks	Water Absorption.	IS 3495 - 1992 (Part 2) Reaffirmed 2016	4 % to 40%
		Compressive Strength	IS 3495 - 1992(Part 1) Reaffirmed 2016	3.5 N/mm ² to 40 N/mm ²
		Efflorescence	IS 3495-1992 (Part 3) Reaffirmed 2016	Visual
8.	Reinforced Concrete	Pull out Test	IS 2770 - 1967 (Part I), Reaffirmed 2012	2 N/mm ² to 20 N/mm ²
9.	Epoxy Resin, Hardners & Epoxy Resine Composition	Determination of Specific Gravity	IS - 9162 - 1979, Reaffirmed 2011	0.1 to 2.0
		Working Time of Epoxy Resin composition	IS - 9162 - 1979, Reaffirmed 2011	5 min to 600 min
		Compressive Strength of Epoxy Resin composition	IS - 9162 - 1979, Reaffirmed 2011	10 N/mm ² to 90 N/mm ²
		Flexural Strength of Epoxy Resin composition	IS - 9162 - 1979, Reaffirmed 2011	5 N/mm ² to 60 N/mm ²
10.	Paver Block	Dimension	IS 15658 : 2006 Reaffirmed 2011	50 mm to 300 mm
		Thickness of Wearing Layer	IS 15658 : 2006 Reaffirmed 2011	1 mm to 50mm
		Water Absorption	IS 15658 : 2006 Reaffirmed 2011	1% to 25%
		Compressive Strength	IS 15658 : 2006 Reaffirmed 2011	5 N/mm ² to 70 N/mm ²
		Abrasion Resistance	IS 15658 : 2006 Reaffirmed 2011	0.1 mm ³ to 7.0 mm ³
		Tensile Splitting Strength	IS 15658 : 2006 Reaffirmed 2011	4 N/mm ² to 20 N/mm ²

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		Flexural Strength	IS 15658 : 2006 Reaffirmed 2011	1 N/mm ² to 10 N/mm ²
11.	Cement	Normal Consistency	IS 4031-1988 (Part 4) Reaffirmed 2014	20 % to 45%
		Setting Time Initial Final	IS 4031-1988 (Part 5) Reaffirmed 2014	5 min to 300 min 90 min to -600 min
		Soundness	IS 4031-1988 (Part 3) Reaffirmed 2014	0.01 mm to 10 mm
		Density	IS 4031-1988 (Part 11) Reaffirmed 2014	2 g/cc to 4 g/cc
		Fineness by Dry Sieving	IS 4031 -1996(Part 1) Reaffirmed 2016	1 % to 10%
		Compressive Strength	IS 4031-1988 (Part 6) Reaffirmed 2014	5 N/mm ² to 80 N/mm ²
		Heat of Hydration	IS 4031- 1998 (Part 9) Reaffirmed 2014	Upto 500 kJ/kg
		Fineness by Specific Surface by Blaine Air Permeability	IS 4031- 1999 (Part 2) Reaffirmed 2013	200 m ² /kg to 510 m ² /kg
		Soundness by Autoclave	IS 4031-1988 (Part 3) Reaffirmed 2014	0.002 mm to 5mm
		Drying Shrinkage	IS 4031-1988 (Part 10) Reaffirmed 2014	0.04 % to 0.5%
12.	Pozzolanic Materials	Soundness	IS 1727-1967, Reaffirmed 2013	0.01 mm to 10mm
		Setting Time Initial Final	IS 1727-1967, Reaffirmed 2013	5 min to 300 min 90 min to 700min
		Compressive Strength	IS 1727-1967, Reaffirmed 2013	5 N/mm ² to 80 N/mm ²
		Specific Surface	IS 1727-1967, Reaffirmed 2013	200 m ² /kg to 500 m ² /kg
		Specific Gravity	IS 1727-1967, Reaffirmed 2013	1.5 to 3

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		Drying Shrinkage	IS 1727-1967, Reaffirmed 2013	0.05% to 0.5%
		Lime Reactivity	IS 1727-1967, Reaffirmed 2013	1 kN to 10 kN
13.	Micro Silica / Silica Fumes	Compressive Strength	IS 15388 - 2003, Reaffirmed 2012	5 N/mm ² to 80 N/mm ²
		Retained on 45 micron IS Sieve	IS 15388 - 2003, Reaffirmed 2012	1 % to 10%
II.	WOOD AND WOOD PRODUCTS			
1.	Plywood	Density	IS 1734 – 1983 (Part 1), Reaffirmed 2013	400 kg/m ³ to 900 kg/m ³
		Moisture Content	IS 1734 – 1983 (Part 1), Reaffirmed 2013	1 % to 50%
		Adhesion of Plies	IS 1734 - 1983 (Part 5), Reaffirmed 2013	Visual
2.	Timber	Moisture Content.	IS 1708 -1986 (Part 2), Reaffirmed 2015	0.1% to 50 %
		Specific Gravity	IS 1708 -1986 (Part 2), Reaffirmed 2015	0.5 to 1.5
3.	Block Board	Knife Test	IS - 1659 - 2004 Reaffirmed 2014	Visual
		Thickness	IS - 1659 - 2004 Reaffirmed 2014	1 mm to 50 mm
4.	Flush door shutter	Knife Test	IS - 4020 - 1998 (Part 14), Reaffirmed 2013	Visual
		Thickness	IS 4020 - 1998 (Part15), Reaffirmed 2013	20 mm to 50 mm
		Glue Adhesion	IS 4020 - 1998 (Part 15), Reaffirmed 2013	1 mm to 150 mm
		End Immersion	IS 4020 – 1998 (Part 13), Reaffirmed 2013	Visual

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Sl.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
5.	Door shutter	Measurement of Dimension and Defects of Squareness	IS 4020-1998 (Part 2) Reaffirmed 2013	25 mm to 5000mm
		Measurement of Defects of general Flatness	IS 4020- 1998 (Part 3) Reaffirmed 2013	0.1 mm to 5mm
		Test to examine the general smoothness of the Surfaces	IS 4020-1998 (Part 4) Reaffirmed 2013	0.1 mm to 5mm
		Impact Indentation	IS 4020 -1998 (Part 5) Reaffirmed 2013	0.01 mm to 1mm
		Deflection due to Load applied at its Edge	IS 4020-1998(Part 7) Reaffirmed 2013	0.1 mm to 25 mm
		Resistance to Shock	IS 4020-1998 (Part 8) Reaffirmed 2013	Visual
		Resistance to Buckling	IS 4020-1998 (Part 9) Reaffirmed 2013	0.01 mm to 25 mm
		Resistance to misuse	IS 4020- 1998 (Part 11) Reaffirmed 2013	Visual
		Resistance to Slamming Actions	IS 4020 - 1998 (Part 10) Reaffirmed 2013	Visual
		Screw Holding Power	IS 4020-1998 (Part 16) Reaffirmed 2013	10 N to 5000 N
III.	SOIL AND ROCK			
1.	Soil	Lab Test		
		Free Swell Index	IS 2720 -1977 (Part 40) Reaffirmed 2011	1% to 100%
		Water Content	IS 2720 -1973 (Part 2) Reaffirmed 20105	1% to 50%
		Liquid Limit / Plastic Limit	IS 2720 -1985 (Part 5) Reaffirmed 2015	0 to 80%
		Shrinkage Limit	IS 2720 -1972 (Part 6) Reaffirmed 2011	0 to 50%

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Sl.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
		Water Content - Dry Density relation using Light Compaction	IS 2720- 1980 (Part 7) Reaffirmed 2011	1200 kg/m ³ to 2200 kg/m ³ & 2 % to 30 %
		Grain Size Analysis	IS 2720 - 1985 (Part 4) Reaffirmed 2015	1% to 100%
		Direct Shear Test	IS 2720 -1986 (Part 13) Reaffirmed 2011	C=0.1 t/m ² to 10 t/m ² & $\phi=1$ to 40
		Laboratory California Bearing Ratio	IS 2720 -1987(Part 16) Reaffirmed 2011	2 % to 50%
		Oedometer test (Consolidation Test)	IS2720-19865 (Part 15) Reaffirmed 2011	$C_v = 2$ to 200 m ² /yr x10 ⁻²
		Water content - Dry Density Relation using Heavy compaction	IS 2720 - 1983 (Part 8) Reaffirmed 2015	1500 kg/m ³ to 2400 kg/m ³ & 1 % to 30%
		Swelling Pressure	IS2720 -1977 (Part 41) Reaffirmed 2011	1 T/m ² to 150 T/m ² 0.1 to 3.0
		Specific Gravity	IS2720 – 1980 (Part 3 Sec.1)Reaffirmed 2011	2 to 4
		Field Test		
		Field California Bearing Ratio	IS 2720 - 1990(Part 31), Reaffirmed 2015	5 % to 90%
		Field Density by Core Cutter method	IS-2720 -1975 (Part 29), Reaffirmed 2015	1000 kg/m ³ to 2000 kg/m ³ & 1 % to 30 %
		Plate Load Test	IS-1888 - 1982, Reaffirmed 2011	1 tonne to 15 tonne & 0.01 mm to 25mm
		Standard Penetration Test	IS - 2131 - 1981, Reaffirmed 2011	N Value1 to 50
		Dry Density by Sand Replacement method	IS-2720-1974 (Part 28), Reaffirmed 2015	1000 to 2500 kg/m ³ , 1% to 30 %
2.	Rock	Unconfined Compressive Strength	IS - 9143 - 1979, Reaffirmed 2016	1 to 100 N/mm ²
		Specific Gravity	IS 1122 - 1974, Reaffirmed 2013	1 to 4

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Sl.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
		Dry Density	IS 13030 - 1991, Reaffirmed 2016	1.5 g/cc to 5 g/cc
		Water Absorption	IS 13030 - 1991, Reaffirmed 2016	0.1% to 25%
		Porosity	IS 13030 - 1991, Reaffirmed 2016	0.1 % to 10 %
IV.	MECHANICAL PROPERTIES OF METAL			
1.	High Strength deformed Steel bars and wires for concrete reinforcement	Percentage Elongation	IS - 1786 - 2008, Reaffirmed 2013	5 % to 40%
			IS - 432-1982 (Part 1), Reaffirmed 2015	
		% Elongation at Maximum Force	IS - 1786 - 2008, Reaffirmed 2013 IS - 432-1982 (Part 1), Reaffirmed 2009	5 % to 40%
		Yield strength	IS - 1786 - 2008, Reaffirmed 2013 IS - 432-1982 (Part 1), Reaffirmed 2015	200 N/mm ² to 800 N/mm ²
		Ultimate Tensile strength	IS - 1786 - 2008, Reaffirmed 2013 IS - 432-1982 (Part 1), Reaffirmed 2015	200 N/mm ² to 900 N/mm ²
		Bend Test	IS -1599 - 2012	Mandrel dia.
		Rebend Test	IS -1599 - 2012	12,16,18,20,24,30, 32,36,40,42,48,50, 56,64,70,72,75, 80,84,96,100,112,120,125,128,140,150,160,175, 192,200,224,256 mm

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Sl.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
2.	Low, Medium & High Tensile Structural Steel	Percentage Elongation	IS 2062 - 2011 Reaffirmed 2016	5 % to 40%
		Weight per Meter	IS 2062 - 2011 Reaffirmed 2016	0.20 kg/m to 75 kg/m
		Yield strength	IS 2062 - 2011 Reaffirmed 2016	200 N/mm ² to 800 N/mm ²
		Ultimate Tensile strength	IS 2062 - 2011 Reaffirmed 2016	200 N/mm ² to 900 N/mm ²
		Bend Test	IS 2062 - 2011 Reaffirmed 2016	Visual

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NON-DESTRUCTIVE TESTING

I.	BUILDING MATERIALS – REINFORCED CONCRETE STRUCTURES			
1.	Concrete	Schmidt Rebound Hammer Test	IS -13311: 1992, Part 2 Reaffirmed 2013	5 N/mm ² to 50 N/mm ²
		Ultrasonic Pulse Velocity Test	IS -13311: 1992, Part 1 Reaffirmed 2013	0.50 km/s to 5.0 km/s
		Cover Meter Test	BS -1881: 1986 Part 204	1 mm to 100 mm
		Carbonation Test	BS -1881 : 1986 Part 201	1 mm to 50 mm
		Load Test	IS 456 – 2000 Reaffirmed 2016	0.01mm to 25mm
		Half cell potentiometer Test	ASTM C-876 : 2015	-100 mV to - 650 mV

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