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|---|---|
| **Laboratory** | **Manglam Consultancy Services Hyderabad, H. No. 11-13-39, Alakapuri Road No-1, R.K. Puram, Hyderabad, Telangana** |
| **Accreditation Standard** | **ISO/IEC 17025: 2005** |
| **Certificate Number** | **TC-8085** **Page 1 of 3** |
| **Validity** | **19.11.2018 to 18.11.2020** **Last Amended on --** |

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

## MECHANICAL TESTING

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|---|---|---|---|---|
| **I.** | **BUILDING MATERIALS** | | | |
| **1.** | **Aggregate-Coarse** | Sieve Analysis | IS 2386 (Part 1) | 0.1 % to 100 % (4.75 mm to 75 mm) |
| | | Flakiness Index | IS 2386 (Part 1) | 5 % to 40 % |
| | | Elongation Index | IS 2386 (Part 1) | 5 % to 40 % |
| | | Specific Gravity | IS 2386 (Part 3) | 2.5 g/cc to 3.5 g/cc |
| | | Water Absorption | IS 2386 (Part 3) | 1 % to 10 % |
| | | Bulk Density | IS 2386 (Part 3) | 1.2 Kg/l to 1.7 Kg/l |
| | | Impact Value | IS 2386 (Part 4) | 5 % to 50 % |
| | | Crushing Value | IS 2386 (Part 4) | 5 % to 60 % |
| | | Abrasion Value-Los Angeles | IS 2386 (Part 4) | 5 % to 60 % |
| **2.** | **Aggregate-Fine** | Sieve Analysis | IS 2386 (Part 1) | 0.1 % to 100 % (0.075 mm to 10 mm) |
| | | Specific Gravity | IS 2386 (Part 3) | 2.5 g/cc to 3.5 g/cc |
| | | Water Absorption | IS 2386 (Part 3) | 1 % to 10 % |
| | | Bulk Density | IS 2386 (Part 3) | 1.2 Kg/l to 1.8 Kg/l |
| **3.** | **Bitumen** | Specific Gravity | IS 1202 | 0.98 to 1.102 |
| | | Penetration | IS 1203 | 35 to 200 (1/10 mm) |
| | | Softening Point | IS 1205 | 40 $^0$C to 65 $^0$C |
| | | Absolute Viscosity | IS 1206 (Part 2) | 800 Poise to 4800 Poise |
| | | Kinematics Viscosity | IS 1206 (Part 3) | 250 cSt to 700 cSt |
| | | Ductility | IS 1208 | 25 cm to 100 cm |
| **4.** | **Bituminous Mix** | Marshall Stability | ASTM D 6927 | 6 kN to 3 kN |
| | | Marshall Flow | ASTM D 6927 | 1 mm to 10 mm |
| | | Density | ASTM D 2041 | 1.5 g/cc to 3.5 g/cc |
| | | Binder Content | IRC SP-11 | 1 % to 10 % |

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| **5.** | **Bricks (Burnt Clay/ Fly Ash)** | Dimensions- Burnt Clay Bricks | IS 1077 | Length 4400 mm to 4800 mm Width 2000 mm to 2300 mm Height 1200 mm to 1500 mm |
| | | Dimensions- Fly Ash Bricks | IS 12894 | Length 4520 mm to 4680 mm Width 2160 mm to 2240 mm Height 1360 mm to 1440 mm |
| | | Compressive Strength | IS 3495 (Part 1) | 2.5 $N/mm^2$ to 12.5 $N/mm^2$ |
| | | Water Absorption | IS 3495 (Part 2) | 2 % to 30 % |
| | | Efflorescence | IS 3495 (Part 3) | Qualitative |
| **6.** | **Precast Concrete Paving Block** | Water Absorption | IS 15658 | 0.5 % to 20 % |
| | | Compressive Strength | IS 15658 | 5 $N/mm^2$ to 80 $N/mm^2$ |
| **7.** | **Cement (OPC/PPC)** | Fineness by Blaine's Air Permeability | IS 4031 (Part 2) | 200 $m^2/Kg$ to 400 $m^2/Kg$ |
| | | Soundness by Le-Chatelier Method | IS 4031 (Part 3) | 0.5 mm to 10 mm |
| | | Standard Consistency | IS 4031 (Part 4) | 25 % to 40 % |
| | | Initial Setting Time | IS 4031 (Part 5) | 30 min to 250 min |
| | | Final Setting Time | IS 4031 (Part 5) | 100 min to 700 min |
| | | Compressive Strength | IS 4031 (Part 6) | 10 $N/mm^2$ to 80 $N/mm^2$ |
| **7.** | **Hardened Concrete** | Compressive Strength- Cube & Core | IS 516 | 10 $N/mm^2$ to 80 $N/mm^2$ |
| | | Flexural Strength | IS 516 | 5 $N/mm^2$ to 15 $N/mm^2$ |
| **8.** | **Fresh Concrete** | Slump | IS 1199 | Upto 150 mm |

**Deepak Kumar Sharma**
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| **II.** | **SOIL & ROCK** | | | |
| **1.** | **Soil** | Specific Gravity | IS 2720 (Part 3/ Sec-1) | 2.4 g/cc to 3.0 g/cc |
| | | Grain Size Analysis | IS 2720 (Part 4) | 0.1 % to 100 % (0.075 mm to 20 mm) |
| | | Liquid Limit | IS 2720 (Part 5) | 25 % to 80 % |
| | | Plastic Limit | IS 2720 (Part 5) | 5 % to 50 % |
| | | Light Compaction | IS 2720 (Part 7) | MDD: 1 g/cc to 2.1 g/cc<br>OMC: 5 % to 40 % |
| | | Heavy Compaction | IS 2720 (Part 8) | MDD: 1.4g/cc to 2.6g/cc<br>OMC: 5 % to 40 % |
| | | Direct Shear (Undrained) | IS 2720 (Part 13) | C: Upto 0.4 kg/cm$^2$<br>Φ: 5° to 50° |
| | | Consolidation | IS 2720 (Part 15) | Cc: 0.05 to 2.0<br>Pc:<br>0.1 kg/cm$^2$ to 8.0 kg/cm$^2$ |
| | | California Bearing Ratio | IS 2720 (Part 16) | 1 % to 60 % |
| | | Free Swell Index | IS 2720 (Part 40) | Upto 300 % |

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