

| CONSTRUCTION MATERIALS | | |
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| Item No. | Test | Method |
| 1 | CONCRETE. | |
| 1.01 | Compressive strength & Density of cube | BS EN 12390 -3&7 |
| 1.02 | Depth of Penetration of water under pressure | BS EN 12390 -8/ DIN 1048-5 |
| 1.03 | Water Absorption | BS 1881 : Part 122 |
| 1.04 | Chloride ion Permeability (RCPT) | ASTM C 1202 |
| 1.05 | Chloride Migration Coefficient | NT Build 492 (1999-11) |
| 1.06 | Initial surface absorption test (ISAT) | BS 1881 : Part : 208 |
| 1.07 | Porosity | RILEM CPC |
| 1.08 | Capillary Index | Concrete Society |
| 1.09 | Water absorption and volume of permeable voids | ASTM C 642 |
| 1.10 | Dry & Wet bulk Density, Water Absorption & Apparent Porosity | ASTM C948 |
| 1.11 | Compressive strength of cylinders | ASTM C 39 |
| 1.12 | Determination of Rebound hammer – Schmidt hammer test | BS EN 12504-2/ASTM C- 805/805M |
| 1.13 | Concrete cover meter | BS 1881 Part 204 |
| 1.14 | Compressive strength of Hydraulic cement mortars | ASTM C109/C109M |
| 1.15 | Flexural strength of concrete beams | ASTM C 78/C78M |
| 1.16 | Splitting Tensile Strength of cylinders | ASTM C 496 |
| 1.17 | Compressive strength of drilled cores | BS EN 12504-1 |
| 1.18 | Compressive strength of concrete hollow blocks and Masonry units | BS 6073- Part:1/ BSEN -772-1 |
| 1.19 | Compressive strength of Paving blocks | BS 6717 – Part:1 |
| 1.20 | Water Absorption of Paving blocks | BS EN 1338/CML 09-97 |
| 1.21 | Measurement of Tensile Splitting Strength of Paving Blocks | BS EN 1338:2003 (Annex F) |
| 1.22 | Total Water Absorption of Kerbstone | BS EN 1340: 2003(Annex E) |
| 1.23 | Measurement of Bending and Breaking Load of Concrete Flags | BS EN 1339: 2003 (Annex- F) |
| 1.24 | Water Absorption of Kerb stone | BS 7263 Part:1 |

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| 1.25 | Transverse / Bending Strength of Kerbstone | BS EN 1340: 2003 (Annex- F) |
| 1.26 | Concrete Mix Design and laboratory trial mixes. Client shall provide all material | ACI 211 |
| 1.27 | Core Drilling. Various diameters | BS EN 12504-1 |
| 1.28 | Compressive strength of young sprayed concrete | BS EN 14488-2 |
| 1.29 | Energy Absorption capacity of Fibre reinforced slab specimen | BS EN 14488-5:2006 |
| 1.30 | Flexural strength of Fibre reinforced concrete beam. First peak, ultimate and residual | BS EN 14488-3 |
| 1.31 | Testing of Sprayed concrete – Bond strength of cores by direct tension | BS EN 14488-4 |
| Fresh concrete testing at site or Batching plant. | | |
| 1.32 | Slump test and temperature | BS EN 12350-2 |
| 1.33 | Air content | BS EN 12350-7 |
| 1.34 | Sampling and manufacture of specimen | BS EN 12390-2 |
| 1.35 | Setting Time of Concrete Mixtures | ASTM C 403/403M- 16 |
| 1.36 | Bleeding test | ASTM C 232/232M -14 |
| 1.37 | Flow Table Test of Fresh Concrete | BS EN 12350 - 5 |
| 1.38 | Density Test of Fresh Concrete | BS EN 12350 - 6 |
| 2 | BITUMINOUS MIXTURES | |
| 2.01 | Binder content by Centrifuge extraction and Sieve analysis of aggregate obtained | ASTM D 2172 and ASTM C 136 / ASTM C 5444 or BS 812 Part: 103.1 |
| 2.02 | Soluble Binder content | BS EN 12697-1 |
| 2.03 | Theoretical maximum Specific gravity and Density | ASTM D2041/ BS EN 12697-5 |
| 2.04 | Density and compaction of Core samples | BS EN 12697-6 or ASTM D 2726 |
| 2.05 | Marshal Test on Plant mixed sample (4 specimens shall be prepared and tested on each sample) | BS EN 12697-34 /ASTM D 6927 BS EN 12697-30/ ASTM D 6926 BS EN 12697-29/ ASTM D 3549 BS EN 12697 8 |
| 2.06 | Specimen Preparation by Impact Compactor | BS EN 12697-30/ ASTM D 6926 |
| 2.07 | Marshall Stability Test | BS EN 12697-34/ ASTM D 6927 |

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| 2.08 | Marshal Mix Design. (Client shall provide all material) | MS 2 Manual |
| 2.09 | Mix Design Verification | - |
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| 2.10 | Tensile Strength Ratio (TSR) | AASHTO T 283 |
| 2.11 | Asphalt core drilling (pair of 2 cores) | BS EN 12697/ASTM D 5361M |
| 2.12 | Application Rate | ASTM D 2995 |
| 2.13 | Sampling of Bituminous mixtures from site or batching plant | ASTM D979 |
| 3 | CEMENT | |
| 3.01 | Initial and final setting times | BS EN 196-3 |
| 3.02 | Soundness of cement | BS EN 196-3 |
| 3.03 | Fineness of cement | BS EN 196-6 |
| 3.04 | Compressive strength | BS EN 196-1 |
| Chemical Analysis | | |
| 3.05 | Total Silica (SiO ₂) | BS EN 196-2/ASTM C114 |
| 3.06 | Aluminium Oxide (Al ₂ O ₃) | |
| 3.07 | Iron Oxide (Fe ₂ O ₃) | |
| 3.08 | Calcium Oxide (CaO) | |
| 3.09 | Magnesium Oxide (MgO) | |
| 3.10 | Sulphur Trioxide (SO ₃) | |
| 3.11 | Los on Ignition | |
| 3.12 | Insoluble residue | |
| 3.13 | Tricalcium Aluminate (C ₃ A) | |
| 3.14 | Total Alkalies | |
| 4 | GGBS | |
| 4.01 | Total Silica (SiO ₂) | BS EN 196-2/ BS EN 15167-1 |
| 4.02 | Aluminium Oxide (Al ₂ O ₃) | |
| 4.03 | Iron Oxide (Fe ₂ O ₃) | |
| 4.04 | Calcium Oxide (CaO) | |
| 4.05 | Magnesium Oxide (MgO) | |
| 4.06 | Sulphur Trioxide (SO ₃) | |
| 4.07 | Los on Ignition | |
| 4.08 | Chloride | |

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| 4.09 | Moisture content | BS EN 15167-1 |
| 4.10 | Density | BS EN 196-6 |
| 4.11 | Fineness | BS EN 196-6 |

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| 4.12 | Activity Index @ 7 & 28 days | BS EN 196-1/BS EN 15167 |
| 4.13 | Setting time - Initial | BS EN 196-3 |
| 5 | Pulverized Fuel Ash (PFA) | |
| 5.01 | Total Silica | BS EN 196-2/BS EN 450-1 |
| 5.02 | Aluminium Oxide | BS EN 196-2/BS EN 450-1 |
| 5.03 | Sulphate | BS EN 196-2/BS EN 450-1 |
| 5.04 | Iron Oxide | BS EN 196-2/BS EN 450-1 |
| 5.05 | Magnesia content | BS EN 196-2/BS EN 450-1 |
| 5.06 | Loss on ignition | ASTM C 311/C311M |
| 5.07 | Moisture content | BS 3892 -1 /ASTM C114 |
| 5.08 | Fineness | ASTM C430/ASTM C311 |
| 6 | Micro silica | |
| 6.01 | Silica content (SiO ₂) | ASTM C1240/C114 |
| 6.02 | Moisture content | ASTM C1240/C114 |
| 6.03 | Loss on ignition | ASTM C1240/C114 |
| 6.04 | Percent retained on 45- μ m | ASTM C1240 |
| 7 | LIMESTONE | |
| 7.01 | Total Silica (SiO ₂) | ASTM C25-11/USEPA-6010C |
| 7.02 | Aluminum Oxide (Al ₂ O ₃) | |
| 7.03 | Iron Oxide (Fe ₂ O ₃) | |
| 7.04 | Calcium Oxide (CaO) | |
| 7.05 | Magnesium Oxide (MgO) | |
| 7.06 | Loss on ignition | |
| 7.07 | Titanium Oxide (TiO ₂) | |
| 7.08 | Sodium Oxide (Na ₂ O) | |
| 7.09 | Potassium Oxide (K ₂ O) | |
| 8 | Gypsum | |
| 8.01 | Silicon dioxide & Insoluble matter | ASTM C471M-14 |
| 8.02 | Iron & Aluminium Oxide | ASTM C471M-14 |
| 8.03 | Sulfur Trioxide | ASTM C471M-14 |
| 8.04 | Calcium Oxide | ASTM C471M-14 |
| 8.05 | Chloride | ASTM C471M-14 |
| 8.06 | Free Water | ASTM C471M-14 |

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| 8.07 | Combined Water | ASTM C471M-14 |
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| 9.0 | Admixture | |
| 9.01 | Chloride content | BS EN 480-10/BS EN 934-2 |
| 9.02 | Specific Gravity | ASTM C 494/M-13 |
| 9.03 | Dry Material Content – Residue by Oven Drying | ASTM C 494/ASTM C 494M-13 |
| 9.04 | pH value | In-house |
| 10 | Steel Reinforcement | |
| 10.01 | Tensile strength, Yield and Elongation up to 32 mm diameter bar. | BS 449:2005+A2:2009/BS EN –ISO 6892-1:2009/BS EN ISO 15630-1:2010/BS EN ISO 7438:2005 |
| 10.02 | Tensile strength, Yield and Elongation 40 mm diameter bar. | |
| 10.02 | Bend | |
| 10.03 | Rebend | |
| Chemical Analysis | | |
| 10.04 | Carbon (C) | A615/A615M-14/ASTM E415-14 |
| 10.05 | Sulphur (S) | |
| 10.06 | Manganese(Mn) | |
| 10.07 | Silicon (Si) | |
| 10.08 | Phosphorous (P) | |
| 10.10 | Vanadium (V) | |
| 10.11 | Nickel (Ni) | |
| 10.12 | Chromium (Cr) | |
| 10.13 | Molybdenum (Mo) | |
| 10.14 | Copper (Cu) | |
| 10.15 | Nitrogen (N) | |
| 10.16 | Carbon Equivalent (Ceq) | BS 4449:2005+A2:2009 |
| 11 | Refractory Material | |
| 11.01 | Cold Crushing strength & Bulk density | ASTM C 133 & ASTM C134 |
| 11.02 | Permanent Linear change | ASTM C 113 |
| 12 | Water for Concrete purpose | |
| 12.01 | Sulphate (SO ₄) | BS 1377 part:3:1990 |
| 12.02 | Chloride (Cl) | BS 1377 part:3:1990 |
| 12.03 | Total Dissolved Solids (TDS) | BS 1377 part:3:1990 |
| 12.04 | Total Alkalinity as CaCO ₃ | BS EN ISO9963-1:1996 |
| 12.05 | Carbonate & Bi-Carbonate | APHA |
| 12.06 | pH value | BS 6068-2.50:1995 |
| 12.07 | Lead (Pb) | SM WW 3120 (ICP –OES) |

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| 12.08 | Zinc (Zn) | SM WW 3120 (ICP –OES) |
| 12.09 | Nitrate Nitrogen | SM WW 4110 B |
| 12.10 | Phosphate (PO ₄) | SM WW 4500 PD-B |
| 12.11 | Chemical Oxygen Demand (COD) | SM WW 5220D |