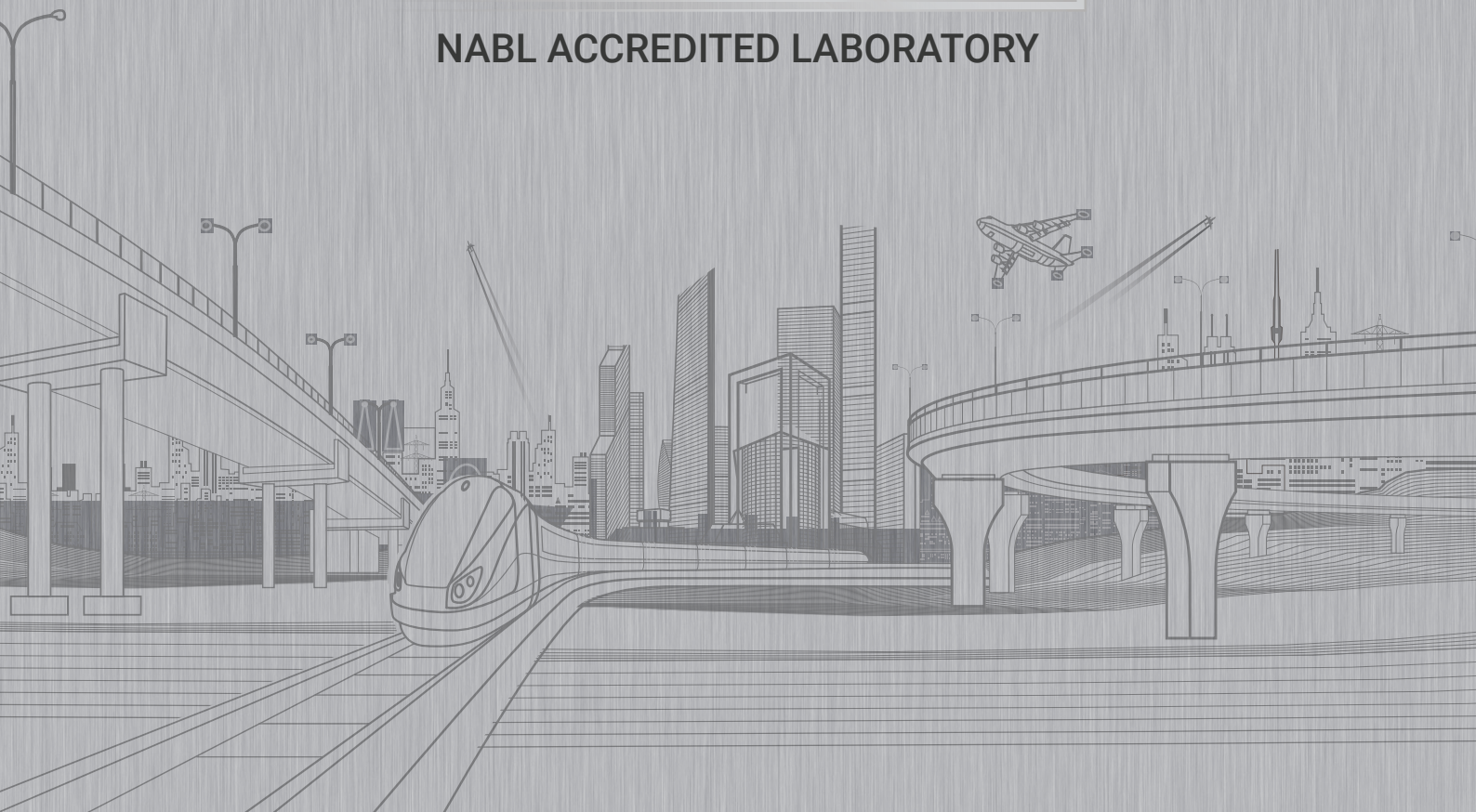
SMCLAB

Quality with integrity

MASTERING PRECISION ANALYST

NABL ACCREDITED LABORATORY



ABOUT US

Founded in 2020, Shri Metal Connect LLP aims at using a visionary approach while imparting a wide array of services for Building material testing, Soil/Geotechnical Investigation, Transportation (Bitumen/Asphalt), Field Testing, Mechanical Testing (Physical & Chemical), Non-destructive Testing (NDT), and many more for the Strength, Quality, Purity of materials. We are an ISO 9001:2015 NABL Accredited Laboratory, rendering consultancy services to various government and private companies.

Under the leadership of Dharmendra Seth and Krunal Shah, sales enthusiast, an industry veteran and marketing expert, Shri Metal Connect LLP (SMC LAB) has developed various profitable solutions for many clients. Additionally, our expert team of Geotechnical, Transportation and Building Material Engineers, Metallurgists, Technicians, and Inspection Professionals bring along wealth of experience enabling us to provide top-notch services to our clients.

With our vast knowledge and familiarity with a variety of services in many fields such as Surveying, Soil Investigation, Laboratory Testing of various construction materials, Chemical Analysis, Non-Destructive Testing of Structures, Project Management Consultancy, Geotechnical Investigation, Structure Designing and Third Party Inspection for Quality Assurance, our clientele enjoy innovative solutions.

By means of our state-of-the art research and development techniques and methodologies, we strive to offer the best services while assuring quality and strong value protocols.

Our corporate philosophy is “Trustworthiness & Credibility”. These are not just words for us but strongly imbibed in every person who works with us. They are the unchanging principles, to which we will be forever dedicated.

Our services are of paramount importance when it comes to designing of structural foundations, dams, roadways, structures, tunnels, and other projects.

ONE-POINT SOLUTION FOR ALL YOUR TESTING NEEDS

OUR POLICY

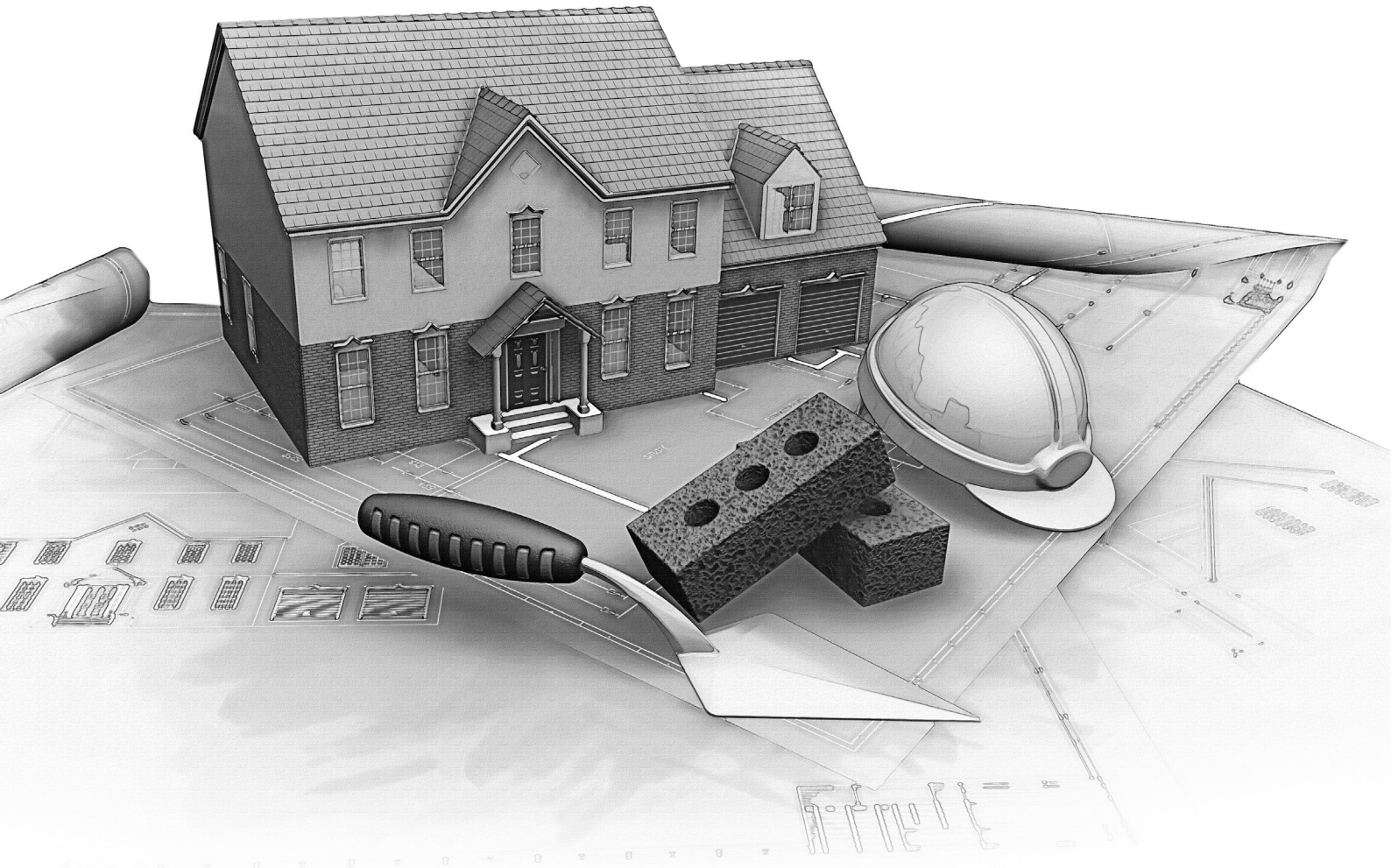
- Quality Control services in testing civil engineering material
- Reliable, error-free and client-centric solutions
- Cost-effectiveness with no compromise in quality
- Seek new knowledge and be updated with the latest trends
- Strict adherence to quality manuals and procedural techniques
- Commitment to quality, innovation and respect for the planet
- Enriching lives around us in the most responsible manner

VISION & MISSION

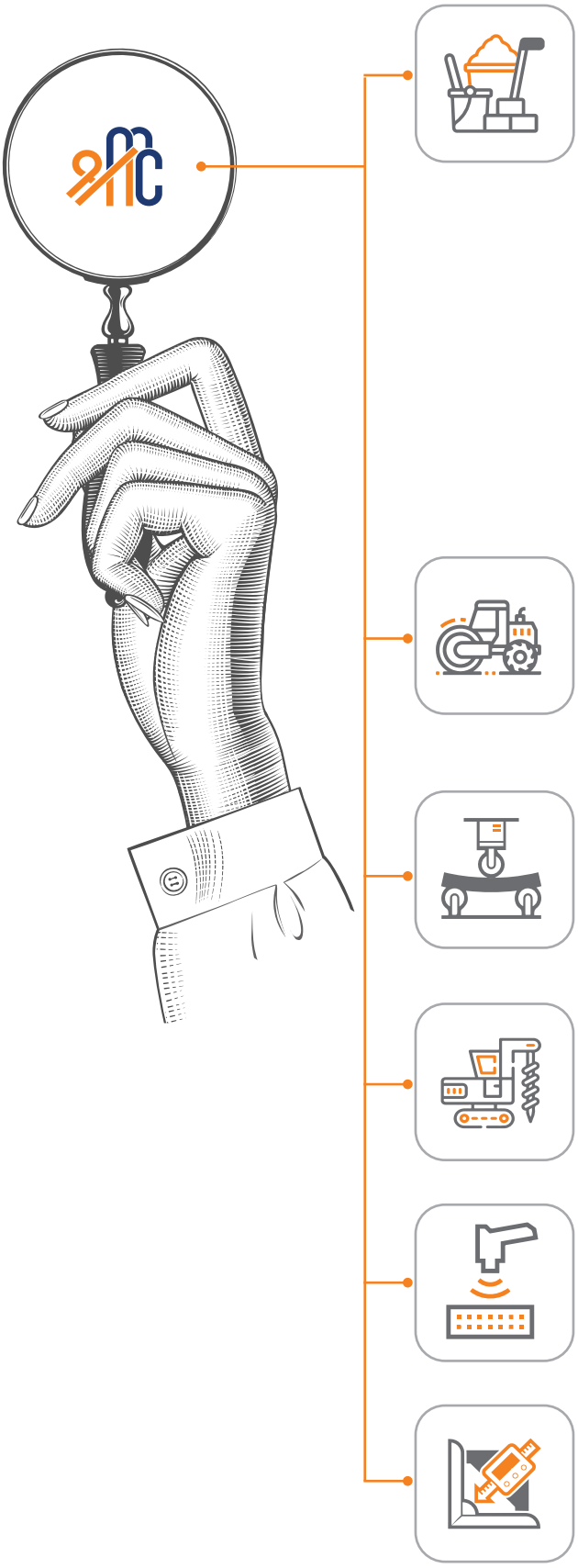
- Transforming towards a sustainable future
- Continuous improvement on professional front to serve the client with the best
- A new and reformed system for testing and Quality Assurance in all segments
- Constant Innovation to deliver value to clients
- Striving to bring about a positive turn-around in the testing sector

WHY
SMC LAB

- Well-equipped with holistic infrastructure that caters to the ever-changing needs
- Experienced team for NDT, Field Testing, Foundation design and third Party Inspection.
- Expertise in Mechanical and On-Site Testing, 5-7 years experienced staff.
- NABL Accredited Laboratory and ISO Certified laboratory
- Our results are accepted worldwide cause we are NABL Approved Laboratory.
- Operational facilities with fully digital equipment with Load Cell & LVDT Censors.
- Error-free test reports within the scheduled timeline



OUR KEY TESTING SERVICES



BUILDING MATERIAL

Concrete - (Fresh & Hardened Concrete) – Concrete Mix Design, Cube, Flexural Beam, Split Tensile, Drying Shrinkage, Density.

Material - Coarse Aggregate, Fine Aggregate, Ballast, Bricks [Flyash, Common burnt Clay (Red Bricks), Hollow Bricks], Paver Block, Kerb Stone, Hollow /Solid Concrete Block, AAC Block

Cement - [OPC, PPC, SRPC, WPC, PSC], Mineral Admixtures [Flyash Ash, Silica fumes, GGBS]

Special Materials - Tiles [Ceramic, Terrazzo, Cement Flooring, Chequered Cement], Natural Stone [Granite, Marble, Kota Stone, Dholpur Stone, Sand Stone], Wood, etc.

TRANSPORTATION

Bitumen Mix Design [BC, DBM,BM,SDBM, WMM, WBM, GSB, Blanketing Material, Screening Material], VG Grade Bitumen, Industrial Grade Bitumen, Asphalt Testing, Pavement Quality Concrete.

MECHANICAL (Physical & Chemical)

Steel Testing, High Strand Tensile Bars (HT Strand), Steel Tubes, Channel/Section (Structural Steel), MS Plate, Coupler, Stainless Steel.

GEOTECH

Soil Testing, Geotechnical Investigation Work, SBC, Rock, Drilling Facility.

FIELD TESTING

Sand Replacement, Core cutter, SPT, Plate load, Pile Load, Electrical Resistivity Testing (ERT).

NON-DESTRUCTIVE TESTING (NDT)

Rebound Hammer, Ultrasonic Pulse Velocity (UPV), Half Cell Potential.

TESTING FACILITY IN SMC

BUILDING MATERIAL LAB

We have established one of the best material testing laboratories in the state of Gujarat. We can test more than 200 parameters of different samples under NABL. Our lab is environmentally controlled; instruments are fully digital and as per Indian and ASTM standard specifications.

Following is the list of testing performed in BM Lab:

- **Coarse & Fine Aggregate**
- **Bricks**
- **Paver Blocks**
- **Solid Concrete Blocks**
- **Concrete Mix Design**
- **Hardened Concrete**
- **Natural Stone**
- **Tiles**
- **AAC Blocks**
- **Kerb Stone**

FLEXURAL TESTING MACHINE

We have controls group's 100 KN capacity flexural testing machine, which provides result accuracy up to 0.001 KN. Few samples which we test for flexural strength includes:

- **Flexural Beam**
- **Granite**
- **Kota Stone**
- **Sand Stone**
- **Wood**
- **Paver Block**
- **Tiles, etc.**

COMPRESSION TESTING MACHINE

Equipped with **Compression Testing Machine** from controls group, the Italy-based compression testing machine has a capacity of up to 3000 KN. One of the best machines all over the world for compression testing material. We have invested heavily in lab equipment, to give precise results to our valuable clients.

We mention few sample tests on regular basis:

Compressive Strength			Splitting Strength
Paver Blocks	Granite	Hollow concrete Blocks	Granite
Mortar Cube	Marble	Concrete Core	Kota stone
Flyash Bricks	Kota Stone	Flyash Cube	Sand Stone
Common Burnt Clay Bricks	Sand Stone	Solid Concrete Blocks	Dholpur Stone
Cement mortar cube	Dholpur Stone	Perforated Bricks	Hardened Concrete

THERMAL CONDUCTIVITY INSTRUMENT

Our superior quality instrument test thermal conductivity of products, which is accurate to 0.001 W/mk. This instrument is based on Two Slab Guarded Hot Plate Method, which consists of central heater, guarded heater, chiller system and automatic pneumatic pressure valve. We provide you complete testing of AAC blocks and we offer testing of AAC blocks from Indian and American Standard both (IS 2185 (Pt-3) & ASTM C177.

BASIC FACILITIES IN LAB

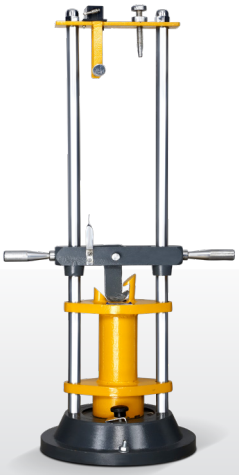
Our laboratory is amongst the very few laboratories in Ahmedabad that has Thin Film Oven test Equipment to test Viscosity grade Bitumen. Our transportation lab has 5 liters flask to test theoretical specific gravity of Asphalt and authentic setup to test solubility of bitumen in trichloroethylene.

- SMC Lab possesses a set of Ovens, Humidity Chamber, water bath, Curing Tank and Accelerated Curing Tank (ACT Tank) for drying, curing and boiling of samples.
- Our lab has the facility of one jumbo size oven to easily accommodate large samples like AAC blocks, Solid Concrete blocks, bulk sample of geotechnical investigation, etc. Three Medium and one small size ovens for regular lab testing purpose of Building Material, Cement, Soil, bitumen, etc.
- We also have Separate Humidity chamber for Cement mortar cube and similar products.
- We perform Accelerated Curing Testing (ACT) of concrete. We are also equipped with all the required facilities like ACT tank, curing tank (27±2°C), and Compression testing machine for this relevant testing.
- Each lab consists of large and small size Glass and Plastic desiccators to prevent samples under testing from moisture and dust. We test the samples at utmost accuracy to give genuine results to our clients.

SPECIFIC GRAVITY TEST APPARATUS

MORTAR MIXER

AGGREGATE IMPACT VALUE APPARATUS



HIGH SPEED STRIRRER

LOS ANGELES ABRASION MACHINE

PAN MIXTURE 60 LITRES CAPACITY

WEIGHING BALANCE

HOT PLATE

CASAGRANDE APPARATUS

DIGITAL HUMIDITY CHAMBER

SOFTENING POINT APPARATUS

DUCTILITY TESTING INSTRUMENT

CLEAVELAND OPEN CUP APPARATUS

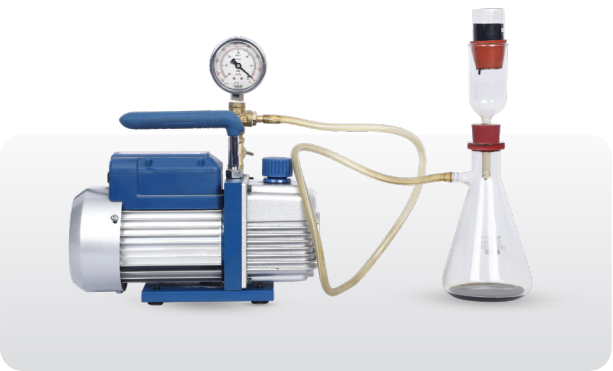
DIGITAL PENETROMETER

CEMENT TESTING LAB

Our Cement testing Lab is environmentally controlled at 65%+ humidity and 27±2°C temperature for testing of Cement and similar products. Our Lab is equipped with Humidity and temperature controller, Conditioning Chamber for mortar cube, Vicat Apparatus, Gauging Table, Flow Table for Mineral Admixture, Blaine air permeability apparatus, Vibrating table, Mortar Mixer and much more. These are the testing of cement and similar products we perform in our lab:

- **Ordinary Portland Cement (OPC 33,43,53)**
- **Portland Pozzolana Cement (PPC)**
- **Sulphate Resisting Portland cement**
- **Portland Slag Cement**
- **Granulated Blast furnace Slag**
- **Flyash**
- **Silica Fumes**

TRANSPORTATION LAB



Our laboratory of transportation lab has all the instruments such as Marshall Stability, Viscosity bath, Ductility, Thin film Oven, Fully automatic Softening point, Penetration, Gmm flask, and much more, and we are proud that we are one of the very few laboratories that provide this facility.

Apart from this, we also have other instruments such as CBR, Proctor, Liquid and Plastic limit, Los angles abrasion instrument, controls Compression machine etc.

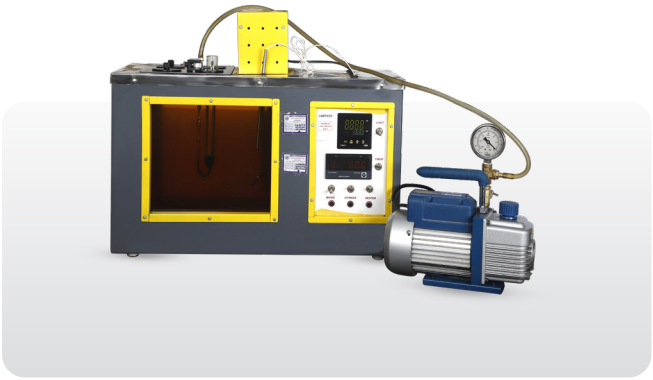
We believe that only instruments are not enough for testing of any material. An expert team plays an important role in testing accuracy. Our transportation team has an experience of 5+ years in laboratory testing and designing that helps us serve our esteemed clients.

- **Bitumen (VG Grade)**
- **Polymer Based Bitumen (Industrial Grade)**
- **Bitumen Mix Design**

Our Bitumen lab has all advanced Instruments that help us in analyzing samples with more accuracy.

DIGITAL SOFTENING POINT INSTRUMENT

Our Softening point instrument is fully automatic & it follows IS 1205:1978. Rate of heating is 5±5°C per minute which is one of the most prominent requirements as per Indian Standard for Bitumen and Tar products.



VISCOSITY BATH

Our Lab has Viscosity bath which can test viscosity of any material to temperature up to 250°C.

AUTOMATIC MARSHAL STABILITY INSTRUMENT

Our Automatic Marshall Testing Machine is a fully automated PC controlled Marshall Tester. Our machine accurately determines the maximum load and flow values of bituminous mixtures.

GEO - TECH TESTING LAB

Our Lab is one amongst the most advanced soil laboratories, backed by an experienced team. All our soil laboratory instruments are software-based to minimize errors and maximize accuracy. Our soil lab equipments are equipped with Load cells and LVDT sensors, which help us to analyze with utmost accuracy and confidence in results. Our extensive fleet of drilling and support equipment enables us to provide a comprehensive range of field services which include:

- **Drilling, Coring and Sampling of soils and rock**
- **Dynamic Cone Penetration Testing (DCPT)**
- **In SITU testing**
- **Static Cone Penetration Testing (SCPT)**

GEOTECHNICAL INVESTIGATION

These investigations form the basis for planning, designing, and constructing structures and helps to obtain information about the physical characteristics of soil/rock around a sit

Soil testing & analysis help us to determine the rate of settlement and bearing capacity of soil. These tests give complete picture to define the length and depth of the pillars to lay the foundation.

Our division comprises qualified and experienced team of geotechnical engineers, site supervisors, lab personnel aided with sophisticated equipment and NABL accredited fully fledged soil mechanics laboratory to cater to the needs of ground engineering and related activities.

We provide the following services to our customers:

- Geotechnical studies for designing super/ substructures through borehole exploration, in-situ testing, geophysical exploration etc.
- Identification of problematic soils and remedial measures.
- Testing of soil/rock samples in the laboratory to determine its physical and engineering properties
- Analyzing all field and laboratory data to evaluate safe bearing capacity and safe bearing pressure of the soil/rock for given foundation sizes and necessary recommendations for open/pile foundation design/construction.
- Testing and analysis of sub grade and sub base materials for roads and runways, suitability tests of material for embankments, clay liners for engineered landfills, fill material for reinforced earth retaining walls etc.

FULLY AUTOMATIC TRI-AXIAL MACHINE

The Tri-axial Compression Test is used to measure the shear strength of soil under controlled drainage condition.

A Cylindrical Specimen of soil is subjected encased into a confining Fluid/air pressure and then loaded axially to failure.

The Test is Called “Tri-axial” because the three Principal Stress are assumed to be known and are controlled.

The tri-axial shear test is the most versatile of all the shear test testing methods for getting shear strength of the soil i.e. Cohesion (C) and Angle of Internal Friction (Ø), though it is a bit complex. This test can measure the total as well as effective stress parameters both. These two parameters are required for design of slopes, calculation of bearing capacity of any strata, calculation of consolidation parameters and in many other analyses. This test can be conducted on any type of soil, drainage conditions can be controlled, pore water pressure measurements can be made accurately and volume changes can be measured. In this test, the failure plane is not forced, the stress distribution of failure plane is fairly uniform and specimen can fail on any weak plane or can simply bulge.

Types of Test Our Machine can Perform are

- Unconsolidated-Undrained (UU) Test
- Consolidated-Undrained (CU) Test
- Consolidated-Drained (CD)Test
- Unconfined Compression (UC) Test

SWELLING PRESSURE INSTRUMENT

The equipment is designed to determine the swelling pressure developed by soil specimens molded to desired densities at known moisture contents, when soaked in water. The load applied to restrain the swelling is transferred on to a load measuring proving ring through a perforated swell plate and a load transfer bar. It is attached with Load cell and LVDT sensor.

POINT LOAD INDEX TESTER

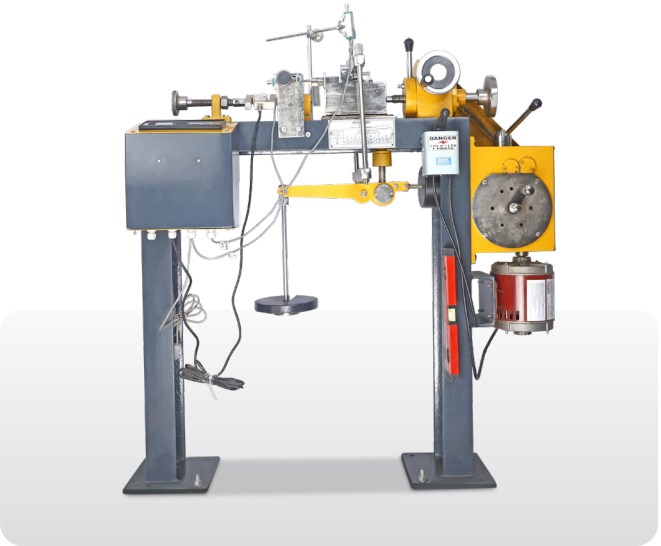
We have Aimil brand Digital Point Load Index Tester which is 100 KN capacity and is used for determining the Diametral Point Load Strength Index of rock cores and irregular lumps which can be tested without any treatment. The Point Load Test is primarily an Index Test for strength classification of rock materials. This instrument is mainly intended for field measurements on rock specimen; however it can also be used in the laboratory. The results of the test may also be used to predict the uni axial compressive strength of rock from correlations. The apparatus is light and portable.

CALIFORNIA BEARING RATIO INSTRUMENT (CBR)

An advanced instrument in our lab equipped with Load cell (50KN), LVDT sensors and data logger, the California Bearing Ratio (CBR) test is a measure of the strength of sub-grade soil and highway sub base and sub-grade via a penetration test. Our automatic CBR machine is composed of a robust and compact two column frame with an adjustable upper crossbeam driven by an electromechanical ram of maximum 50 kN capacity and a data acquisition and processing system. Rapid adjustment of the platen is also provided by up and down buttons which are located on the front panel of the machine. The model is supplied complete with a 50 kN load cell, penetration piston, linear potentiometric displacement transducer (25 mm x 0.001 mm).

DIGITAL CONSOLIDATION INSTRUMENT

Our Instrument is fully digital and follows Indian and American standards. Our Machines work with LVDT and Data logger. The Consolidation test is also referred to as Standard Odometer test or One-dimensional compression test. The consolidation parameters obtained by this test are used to determine the consolidation settlement and time of consolidation for a given loading state (i.e. given height of embankment). These parameters are also used in design of “Ground Improvement measures”, provided for construction of embankment on soft soils.



DIRECT SHEAR INSTRUMENT

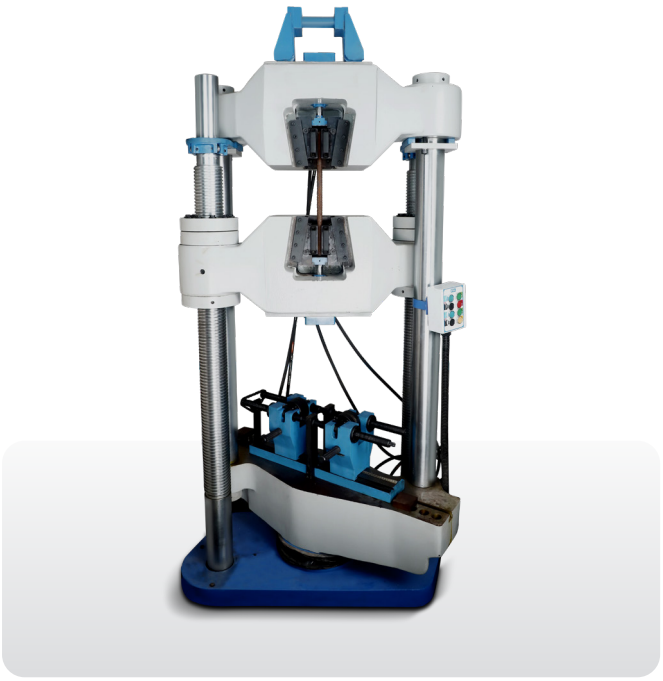
To determine the shearing strength of the soil using the direct shear apparatus. In many engineering problems, such as design of foundation, retaining walls, slab bridges, pipes, sheet piling, the value of the angle of internal friction and cohesion of the soil involved are required for the design.

The Shear Strength is one of the most important engineering properties of a soil because it is required whenever a structure is dependent on the soils shearing resistance.

The Shear Strength is needed for engineering situation such as determining the stability of slopes or cuts, finding the bearing capacity for foundation and calculating the pressure exerted by soil on a retaining wall.

MECHANICAL LAB

Our mechanical laboratory carries out a wide variety of tensile, bending, impact and hardness tests according to the most widely used ISO and ASTM standards. We offer complete physical and chemical testing of reinforcement Steel. We test almost all types of reinforcement. We perform the following tests at our laboratories:



- **Reinforcement Steel (Dia- 8mm to 36mm)**
- **Hollow Steel Section**
- **Steel Tube**
- **M.S. Plate & Structure Steel**
- **Coupled TMT Bar**
- **7 Ply- HTS Strand**

Few features of our Universal testing machine:

- Automatic Data capture, storage & graphic display.
- Recording, storage & retrieval of results & details.
- On line display of load & extension.
- Output to digital printer of test data, test results & graphs.
- Auto detection of over load, over travel & specimen break, on detection of the above conditions, the machine is automatically switched off.
- Load resolution - 0.01% of machine capacity for entire range.

CHEMICAL ANALYSIS

We have the best Spectrometer of Hitachi Brand that is 5 based Machine. Our Machine has 12 million records for 339000 materials from 69 countries and standards. This helps our clients get their grades and elements identification within few seconds with utmost accuracy. Our Metal Chemical analysis machine analyzes the majority of metals and their alloys. Few applications of our machine include:(Fe, Al, Cu, Ni, Co, Mg, Ti, Zn)

- **Low Allow Steel** (Carbon, Silicon, Manganese, Phosphorus, Sulphur, Chromium, Molybdenum, Nickel, Aluminum, Copper Niobium, Cobalt, Vanadium)
- **Stainless Steel** (Carbon, Chromium, Nickel, Molybdenum, Manganese, Silicon, Sulphur, Phosphorus, Nickel, Copper).

FIELD & NDT TESTING FACILITY

We specialize in field and NDT testing. Our laboratory has a vast facility of Field and NDT Instruments. NDT and Field testing are performed by well-trained & experienced staff. Our field lab is equipped with plenty of testing facilities that include:

REBOUND HAMMER

This test is conducted to assess the relative strength of concrete based on the hardness at or near its exposed surface. Rebound hammer measures the elastic rebound from the surface of concrete. The rebound value indicated by the hammer is related empirically to the compressive strength of concrete. Rebound hammer test is used to provide a convenient and rapid indication of the compressive strength of concrete. The test can be performed in horizontal, vertically upward, vertically downward or any intermediate angled positions in relation to the surface.

ULTRASONIC PULSE VELOCITY (UPV)

The ultrasonic pulse velocity method could be used to establish: the homogeneity of the concrete, the presence of cracks, voids and other imperfections, changes in the structure of the concrete which may occur with time, the quality of the concrete in relation to standard requirements, the quality of one element of concrete in relation to another, and the values of dynamic elastic modulus of the concrete.

SOIL CORE CUTTER TEST

The core cutter method is a test used to determine the in-situ dry density of soil. It is only used in fine-grained cohesive soils without stones. The test requires cylindrical core cutters about 130 mm long and 100 mm in diameter. The bulk density of soil can be easily calculated using this method.

CONCRETE CORE

This test is used to measure actual in-situ compressive strength of concrete. A direct assessment on strength can be made by extracting & testing of 50mm (2") to 200mm (8") diameter core. Core can be extracted about 400mm continuous length & up to 900mm depth in two layers with the help of extension rod. Cover meter is used to locate the reinforcement steel before core cutting to prevent structural damage to the RCC elements by avoiding the reinforcement. These cores are dressed, capped and tested in laboratory using standard compression testing method to determine compressive strength.

Fig: Sand Replacement test accessories

SAND REPLACEMENT TEST

The sand replacement test method is used to determine the in-place density of compacted soil in order to compare it with the designated compaction degree. Hence, it specifies how much the compaction of the soil is close to the designated compaction degree. The field density of natural soil is required for the estimation of soil bearing capacity for the purpose of evaluation of pressures on underlying strata for computation of settlement, and stability analysis of natural slope.

SAMPLE PREPARATION FACILITY

We offer the following services in sample dressing:

- Concrete core Preparation (Dia – 45 mm to 150 mm)
- Natural Stone like Granite, Marble, Kota stone, Dholpur Stone, Sand Stone (Prepare sample for Compression testing, Flexural Testing and Split Core extraction).
- Metal Sample Preparation (Physical Chemical)
- AAC blocks, Solid Concrete block & hollow concrete block (capping for compressive strength & Drying Shrinkage)
- Tiles, Paver, wood and many more.

Our lab has all the facilities like cutting, grinding, finishing, machine, tools and equipment for sample preparation. We use superior quality gypsum for capping of Concrete core, Solid Concrete blocks, Paver blocks, Kerb stone etc.

SAMPLE EXTRUDER

Our Soil lab is equipped with fully automatic hydraulic sample extruder to extract undisturbed sample fast, smooth and in a natural state. Our sample extractor is for multi-purpose use and we can extract any sample that has diameter of 60 mm to 150 mm like C.B.R. Proctor, Marshall etc.

DIAMOND CORE DRILLING MACHINE

We have German-made core drilling Machine with drill bit from 127mm to 50 mm. We have an expert site team for concrete, natural stone, bitumen core drilling.

We also dig out natural stone sample and prepare it with consideration of parallelism, perpendicularity and flatness as per standards.

NDT TESTNG

WHAT IS NON DESTRUCTIVE TESTING (NDT)

Non Destructive Testing (NDT) is a way of Testing without destroying the construction. This Means the Component Can continues to be used and the non-Destructive Testing Method can be done without any harming to the construction.

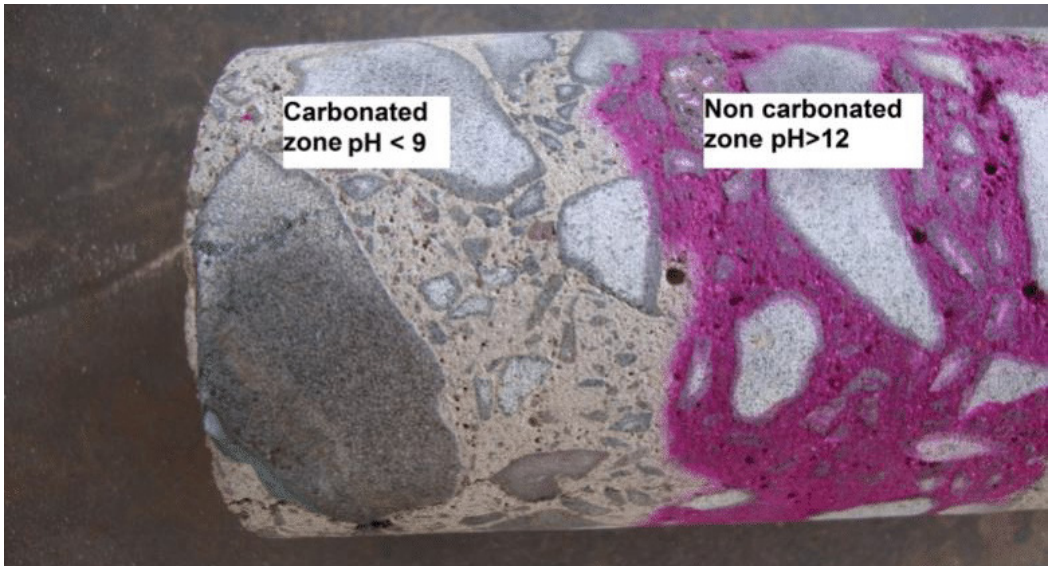
WHY NON DESTRUCTIVE TESTING

Mainly due to lack of proper Quality Control at site & Supervision during the Course of Construction. Sometimes Manner of Preparation is not good and material quality may be poor

TYPES OF NON DESTRUCTIVE TESTING

- Rebound Hammer Test.
- Ultrasonic Pulse Velocity Test
- Half Cell Potential Test
- Cover Meter Test
- Carbonation Depth Measurement
- Chloride Determination Test
- Concrete Core Test

CARBONATION OF CONCRETE



For assessment of possibility of corrosion of reinforcement.

Carbonation of concrete in cover results in loss of protection to the steel against corrosion. The depth of carbonation can be measured by spraying the freshly fractured concrete surface with a 0.2% solution of phenolphthalein in ethanol. Since phenolphthalein is a pH indicator, the magenta (pink colour) area presents noncarbonated concrete and the remaining (colourless) portion, the carbonated area.

HALF – CELL POTENTIOMETER TEST

The instrument measures the potential and the electrical resistance between the reinforcement and the surface to evaluate the corrosion activity as well as the actual condition of the cover layer during testing. The electrical activity of the steel reinforcement and the concrete leads them to be considered as one half of weak battery cell with the steel acting as one electrode and the concrete as the electrolyte. The name half-cell surveying derives from the fact that the one half of the battery cell is considered to be the steel reinforcing bar and the surrounding concrete. The electrical potential of a point on the surface of steel reinforcing bar can be measured comparing its potential with that of copper – copper sulphate reference electrode on the surface. Practically this achieved by connecting a wire from one terminal of a voltmeter to the reinforcement and another wire to the copper sulphate reference electrode. Then generally readings taken are at grid of 1 x 1 m for slabs, walls and at 0.5 m c/c for Column, Beams.

DETERMINATION OF FIELD DENSITY TEST OF SOIL BY CORE CUTTER METHOD

Core Cutter Method of Field Density test is conducted in the field to know whether the specified compaction is achieved or not.

The core cutter method is a test used to determine the in-situ dry density of soil. It is only used in fine-grained cohesive soils without stones. The test requires cylindrical core cutters about 130 mm long and 100 mm in diameter. The bulk density of soil can be easily calculated using this method.

FIELD DENSITY OF SOIL BY SAND REPLACEMENT

Sand replacement density (SRD) tests are used to measure the in-situ density of natural or compacted soils using sand pouring cylinders. The in-situ density is typically used for highway or pavement design purposes to estimate the relative density of base course or subgrade materials.

OUR SCOPE OF ACREDIATION

Sr. No.	Material	Test Parameters	Testing Method	Sample Requirement	Duration
1	Fine Aggregate (Physical Testing)	Gradation (Sieve Analysis)	IS 2386 (Part-1): 1963, (RA 2016)	50 Kg Bag	1-2 days
		Fineness Modulus	IS 2386 (Part-1): 1963, (RA 2016)		1-2 days
		Specific Gravity	IS 2386 (Part-3): 1963, (RA 2016)		3 days
		Water Absorption	IS 2386 (Part-3): 1963, (RA 2016)		2 days
		"Silt content by sedimentation pipette"	IS 2386 (Part-2): 1963, (RA 2016)		2 days
		Bulking of Fine Aggregate	IS 2386 (Part-3): 1963, (RA 2016)		1 day
		Soundness (Na2So4)	IS 2386 (Part-5): 1963, (RA 2016)		12-15 days
		Soundness (MgSo4)	IS 2386 (Part-5): 1963, (RA 2016)		12-15 days
		Surface Moisture	IS 2386 (Part-3): 1963, (RA 2016)		3-4 days
		Loose Bulk Density and Voids	IS 2386 (Part-3): 1963, (RA 2016)		1 day (if sample is in dry condition)
		Compacted Bulk Density and Voids	IS 2386 (Part-3): 1963, (RA 2016)		1 day (if sample is in dry condition)
		Material Finer 75 micron	IS 2386 (Part-1): 1963, (RA 2016)		2 days
		Organic Impurities	IS 2386 (Part-2): 1963, (RA 2016)		2 days
		Clay lumps	IS 2386 (Part-2): 1963, (RA 2016)		1 day
		Coal and Lignite	IS 2386 (Part-2): 1963, (RA 2016)		2 days
2	Coarse Aggregate (10/20/40)	Gradation (Sieve Analysis)	IS 2386 (Part-1): 1963, (RA 2016)	50 Kg Bag	1-2 Days
		Specific Gravity	IS 2386 (Part-3): 1963, (RA 2016)		3 days

		Water Absorption	IS 2386 (Part-3): 1963, (RA 2016)		2 days
		Flakiness Index	IS 2386 (Part-1): 1963, (RA 2016)		2 days
		Elongation Index	IS 2386 (Part-1): 1963, (RA 2016)		2 days
		Impact Value	IS 2386 (Part-4): 1963, (RA 2016)		1 day
		Dry Loose Bulk Density	IS 2386 (Part-3): 1963, (RA 2011)		1 day (if sample is in dry condition)
		Compacted Bulk Density	IS 2386 (Part-3): 1963, (RA 2011)		1 day (if sample is in dry condition)
		Los Angeles Abrasion Value	IS 2386 (Part-4): 1963, (RA 2016)		2 days
		Crushing Value	IS 2386 (Part-4): 1963, (RA 2016)		1 day
		10% Fines Value	IS 2386 (Part-4): 1963, (RA 2016)		1 day
		Soundness Na2so4	IS 2386 (Part-5): 1963, (RA 2016)		12-15 days
		Soundness Mgso4	IS 2386 (Part-5): 1963, (RA 2016)		12-15 days
		Material Finer 75 micron	IS 2386 (Part-1): 1963, (RA 2016)		2 days
		Soft particles	IS 2386 (Part-2): 1963, (RA 2016)		1 day
		Clay lumps	IS 2386 (Part-2): 1963, (RA 2016)		1 day
		Coal and Lignite	IS 2386 (Part-2): 1963, (RA 2016)		2 days
3	Sand Stone/ Kota Stone/ Dholpur Stone	Moh's Scale Hardness	IS 13630 (Pt-13):2019		1 day
		Compressive Strength	IS 1121 (Pt-1) : 1974 (RA:2017)	50x50x50 mm (12 pieces)	3 days
		Transverse Strength	IS 1121 (Pt-2) : 1974 (RA:2017)	50x50x200mm (6 pieces)	3 days
		Split Tensile Test	IS 1121 (Pt-3) : 1974 (RA:2017)	50x100 cy (6 pieces)	3 days
		True Specific Gravity	IS 1122:1974 (RA:2017)	4 slab of 30x30 cm	2 days

		Apparent Specific Gravity	IS 1124:1974 RA 2017		2 days
		Water Absorption	IS 1124:1974 RA 2017		2 days
		True Porosity	IS 1124:1974 RA 2017		-
		Apparent porosity	IS 1124:1974 RA 2017		-
		Durability	IS 1126:2013 (RA:2018)		35-40 days
4	Granite	Compressive Strength	IS 1121 (Pt-1) : 1974 (RA:2017)	50x50x50 mm (6 pieces)	3 days
		Transverse Strength	IS 1121 (Pt-2) : 1974 (RA:2017)	50x50x200 mm (6 pieces)	3 days
		Split Tensile Test	IS 1121 (Pt-3) : 1974 (RA:2017)	50x100 cy (6 pieces)	3 days
		True Specific Gravity	IS 1122:1974 (RA:2017)	4 slab of 30x30 cm	2 days
		Apparent Specific Gravity	IS 1124:1974 RA 2017		3 days
		Water Absorption	IS 1124:1974 RA 2017		2 days
		True Porosity	IS 1124:1974 RA 2017		-
		Apparent porosity	IS 1124:1974 RA 2017		-
		Moh's Scale Hardness	IS 13630 (Pt-13):2019		1 day
		Dimensions	IS 1130:1969 (RA:2018), IS 3622:1977 (RA:2017)		1 day
		Durability	IS 1126:2013 (RA:2018)		35-40 days
5	Marble	Moh's Scale Hardness	IS 13630 (Pt-13):2019	2 slab of 30x30 cm	1 day
		True Specific Gravity	IS 1122:1974 (RA:2017)		2 days
		Water Absorption	IS 1124:1974 RA 2017		2 days
6	Plywood	Moisture Content	IS 1734 (Pt-1) : 1977, RA:2018	Plywood (3'x6') or any other size	3 days
		Density	IS 1734 (Pt-1) : 1977, RA:2018		3 days
		Resistance to Dry Heat	IS 1734 (Pt-2) : 1977, RA:2018		1 day
		Acid & Alkalinity Resistance Test	IS 1734 (Pt-20) : 1977, RA:2018		3-4 days
7	Cement OPC (43/53)	Consistency	IS 4031 (Part-4): 1988, (RA 2019)	50 kg bag	7-8 days & 28 days
		Initial Setting Time	IS 4031 (Part-5): 1988, (RA 2019)		
		Final Setting Time	IS 4031 (Part-5): 1988, (RA 2019)		

		Fineness by Blaine's Air Permeability	IS 4031 (Part-2): 1999, (RA 2018)		
		Compressive Strength (24 hr)	IS 4031 (Part-6): 1988, (RA 2019)		
		Compressive Strength (72±1hr)	IS 4031 (Part-6): 1988, (RA 2019)		
		Compressive Strength (168±2hr)	IS 4031 (Part-6): 1988, (RA 2019)		
		Compressive Strength (672±4hr)	IS 4031 (Part-6): 1988, (RA 2019)		
		Fineness by Dry Sieving	IS 4031 (Part-1): 1996, (RA 2021)		
		Soundness by Le-Chatelier Method	IS 4031 (Part-3): 1988, (RA 2019)		
		Density	IS 4031 (Part-11): 1988, (RA 2019)		
		Drying Shrinkage	IS 4031 (Part-10): 1988, (RA 2019)		28-35 days

8	Sulphate Resisting Portland Cement (SRPC)	Consistency	IS 4031 (Part-4): 1988, (RA 2019)	50 Kg Bag	1 day
		Initial Setting Time	IS 4031 (Part-5): 1988, (RA 2019)		1 day
		Final Setting Time	IS 4031 (Part-5): 1988, (RA 2019)		1 day
		Fineness by Blaine's Air Permeability	IS 4031 (Part-2): 1999, (RA 2018)		1 day
		Compressive Strength (24 hr)	IS 4031 (Part-6): 1988, (RA 2019)		24 hr
		Compressive Strength (72±1hr)	IS 4031 (Part-6): 1988, (RA 2019)		3 days
		Compressive Strength (168±2hr)	IS 4031 (Part-6): 1988, (RA 2019)		7 days
		Compressive Strength (672±4hr)	IS 4031 (Part-6): 1988, (RA 2019)		28 days
		Fineness by Dry Sieving	IS 4031 (Part-1): 1996, (RA 2021)		1 day
		Soundness by Le-Chatelier Method	IS 4031 (Part-3): 1988, (RA 2019)		2 days
		Density	IS 4031 (Part-11): 1988, (RA 2019)		1 day

9	Portland Slag Cement (PSC)	Consistency	IS 4031 (Part-4): 1988, (RA 2019)	50 Kg Bag	1 day
		Initial Setting Time	IS 4031 (Part-5): 1988, (RA 2019)		1 day
		Final Setting Time	IS 4031 (Part-5): 1988, (RA 2019)		
		Fineness by Blaine's Air Permeability	IS 4031 (Part-2): 1999, (RA 2018)		1 day
		Compressive Strength (24 hr)	IS 4031 (Part-6): 1988, (RA 2019)		1 day
		Compressive Strength (72±1hr)	IS 4031 (Part-6): 1988, (RA 2019)		3 days
		Compressive Strength (168±2hr)	IS 4031 (Part-6): 1988, (RA 2019)		7 days
		Compressive Strength (672±4hr)	IS 4031 (Part-6): 1988, (RA 2019)		28 days
		Fineness by Dry Sieving	IS 4031 (Part-1): 1996, (RA 2021)		1 day
		Soundness by Le-Chatelier Method	IS 4031 (Part-3): 1988, (RA 2019)		2 days
		Density	IS 4031 (Part-11): 1988, (RA 2019)		1 day

10	Ground Granulated Blast furnance Slag (GGBS) BS 6699:1992	Consistency	IS 4031 (Part-4): 1988, (RA 2019)	50 Kg Bag	1 day
		Initial Setting Time	IS 4031 (Part-5): 1988, (RA 2019)		1 day
		Final Setting Time	IS 4031 (Part-5): 1988, (RA 2019)		1 day
		Fineness by Blaine's Air Permeability	IS 4031 (Part-2): 1999, (RA 2018)		1 day
		Compressive Strength (168±2hr)	IS 4031 (Part-6): 1988, (RA 2019)		7 days
		Compressive Strength (672±4hr)	IS 4031 (Part-6): 1988, (RA 2019)		28 days
		Fineness by Wet Sieving	IS 3812 (Part-1):2013, (RA:2017)		2 days
		Soundness by Le-Chatelier Method	IS 4031 (Part-3): 1988, (RA 2019)		2 days
		Moisture Content	IS 2720 (Pt-2): 1973, (RA:2020)		2 days
		Density	IS 4031 (Part-11): 1988, (RA 2019)		1 day

11	Ground Granulated Blast furnace Slag (GGBS) IS 16714:2018	Fineness by Blaine's Air Permeability	IS 4031 (Part-2): 1999, (RA 2018)	50 kg Bag	1 day
		Compressive Strength (7 days)	IS 4031 (Part-6): 1988, (RA 2019)		7 days
		Compressive Strength (28 days)	IS 4031 (Part-6): 1988, (RA 2019)		28 days
		Soundness by Le-Chatelier Method	IS 4031 (Part-3): 1988, (RA 2019)		2 days
		Moisture Content	IS 2720 (Pt-2): 1973, (RA:2020)		2 days
		Density	IS 4031 (Part-11): 1988, (RA 2019)		1 day
12	Integral water proofing compound	Initial Setting Time	IS 4031 (Part-5): 1988, (RA 2019)	10 kg	1 day
		Consistency	IS 4031 (Part-4): 1988, (RA 2019)		1 day
		Final Setting Time	IS 4031 (Part-5): 1988, (RA 2019)		1 day
		Compressive Strength (3 days)	IS 4031 (Part-6): 1988, (RA 2019)		3 days
		Compressive Strength (7 days)	IS 4031 (Part-6): 1988, (RA 2019)		7 days
13	Micro Silica	Moisture Content	IS 1727:1967, RA:2018	5 kg	2 days
		Compressive Strength (7 days)	IS 1727:1967, RA:2018		7 days
		Fineness by 45 micron	IS 1727:1967, RA:2018		2 days
14	Flyash	Compressive Strength	IS 1727:1967, RA:2018	7 kg	28 days
		Drying shrinkage	IS 1727:1967, RA:2018		35 days
		Fineness by Blain permeability	IS 1727:1967, RA:2018		1 day
		Lime Reactivity	IS 1727:1967, RA:2018		10 days
		Moisture Content	IS 2720 P-2 : 1973, RA : 2020		2 days
		Particle retained on 45 micron is Sieve	IS 1727:1967, RA:2018		2 days

15	Autoclave Aerated Concrete Block (AAC Block)	Compressive Strength (12 cubes)	IS 6441:1972 (Part-5), (RA:2017) & ASTM C1693:2017	24 nos.	6-7 days
		Moisture Content	IS 6441:1972 (Part-1), (RA:2017) & ASTM C1693:2017		4 days
		Dimension	IS 2185 (P-3):1984 (RA:2020)		1 day
		Dry Density	IS 6441:1972 (Part – 1), (RA : 2017)		4 days
		Thermal Conductivity	IS 6441:1972 (Part – 2), (RA : 2017)		2-3 days
		Drying Shrinkage	IS 6441:1972 (Part – 1), (RA : 2017)		28-35 days
16	Hollow Burnt clay Bricks	Dimension	IS 3952:2013, RA:2019	20 nos.	1 day
		Water Absorption	IS 3952 Appendix B, (RA:2019)		3-4 days
		Compressive Strength	IS3952:2013, RA:2019		5-7 days
		Efflorescence	IS 3495: 1992 (Part-3), (RA 2019)		5 days
17	Burnt clay Bricks / Flyash Bricks	Dimension	IS 1077:1992, (RA 2016) / IS 12894:2002	20 nos.	1 day
		Water Absorption	IS 3495: 1992 (Part-2), (RA 2019)		3-4 days
		Compressive Strength	IS 3495: 1992 (Part-1), (RA 2019)		5-7 days
		Efflorescence	IS 3495: 1992 (Part-3), (RA 2019)		5 days
18	Perforated Bricks	Dimension	IS 2222:1991, (RA 2016)	20 nos.	1 day
		Water Absorption	IS 3495: 1992 (Part-2), (RA 2019)		3-4 days
		Compressive Strength	IS 3495: 1992 (Part-1), (RA 2019)		5-7 days
		Efflorescence	IS 3495: 1992 (Part-3), (RA 2019)		5 days
19	Hardened Concrete	Compressive Strength	IS 516 (P-1/Sec.-1):2021	1 set (3 cube)	1 day
		Flexural Strength	IS 516 (P-1/Sec.-1):2021	1 set	1 day
		Split Tensile Test	IS 516 (P-1/Sec.-1):2021	1 set	1 day

		Density	IS 516 (P-2/Sec.-1):2018	1 set	1 day
		Drying Shrinkage Test	IS 516 (P-6):2018	1 set	20-25 days
		Moisture Movement	IS 516 (P-6):2018	1 set	20-25 days
20	Hollow & Solid Concrete Blocks	Block Density	IS 2185 (Part–1):2005, RA:2020	20 blocks	3-4 days
		Compressive Strength	IS 2185 (Part–1):2005, RA:2020		2-3 days
		Dimensions	IS 2185 (Part–1):2005, RA:2020		1 day
		Water Absorption	IS 2185 (Part–1):2005, RA:2020		3-4 days
		Drying Shrinkage	IS 2185 (Part–1):2005, RA:2020		20-25 days
		Moisture Movement	IS 2185 (Part–1):2005, RA:2020		
21	Bitumen	Absolute Viscosity	IS 1206 (P-2): 1978, (RA 2019)	10 kg	1 day
		Kinematic Viscosity	IS 1206 (P-3): 1978, (RA 2019)		1 day
		Flash Point	IS 1448 (P-69):2013		1 day
		Fire Point	IS 1448 (P-69):2013		1 day
		Stripping Value	IS 6241:1971 (RA:2017)		2 days
		Ductility Test	IS 1208:1978 (RA 2019)		1 day
		Softening Point Tests	IS 1205:1978, RA:2019		1 day
		Bitumen Penetration Tests	IS 1203:1978, RA:2019		1 day
		Solubility in Trichloroethylene	IS 1216:1978,RA:2019		1 day
22	Bituminous Mix/Core	Bitumen Content	ASTM D 2172:2017	As per Client Requirement	1-2 days
		Marshal Stability & Marshal Flow	ASTM D 6927:2015		1-2 days
		Maximum Theoretical Specific Gravity (Gmm)	ASTM D 2041:2011		1 day
		Bulk Specific Gravity core (per Core)	ASTM D 2726 :2019, AASTHO T166:2020		2 days
23	Asphalt Mix Design	Wet Mix Macadam	MORTH Sec 400 (5th Rev.)	As per Client Requirement	8-10 days
		Water Bound Macadam	MORTH Sec 400 (5th Rev.)		8-10 days

		Screening Material	MORTH Sec 500		8-10 days
		GSB	MORTH Sec 400 (5th Rev.)		8-10 days
		BC, DBM, SDBC, BM	MORTH Sec 500, ASTMD 6926 : 2020		8-10 days
24	Cement Concrete Flooring Tiles	Dimension – Length	IS 1237:2012, RA 2017	20 nos.	1 day
		Dimension – Thickness	IS 1237:2012, RA 2017		1 day
		Dimension – Width	IS 1237:2012, RA 2017		1 day
		Flatness of Tiles Surface	IS 1237:2012, RA 2017		1 day
		Perpendicularity	IS 1237:2012, RA 2017		1 day
		Straightness	IS 1237:2012, RA 2017		1 day
		Resistance to Wear	IS 13801:2013, RA 2018		3 days
		Thickness of wearing layer	IS 1237:2012, RA 2017		1 day
		Water Absorption	IS 1237:2012, RA 2017		3 days
		Wet Transverse Strength	IS 1237:2012, RA 2017		2 days
25	Ceramic/ Pressed Ceramic/ Vitrified Tiles	Dimension – Length	IS 13630 (Pt-1):2019	20 nos.	1 day
		Dimension – Thickness	IS 13630 (Pt-1):2019		1 day
		Dimension – Width	IS 13630 (Pt-1):2019		1 day
		Determination of Chemical Resistance (Unglazed Tiles)	IS 13630 (Pt-7):2019		20 days
		Determination of Chemical Resistance (Glazed Tiles)	IS 13630 (Pt-8):2019		24 & 7 days
		Scratch Resistance by Moh's Scale	IS 13630 (Pt-13):2019		1 day
		Water Absorption	IS 13630 (Pt-2):2019		3 days
		Bulk Density	IS 13630 (Pt-2):2019		2-3 days
		Modulus of Rupture	IS 13630 (Pt-6):2019		2 days
		Breaking strength	IS 13630 (Pt-6):2019		2 days
26	Chequered cement concrete tiles	Dimension – Length	IS 13801 : 2020	20 nos.	1 day
		Dimension – Thickness	IS 13801 : 2020		1 day
		Dimension – Width	IS 13801 : 2020		1 day
		Flatness of Tiles Surface	IS 13801 : 2020		1 day
		Perpendicularity	IS 13801 : 2020		1 day
		Straightness	IS 13801 : 2020		1 day
		Thickness of wearing layer	IS 13801 : 2020		1 day
		Water Absorption	IS 13801 : 2020		3 days
		Resistance to Wear	IS 13801 : 2020		3 days

		Wet Transverse Strength	IS 13801 : 2020		2 days
27	Paver Block	Dimension & Plane Area	IS 15658: 2021	25 Nos.	1 day
		Aspect Ratio	IS 15658: 2021		2 days
		Compressive Strength	IS 15658: 2021		-
		Tensile Strength	IS 15658: 2021		2 days
		Flexural Strength	IS 15658: 2021		2-3 days
		Thickness of wearing layer	IS 15658: 2006 (RA 2017)		1 day
		Squareness	IS 15658: 2021		1 day
		Water Absorption	IS 15658: 2021		3 days
28	Field Testing	Standard Penetration (Soil)	IS 2131 1981,RA 2016	-	1-2 days
		Standard Penetration (Rock)	IS 2131 1981,RA 2016		1-4 days
		Dry Density (Sand Replacement Method)	IS 2720 (Part-28):1974 (section-1&2) (RA 2015)		1 day (Depends on number of test to be performed)
		Dry Density (Core Cutter Method)	IS 2720 (Part-29):1975 (section-1&2) (RA 2015)		1 day (Depends on number of test to be performed)
		Field Moisture Content	IS 2720 (Part 2):1973, (RA 2015)		1 day
29	Concrete Mix Design	Up to M-30	IS 10262:2019, IS 456:2000	2 Bag cement, 100kg FA, 100kg CA 20mm, 100kg CA 10mm, Water 10lit.	Interim report 10-12 Days, Final Report 35 Days
		M-35 to M-60	IS 10262:2019, IS 456:2000	2 Bag cement, 100kg FA, 100kg CA 20mm, 100kg CA 10mm, Water 10lit.	Interim report 10-12 Days, Final Report 35 Days
		Above M-60	IS 10262:2019, IS 456:2000	2 Bag cement, 100kg FA, 100kg CA 20mm, 100kg CA 10mm, Water 10lit.	Interim report 10-12 Days, Final Report 35 Days

		Using Mineral/Admixture, additional charges on above	-	Mineral Admixture- 20kg, Chemical Admixture 1 lit.	Interim report 10-12 Days, Final Report 35 Days
		With accelerated curing for early estimation of strength additional charges extra	IS 9013:1978, RA2018	-	-
30	Concrete Core	Compressive Strength	IS 516 (Part-4):2018	Min. 3	2-3 days
		Charges for taken concrete core	IS 516 (Part-4):2018	Min. 3	3-4 days
MECHANICAL (STEEL)					
1	M.S. Plate	Yield Stress	IS 1608 (Pt-1):2018	M.S. Plate of 300*300	3-5 days
		Ultimate Tensile Strength	IS 1608 (Pt-1):2018		
		Percentage Elongation	IS 1608 (Pt-1):2018		
2	Steel Tubes	Yield Stress	IS 1608 (Pt-1):2018	tube or hollow section of 2mtr	3-5 days
		Mass per meter	IS 1161: 2014, RA:2019		
		Outside Diameter	IS 1161: 2014, RA:2019		
		Thickness	IS 1161: 2014, RA:2019		
		Ultimate Tensile Strength	IS 1608 (Pt-1):2018		
		Percentage Elongation	IS 1608 (Pt-1):2018		
		Bend Test	IS 2329:2005, RA:2017		
		Flattening Test	IS 2329:2005, RA:2017		
3	Hollow Steel Section	Length	IS 4923 : 2017	tube or hollow section of 2mtr	3-5 days
		Width	IS 4923 : 2017		
		Thickness	IS 4923 : 2017		
		Yield Stress	IS 1608 (Pt-1):2018		
		Ultimate Tensile Strength	IS 1608 (Pt-1):2018		
		Percentage Elongation	IS 1608 (Pt-1):2018		
4	Coupled TMT Bar (Coupler)	Static Tensile Strength	IS 1608 (Pt-1):2018	Sample as per testing Requirement	3-5 days
		C.S.A. of Specimen	IS 1786:2008		
		% Elongation at maximum force	IS 1608 (Pt-1):2018		

		Distance of Fracture from coupler	IS 16172:2014		
		Location of Fracture	IS 16172:2014		
5	Reinforcement Steel (Dia. 8-32 mm)	Mass per meter	IS 1786:2008	3 sample of 1 mtr per dia	1-2 days
		Yield Stress	IS 1608 (Pt-1):2018		
		Ultimate Tensile Strength	IS 1608 (Pt-1):2018		
		TS/YS Ratio	IS 1786:2008		
		Percentage Elongation	IS 1608 (Pt-1):2018		
		Bend Test	IS1599:2019		
		Rebend Test	IS 1786:2008		
6	7-Ply HTS Strand wire	% Elongation (Total Elongation)	IS 14268:2017	3 sample of 1.5 mtr per dia	1-2 days
		0.2% proof Load	IS 1608(Pt-1):2018		
		Breaking strength	IS 1608(Pt-1):2018		
		Lay Length	IS 14268:2017		
		Modulus of Elasticity	IS 1608(Pt-1):2018		
		Nominal Dia. of Strand	IS 14268:2017		
		Nominal Mass of Strand	IS 14268:2017		
7	(Chemical Analysis of Metal and Alloys) Low Allow Steel	Aluminum	IS 8811:1998 RA:2018, ASTM E415:2017	4 inch long	1 Day
		Carbon	IS 8811:1998 RA:2018, ASTM E415:2017		
		Chromium	IS 8811:1998 RA:2018, ASTM E415:2017		
		Cobalt	IS 8811:1998 RA:2018, ASTM E415:2017		
		Copper	IS 8811:1998 RA:2018, ASTM E415:2017		
		Manganese	IS 8811:1998 RA:2018, ASTM E415:2017		
		Molybdenum	IS 8811:1998 RA:2018, ASTM E415:2017		
		Nickel	IS 8811:1998 RA:2018, ASTM E415:2017		
		Niobium	IS 8811:1998 RA:2018, ASTM E415:2017		
		Phosphorus	IS 8811:1998 RA:2018, ASTM E415:2017		
		Silicon	IS 8811:1998 RA:2018, ASTM E415:2017		

		Sulphur	IS 8811:1998 RA:2018, ASTM E415:2017		
		Vanadium	IS 8811:1998 RA:2018, ASTM E415:2017		
8	(Chemical Analysis of Metal and Alloys) Stainless Steel	Carbon	IS 9879:1998 RA:2015, ASTM E-1086:2014	As per test required	1 Day
		Chromium	IS 9879:1998 RA:2015, ASTM E-1086:2014		
		Cobalt	IS 9879:1998 RA:2015, ASTM E-1086:2014		
		Copper	IS 9879:1998 RA:2015, ASTM E-1086:2014		
		Manganese	IS 9879:1998 RA:2015, ASTM E-1086:2014		
		Molybdenum	IS 9879:1998 RA:2015, ASTM E-1086:2014		
		Nickel	IS 9879:1998 RA:2015, ASTM E-1086:2014		
		Nitrogen	IS 9879:1998 RA:2015, ASTM E-1086:2014		
		Phosphorus	IS 9879:1998 RA:2015, ASTM E-1086:2014		
		Silicon	IS 9879:1998 RA:2015, ASTM E-1086:2014		
		Sulphur	IS 9879:1998 RA:2015, ASTM E-1086:2014		
NON DESTRUCTIVE TESTING					
1	Non-Destructive Testing	Ultrasonic Pulse Velocity test	IS 516 (Part-5, Sec.1):2020, ASTM C597:2016	-	1 day (Depends on Number of Points)
		Rebound hammer test	IS 516 (Part-5, Sec.4):2020, ASTM C805:2018	-	1 day (Depends on Number of Points)
		Half Cell Potential Test	ASTM C 876:2015	-	1 day
SOIL					
1	Soil	Grain Size Analysis	IS 2720 (Part-4):1985, (RA 2015)	200 kg	3 days
		Clay Hydrometer	IS 2720 (Part-4):1985, (RA 2015)		3 days
		Soil Classification	IS 1498:1970 (RA 2016)		-

		Liquid Limit	IS 2720 (Part-5):1985, (RA 2015)		3 days
		Plastic Limit	IS 2720 (Part-5):1985, (RA 2015)		3 days
		Plasticity Index	IS 2720 (Part-5):1985, (RA 2015)		-
		Proctor (Standard & Modified Compaction) MDD & OMC	IS 2720 (Part-7 & 8):1983, (RA 2011)		3-4 days
		Free Swell Index	IS 2720 (Part-40): 1985, (RA 2016)		2 days
		Specific Gravity	IS 2720 (Part-3, Sec-1): 1980, (RA 2016)		1 day
		Unconfined Compression Strength	IS 2720 (Part–10):1991, (RA : 2015)		2 days
		Shrinkage Limit	IS 2720 (Part-6): 1972, (RA 2016)		1 day
		Swelling Pressure	IS 2720 (Part-41): 1977, (RA 2016)		2 days
		Water Content/ Moisture Content	IS 2720 (Part-2): 1973, (RA 2015)		1 day
		California Bearing Ratio (Soaked)	IS 2720 (Part-16): 1985, (RA 2016)		4 days
		California Bearing Ratio (Un-soaked)	IS 2720 (Part-16): 1985, (RA 2016)		4 days
		Tri-axial Test	IS 2720 (Part–10):1991, (RA : 2015)		2 days
		Direct Shear Test	IS 2720 (Part-13): 1986, (RA 2016)		2 days
		Consolidation	IS 2720 (Part-15): 1986, (RA 2016)		15 days
2	Soil RE Wall	Grain Size Analysis	IS 2720 (Part-4):1985, (RA 2015)	50 kg	2 days
		Soil Classification	IS 1498:1970 (RA 2016)		-
		Liquid Limit	IS 2720 (Part-5):1985, (RA 2015)		3 days
		Plastic Limit	IS 2720 (Part-5):1985, (RA 2015)		3 days
		Plasticity Index	IS 2720 (Part-5):1985, (RA 2015)		-
		Proctor (Standard & Modified Compaction) MDD & OMC	IS 2720 (Part-7 & 8):1983, (RA 2015)		3-4 days
		Specific Gravity	IS 2720 (Part-3, Sec-1): 1980, (RA 2016)		1 day

		Direct Shear Test	IS 2720 (Part-13): 1986, (RA 2016)		2 days
3	Soil (Backfill)	Grain Size Analysis	IS 2720 (Part-4):1985, (RA 2015)	200 kg	2 days
		Liquid Limit	IS 2720 (Part-5):1985, (RA 2015)		3 days
		Plastic Limit	IS 2720 (Part-5):1985, (RA 2015)		3 days
		Plasticity Index	IS 2720 (Part-5):1985, (RA 2015)		-
		Proctor (Standard & Modified Compaction) MDD & OMC	IS 2720 (Part-7 & 8):1983,(RA 2015)		3-4 days
		Free Swell Index	IS 2720 (Part-40): 1985, (RA 2016)		1 day
		Shrinkage Limit	IS 2720 (Part-6): 1972, (RA 2016)		2 days
		Swelling Pressure	IS 2720 (Part-41): 1977, (RA 2016)		3 days
		Water Content/ Moisture Content	IS 2720 (Part-2): 1973, (RA 2015)		2 days
		Relative Density	IS 2720 (Part-14): 1973, (RA 2015)		1 day
		California Bearing Ratio (Soaked)	IS 2720 (Part-16): 1985, (RA 2016)		4 days
		Direct Shear Test	IS 2720 (Part-13): 1986, (RA 2016)		2 days
4	Bentonite	Fineness by Dry Sieving	IS 6186 :1986, RA:2020	5 kg	1 day
		Fineness by wet Sieving	IS 6186 :1986, RA:2020		2 days
		Moisture Content	IS 6186 :1986, RA:2020		2 days
		Liquid Limit	IS 2720 (Part-5):1985, (RA 2015)		2 days
		Sand Content	IS 6186 :1986, RA:2020		2 days
		Swelling Power	IS 6186 :1986, RA:2020		2 days
		Gel Formation Index	IS 6186 :1986, RA:2020		2 days
		Specific Gravity/Density	IS 2720 (Part-3), RA:2016		1 day
		Differential Free Swelling	IS 2720 (Part-40), RA:2016		3 days
5	Rock	Unconfined Compression Strength	IS 9143: 1979, (RA: 2016)		3 days
		Porosity	IS 13030:1991 (RA:2016)		3 days

		Density	IS 13030:1991 (RA:2016)		3 days
		Point Load	IS 8764:1998 (RA:2019)		3 days
		Water absorption	IS 13030:1991 (RA:2016)		3 days
6	GSB/WMM/ WBM/Stone Metal	Gradation	IS 2386 (Pt-1) (RA:2016) & MORTH fifth rev.	200-300 kg	1 day
		Liquid Limit	IS 2720 (Part-5):1985, (RA 2010)		3 days
		Plastic Limit	IS 2720 (Part-5):1985, (RA 2010)		3 days
		Plasticity Index	IS 2720 (Part-5):1985, (RA 2010)		-
		Proctor (Standard & Modified Compaction) MDD & OMC	IS 2720 (Part-7 & 8):1983, (RA 2015)		3-4 days
		Impact Value	IS 2386 (Part-4): 1963, (RA 2016)		1 day
		Abrasion Value	IS 2386 (Part-4): 1963, (RA 2016)		2 days
		Combined EI & FI	IS 2386 (Part-1): 1963, (RA 2016)		1 day
		Deleterious Material	IS 2386 (Part-1): 1963, (RA 2016)		3 days
		Water absorption	IS 2386 (Part-3): 1963, (RA 2016)		3 days
		California Bearing Ratio	IS 2720 (Part-16): 1985, (RA 2016)		7 days
		Soundness (Na_2SO_4/ $MgSO_4$)	IS 2386 (Part-5): 1963, (RA 2016)		12-15 days

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