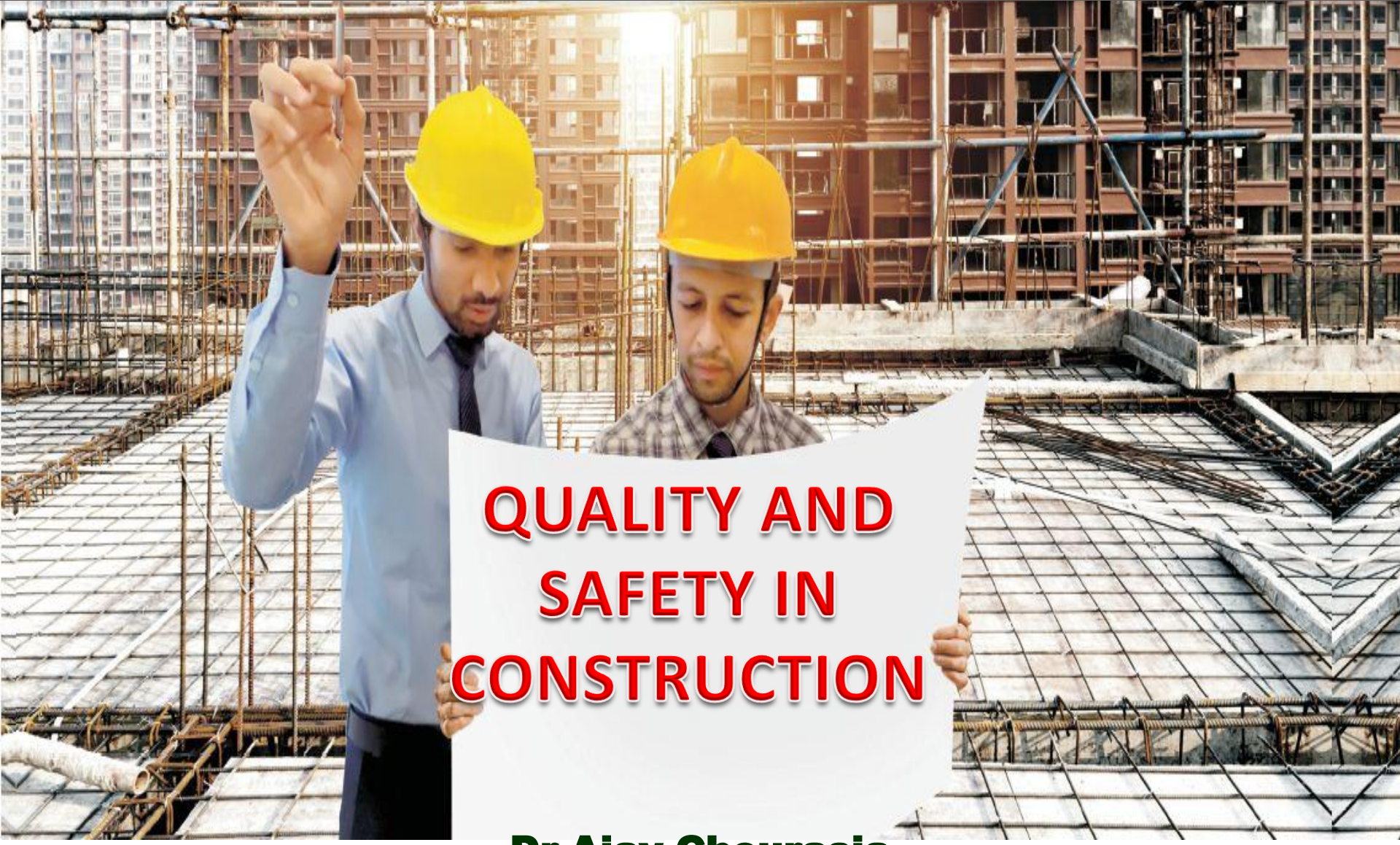


Dr Ajay Chourasia

CSIR-CENTRAL BUILDING RESEARCH INSTITUTE
ROORKEE, INDIA

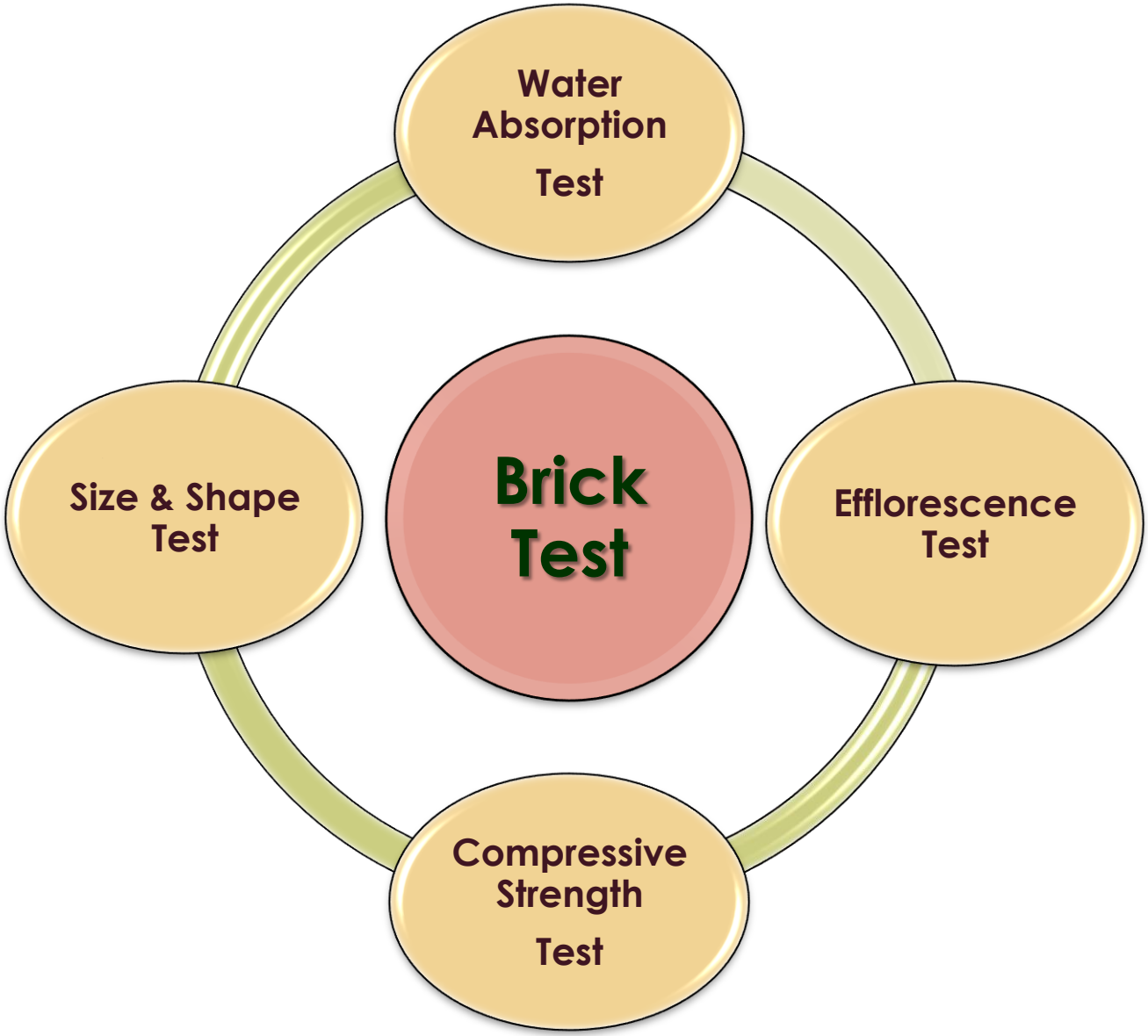
Inspection & Testing Plan for Construction Materials

S. No	Items	Qty
1	Hydraulic Compression Testing Machine, hand operated 100 tons capacity. Conform to the requirements of IS: 516-1959, IS :14858-2000 calibrated to an accuracy of ± 1% indicated load within range.	1 No.
2	Cube moulds 150×150x150 mm size conforming to IS : 516-1959, IS : 10086-1982.	12 Nos.
3	Slump apparatus conforming to IS: 7320.	1 No.
4	Test sieve set IS : 460-1972, 30 cm dia frame of size 40mm, 20mm, 12.5mm and 10 mm and 20 cm dia frame of size 4.75mm, 3.35 mm, 2.36mm, 1.18mm, 600 micron, 300 micron, 150 micron, 90 micron and 75 micron.	One Set
5	Bulk density measure 3 and 15 liters capacity as per IS : 2386 (Part-III)- 1963.	One Each
6	Thickness and length gauge as per IS : 2386 (Part-I)- 1963.	One Each
7	15 cm dia aggregate crushing value apparatus as per IS : 2386 (Part-IV)- 1963.	1 No.
8	Graduated cylinder of glass 100, 250 and 1000 ml capacity.	3 Nos. each
9	Balances 1 kg, 5kg and 15 kg capacity.	One each

Inspection & Testing Plan for Construction Materials

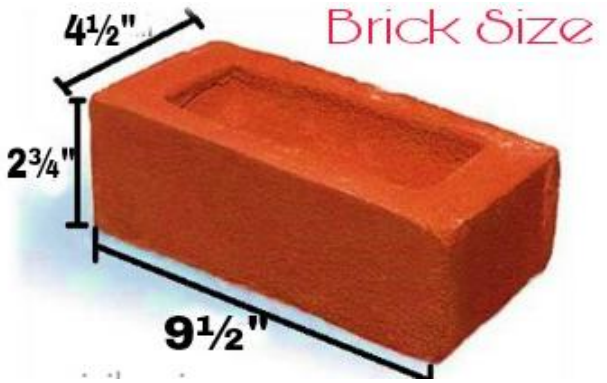
S. No.	Items	Qty
10	Electric oven, thermostatically controlled up to 2000C, chamber space about 40×40x40 cm.	1 No.
11	Concrete Test Hammer (rebound hammer) of impact energy 2.207 N-m (0.225 Kg-m) as per IS : 1331 (Part-2)- 1992.	1 No.
12	Flat edge 10 cm dia. glass cylinder with glass plate 2000 ml capacity.	1 No.
13	Miscellaneous items such as mixing trays, rice trays, karni etc.	One Set
14	Le-Chatelier apparatus as per IS : 4031.	2 Nos.
15	Vicat apparatus as per IS : 4031	1 No.
16	Vibration machine with 6 moulds as per IS : 4031.	1 No.
17	Hot Plate	1 No.
18	Apparatus (HCl heat of solution method) for estimation of cement content of fresh concrete.	1 No.
19	Chemicals for water content determination of fresh concrete sodium chloride, nitric acid, nitrobenzene, ferric alum, silver nitrate, potassium thipcyanate, sodium hydroxide and HCl.	For 50 tests
20	Glass ware for testing of S.No. 19	One Set

Material Test in Laboratory



Size, Shape and Colour Test

- Standard brick size consists length x breadth x height as 19cm x 9cm x 9cm.
- Bricks should be rectangular in shape with sharp edges.
- A good quality brick will not break and will generate a metallic sound
- Closely observe bricks for uniformity of their shape, size and colour.
- Put a scratch on the brick surface with finger nail
- Break a brick and examine its structure.
- It should be homogeneous, compact and free from holes and lumps



Water Absorption Test

To determine Water absorption as per IS: 3495 (Part-II) – 1976.

Apparatus: Drying Oven and Immersion Tank

Procedure

- Select five bricks at random.
- Dry the specimen in a drying oven at a temperature of 110'C to 115'C for 24hrs.
- Remove the bricks from the oven and obtain it's weight W_1(kg)
- Immerse the five bricks completely in water at 27'+/-2'C for 24hrs.
- Remove the specimen and weigh the specimen within three minutes after it's removal from water. Let its weight be W_2 (kg).
- Take the average value of water absorption

$$W = \frac{W_2 - W_1}{W_1} \times 100$$

Water Absorption Test

Results

1st Class Brick	Not more than 20% by weight
2nd Class Brick	Not more than 22% by weight
3rd Class Brick	Not more than 25% by weight

Efflorescence Test

To determine Efflorescence as per IS: 3495 (Part-III) – 1976.

Apparatus : Distilled Water and Glass Cylinder

Procedure

- Fill distilled water in shallow dish and place the end of the bricks in the dish
- Water shall be filled such that bricks should be immersion in water up-to 25 mm depth
- When the water has been absorbed and bricks appear to be dry, place a similar quantity of water in the dish and allow it to evaporate as before
- Examine the bricks for efflorescence after the second evaporation and take the results.

Efflorescence to be not more than moderate (10-50%) up to class and not more than slight (< 10 per cent) for higher classes.

Efflorescence Test

Results

Nil	No efflorescence
Slight	10% of area covered with deposits
Moderate	10 to 50% area covered with deposit but unaccompanied by flaking of the surface.
Heavy	More than 50 per cent area covered with deposits but unaccompanied by flaking of the surface.
Serious	Heavy deposits of salt accompanied by flaking of the surface

Compressive Strength Test

To determine Compressive strength as per IS: 3495 (Part-I) – 1976.

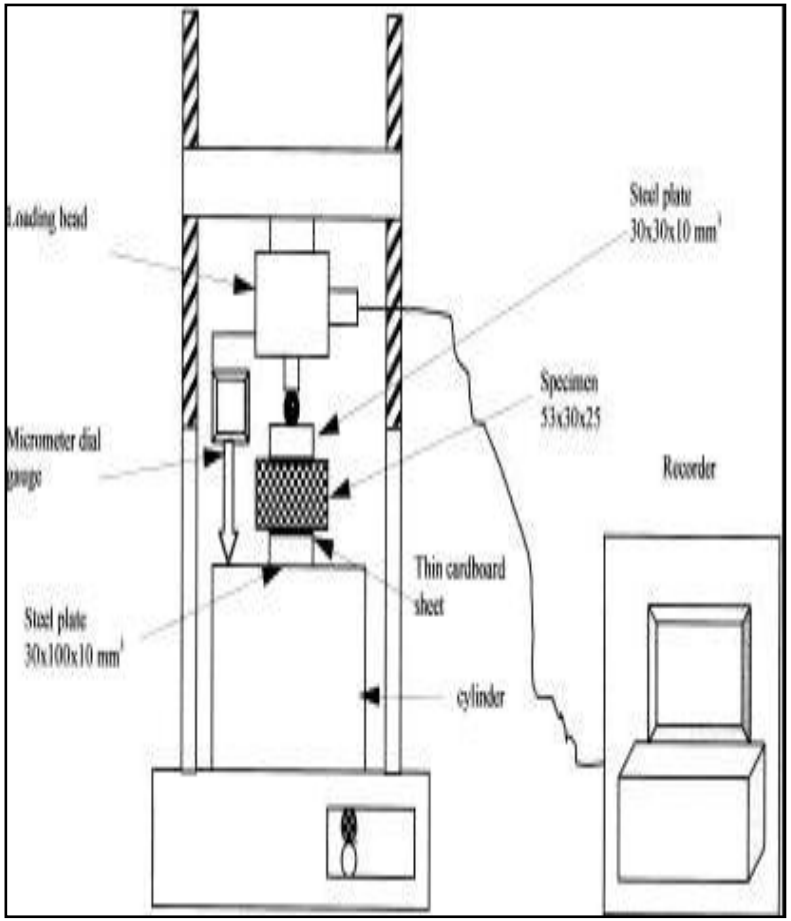
Apparatus : Compression Testing Machine

Procedure

- The bed faces of bricks is removed to provide two smooth and parallel faces by grinding
- It is immersed in water at room temperature for 24 h.
- The specimen is then removed and any surplus moisture is drained out at room temperature
- The frog and all voids in the bed face is filled with cement mortar.
- The specimen is placed with flat faces horizontal, and mortar filled face facing upwards between two 3 ply plywood sheets each of 3mm thickness and carefully centred between plates of testing machine.
- The maximum load at failure is noted down.

Compressive Strength Test

$$\text{Compressive strength} = \frac{\text{Maximum load at failure } (N)}{\text{Average area of the bed faces } (mm^2)}$$



Specifications of RBM Unit

Size	**40 – 60 mm**
Cement Sand Ratio	**1:8**
Mortar Content	**60%**
Round Boulders Content	**40%**

Round Boulders

Manufacturing Process of RBM Unit

Placement of rubble stones over mortar

Filling of mortar

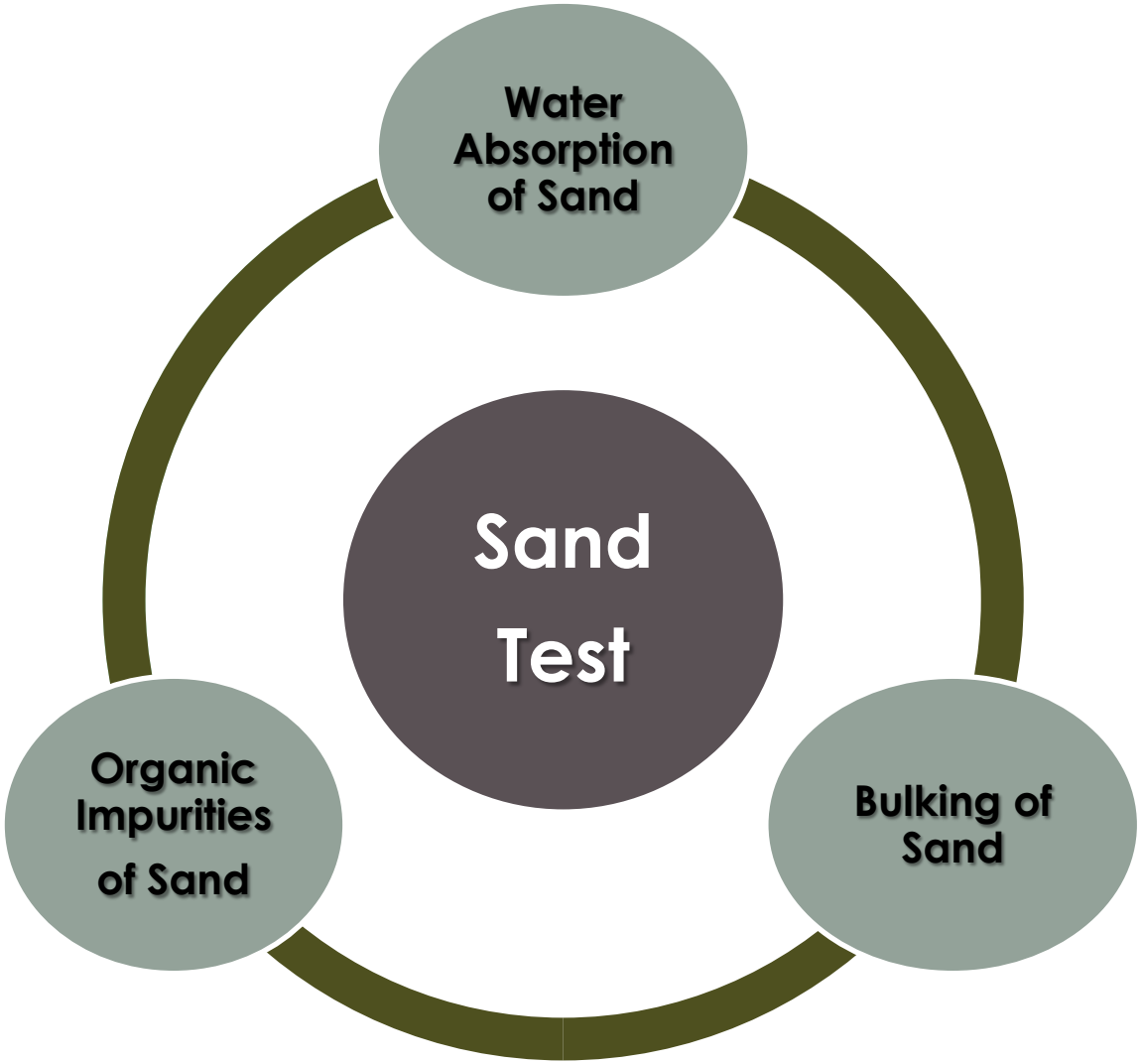
Compaction and vibration using vibro-compaction technique

Finished RBM unit

MATERIAL PROPERTIES OF BURNT SOLID CLAY UNIT, AAC UNIT & RBM UNIT

Parameters	Type of Units		
	Burnt Solid Clay Unit	AAC Unit	RBM Unit
Size (mm)	220 x 110 x 70	230 x 110 x 80	230 x 110 x 80
Water Absorption (%)	10.34	48.83	5.56
Dry Density (kN/m^3)	17.90	6.15	18.34
Compressive Strength (N/mm^2)	13.37	3.78	15.37
Elastic Modulus (N/mm^2)	1560	1300	3183
Poisson's Ratio	0.150	0.260	0.110
Shear Strength (N/mm^2)	0.140	0.226	0.340
Shear Modulus (N/mm^2)	227.25	320.00	665.00
Cost/unit (Rs.) **Considering uniform size of unit*	4.23	4.45	3.03
Cost/cum (Rs.)	2500	2200	1500
% Reduction in Cost (w.r.t. Clay Unit)	-	12%	40%

Material Test in Laboratory



Organic Impurities Test

To determine organic impurities of sand as per IS: 2386 (Part-II) – 1963.

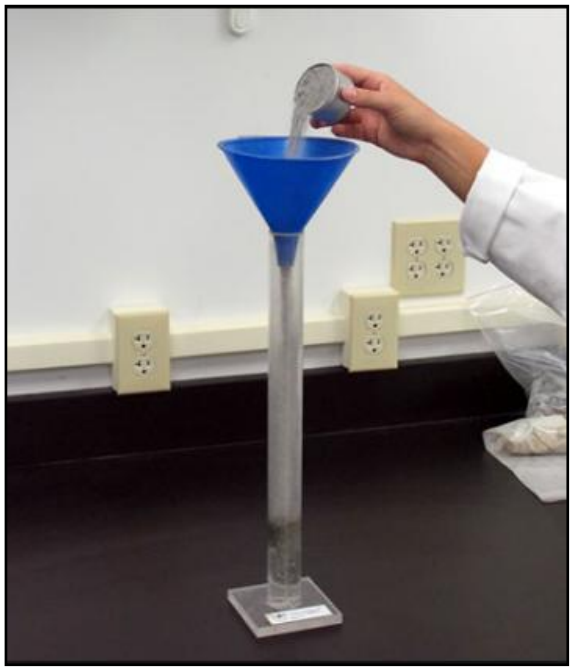
Apparatus : Glass Tube and Scale

Procedure

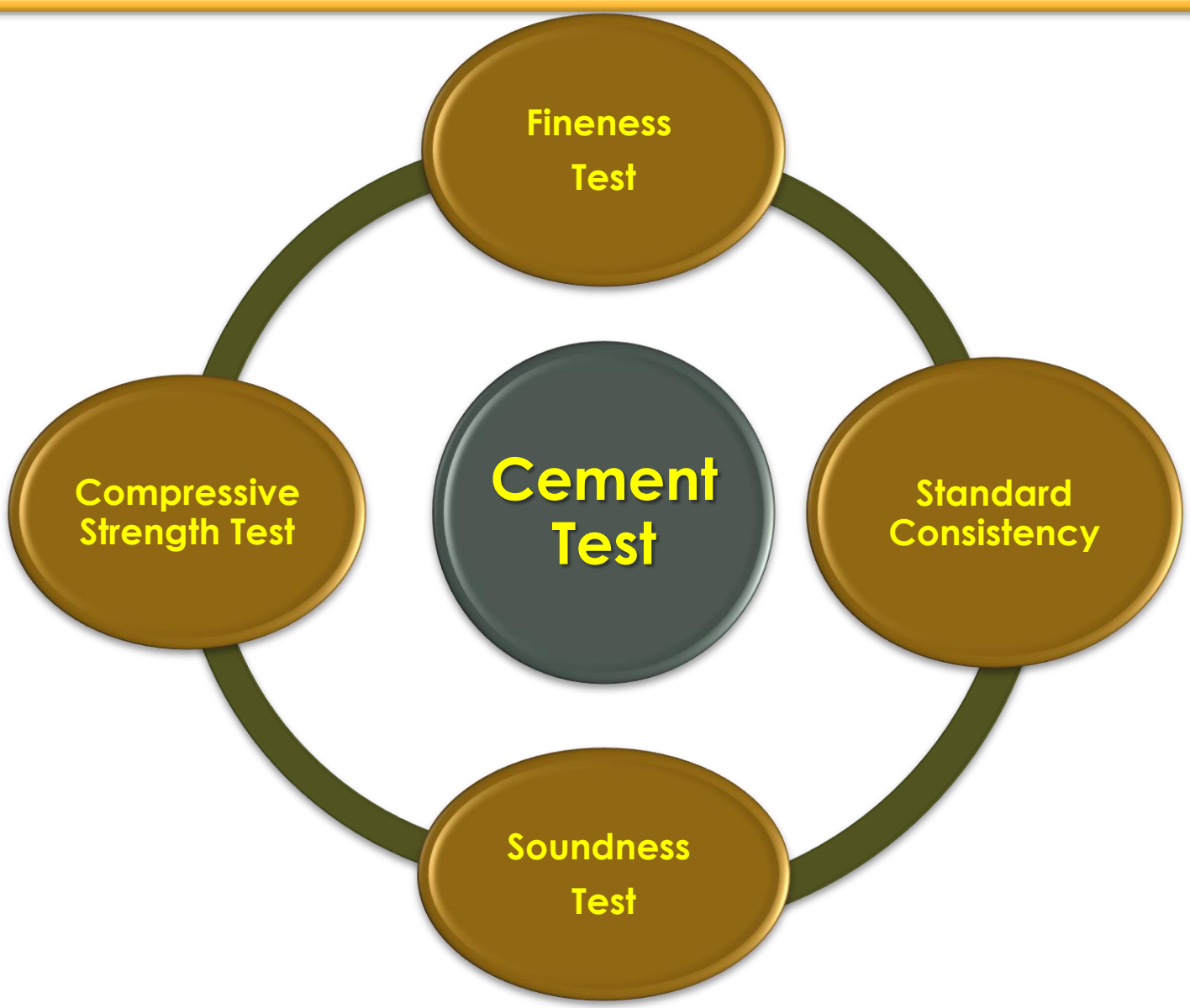
- Take a glass of water and add some quantity of sand in it. Then it is vigorously shaken and allowed to settle.
- If clay is present in sand, Its distinct layer is formed at top of sand.
- For detecting organic impurities in sand, take a container add some quantity of sodium hydroxide or caustic soda and also add small quantity of fine aggregate/sand stir the container.
- Colour of the solution changes to brown it indicates the presence of organic matter
- Find the presence of salts in sand, the sand is actually tasted

Organic Impurities Test

- Take a heap of sand and it is rubbed against fingers, in case if the fingers get stained then it clearly indicates the presence of earthy matter
- The colour of sand will indicate the purity of sand, the grain sharpness and size can be observed by naked eye



Material Test in Laboratory



Initial Setting Time Test

- Set the 1mm. diameter needle on the lower end of the rod.
- Now release the rod for 30 seconds and note the time at which the needle was released
- After periodic time again release the rod for 30 seconds note the penetration of the needle in paste.
- Calculate the total time up to this step, which will be the initial setting time of the cement.

Final Setting Time Test

- Set the 5 mm diameter needle on the lower end of the rod.
- Now again repeat the above steps for noting the final setting time of cement.
- The final setting time will be noted when the needle if released doesn't sink visibly and leaves no impression on the surface of the paste.
- Then compare it with the ASTM standard time
- Final setting time = 90 + 1.2 (initial setting time)

Compressive Strength Test

Compressive Strength of cement is determined as per IS: 4031 (Part 6) 1988.

Apparatus: Cube Mould and Compressive Testing Machine

Procedure

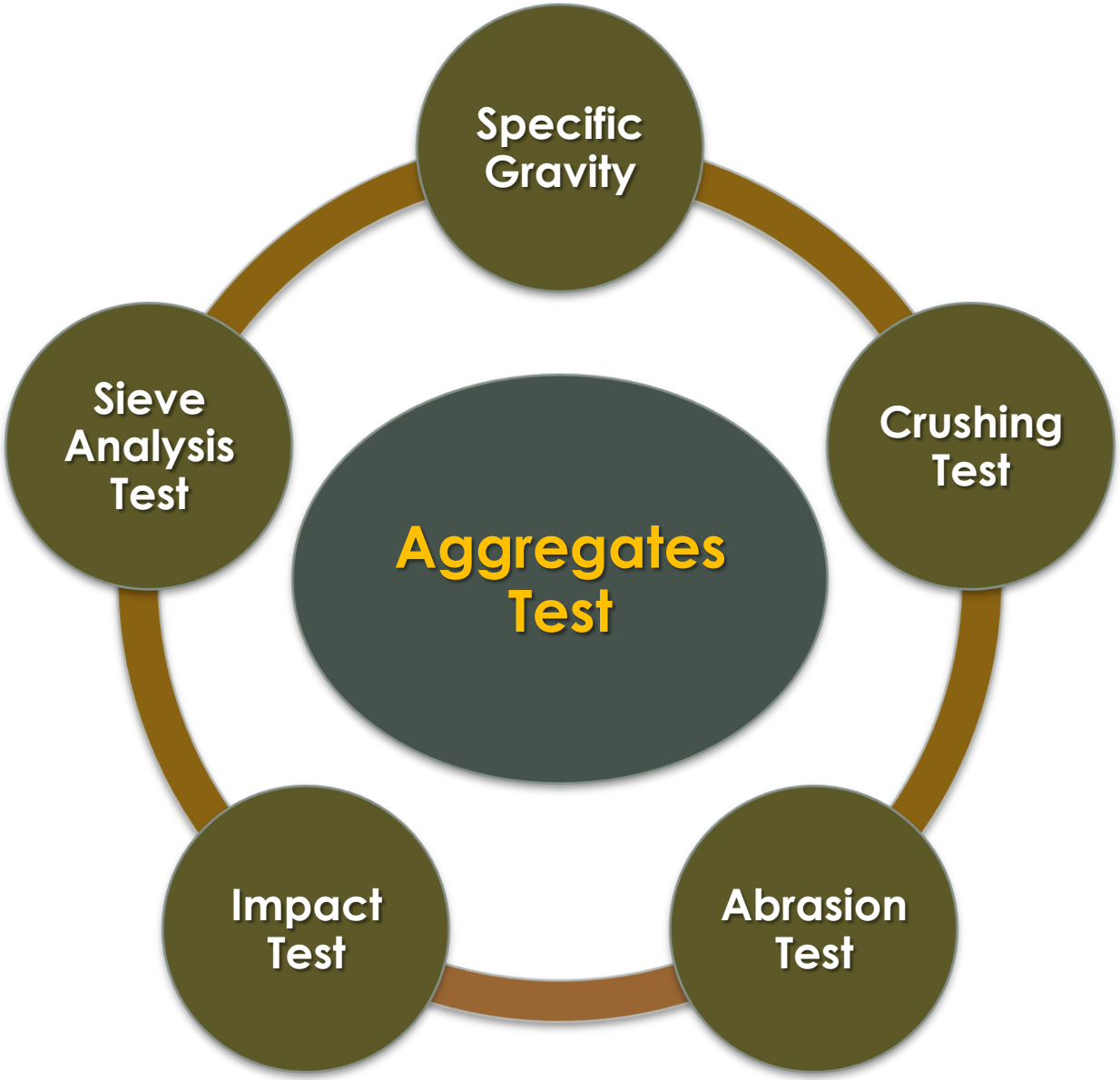
- Gauge a mixture of cement and regarded IS sand in the proportion of 1:3 by weight using (P/4+3.0) percent of water
- Fill the cube mould by compacting it for 2 minutes on a vibrating machine at a speed of 2700$\pm$400.
- Smoothen the top surface of the cubes with flat side of a trowel.
- Place the cube mould in an atmosphere of 270c$\pm$20c.

Compressive Strength Test

- After 24hr. remove the specimen from the mould and keep them in water till testing
- The test cubes at 3days and 7days age in the compression testing machine.

Compressive Strength = P / A

Material Test in Laboratory



Crushing Test

To determine Aggregate crushing value as per IS: 2386 (Part-IV) – 1963.

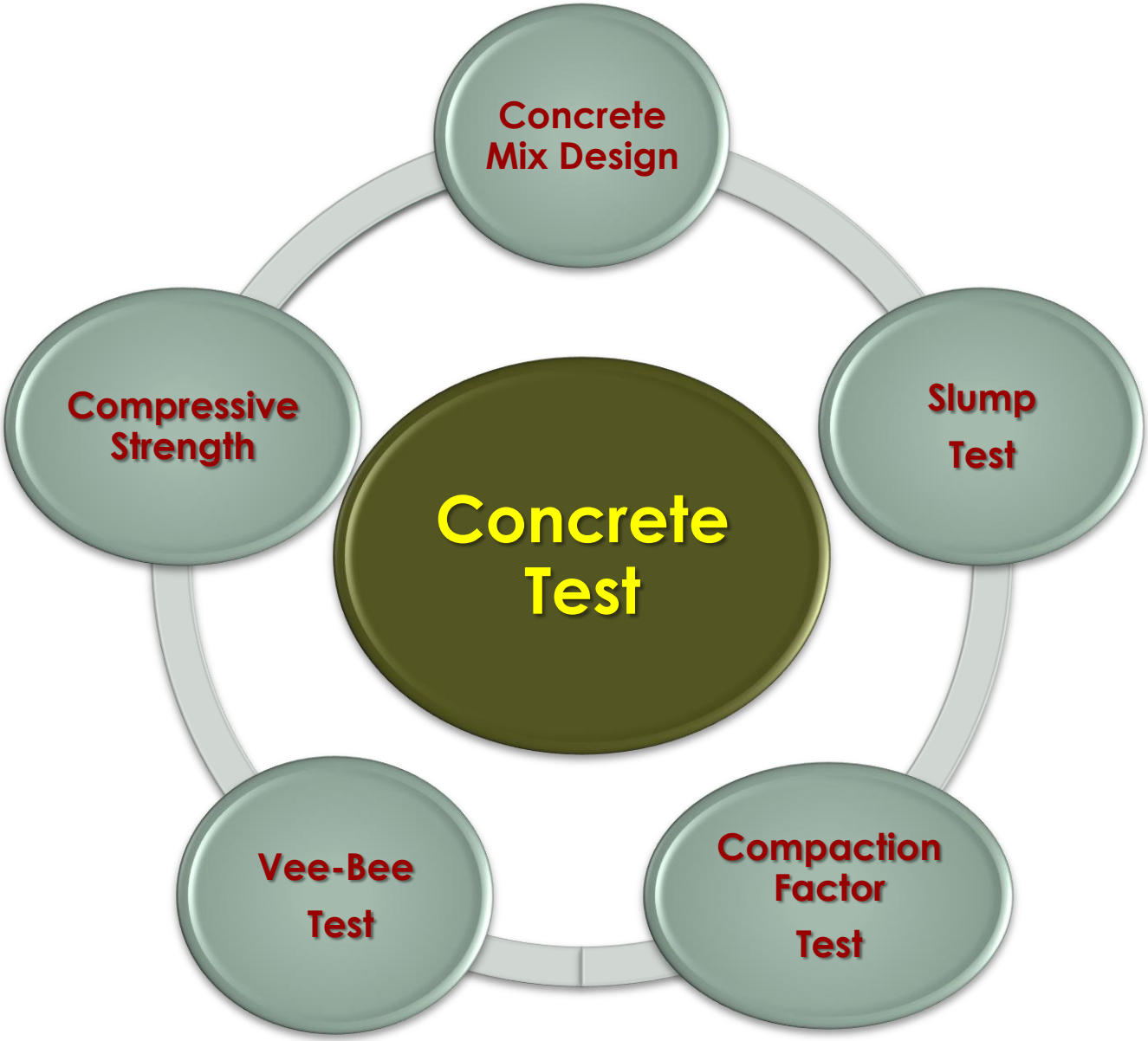
Apparatus: Compression Testing Machine and IS Sieve

Procedure

- Dry aggregates passing through 12.5 mm sieves and retained 10 mm sieves are filled in a cylindrical.
- Each layer is tamped 25 times with at standard tamping rod.
- The test sample is weighed and placed in the test cylinder in three layers each layer being tamped again
- The specimen is subjected to a compressive load of 40 tonnes gradually applied at the rate of 4 tonnes per minute.
- Sieved through 2.36 mm sieve and weight of passing material (W2) is expressed as percentage of the weight of the total sample (W1) which is the aggregate crushing value

$$Aggregate\ crushing\ value = \frac{W1}{W2} \times 100$$

Material Test in Laboratory



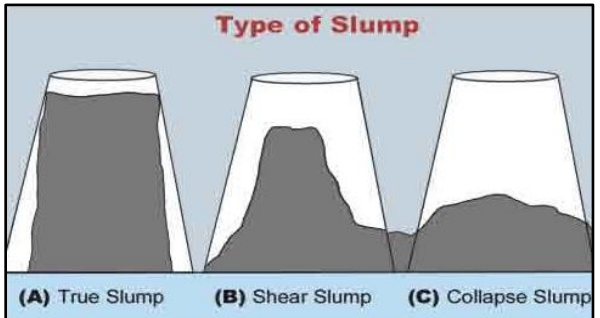
Slump Test

Fresh Concrete by Slump Test to determine the workability of fresh concrete as per IS: 1199 – 1959.

Apparatus: Slump Cone and Tamping Rod

Procedure

- First, clean the inner surface of the empty mould and then apply oil to it
- Set the mould on a horizontal non-porous and non-absorbent base plate
- Fill the mould fully by pouring freshly mixed concrete in three equal layers
- Stroke each layer 25 times with the standard tamping rod over the cross section
- After stroking 25 times the top layer is struck off level, now lift the mould slowly in the vertical direction without disturbing the concrete cone
- Use the measuring scale to measure the difference level between the height of the mould and the concrete sample.



Compressive Strength of Cement Concrete Test

To determine the cube strength of concrete as per IS: 4031: (part vi) 1988.

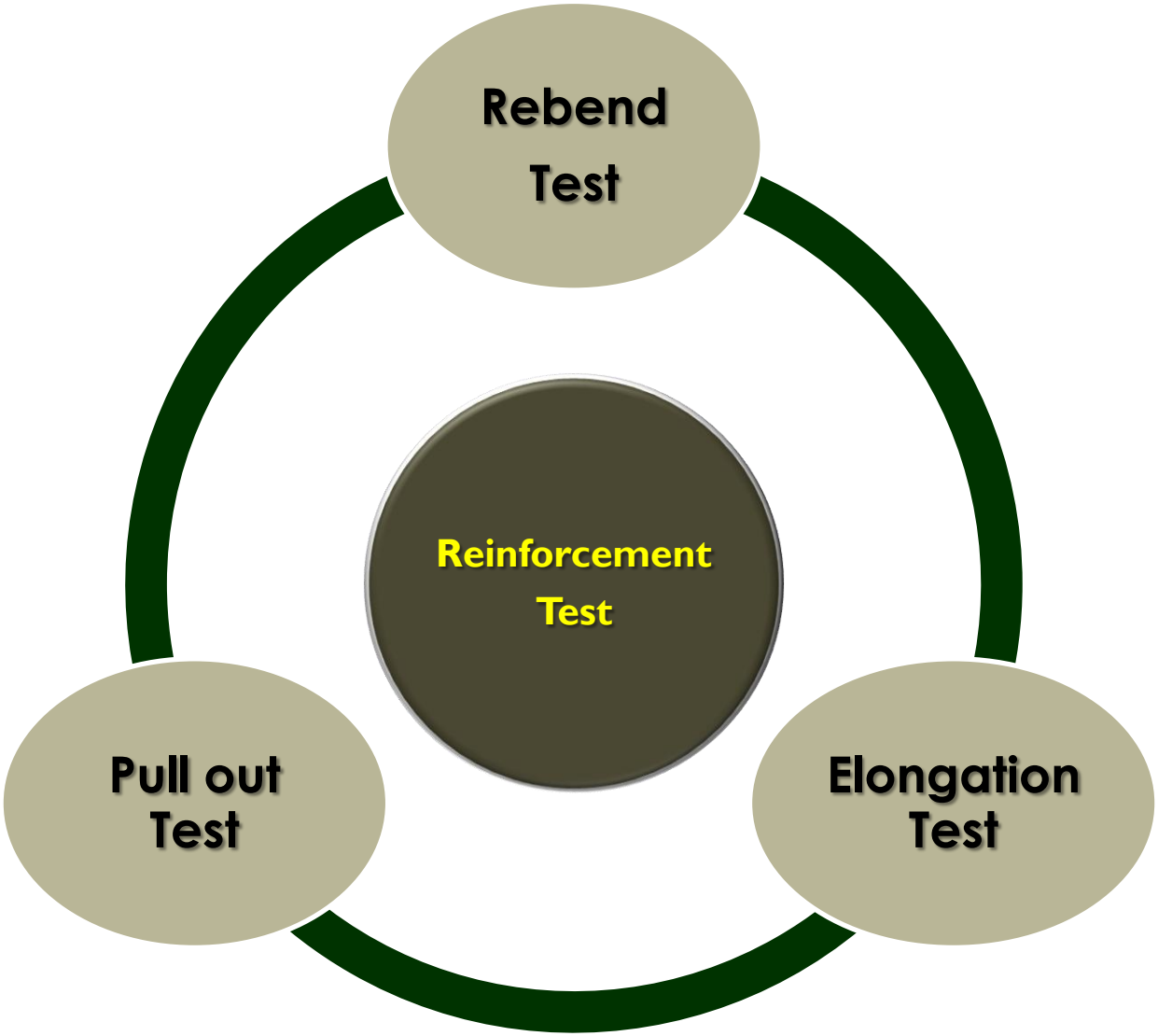
Apparatus: Compression Testing Machine and Mould for Cube Test

Procedure

- Weight of cement, fine aggregate and coarse aggregate and water
- Mix them thoroughly in the mechanical mixer until uniform colour of concrete is obtained.
- Fill the concrete in cube moulds in three layers.
- Trowel off surplus concrete from the top of moulds.
- Cover the mould with wet mats and mark them after about 3 to 4 hours.
- Specimens are removed from the moulds after 24 hours and cured for 27 days
- Place the test cube on the platform of a compressive testing machine without any packing between the cube and the plates of the testing machine.

$$\text{Compressive Strength} = \frac{P}{A}$$

Material Test in Laboratory



Rebend Test

Procedure to be followed: A mandrel is chosen according to the reinforcement diameter as mentioned in the table below –

Nominal Size of Specimen	Dia of mandrel for Fe 415 and Fe 500	Dia of mandrel for Fe 550
Upto and including 10mm	5φ	7φ
Over 10 mm	7φ	8φ

where φ is the diameter of the sample in mm.

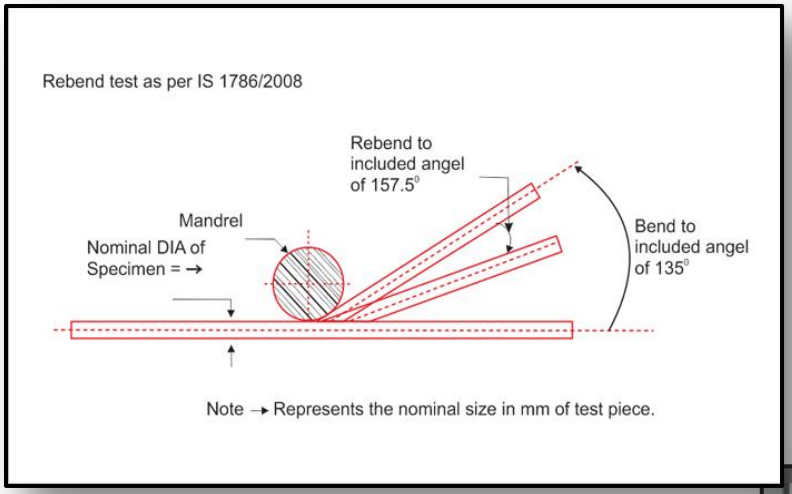
Procedure

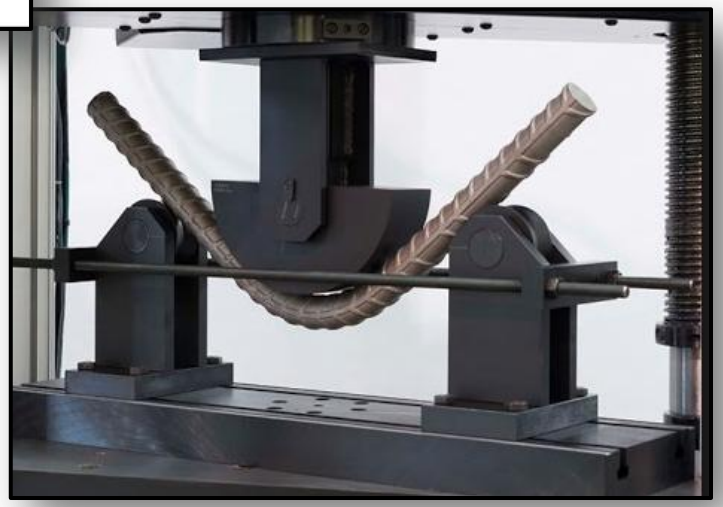
- **The test sample is bent to an included angle of 135°.**
- **The bent piece is then kept immersed in water at 100° for 30 minutes and then allowed to cool.**
- **The sample is then bent back to an included angle of 157.5°.**
- **The purpose of re-bend test is measure the effect of strain ageing on steel**

Rebend Test

Results

The sample is considered to have passed the test if it there is no fracture in the bent portion.





Elongation Test

Procedure

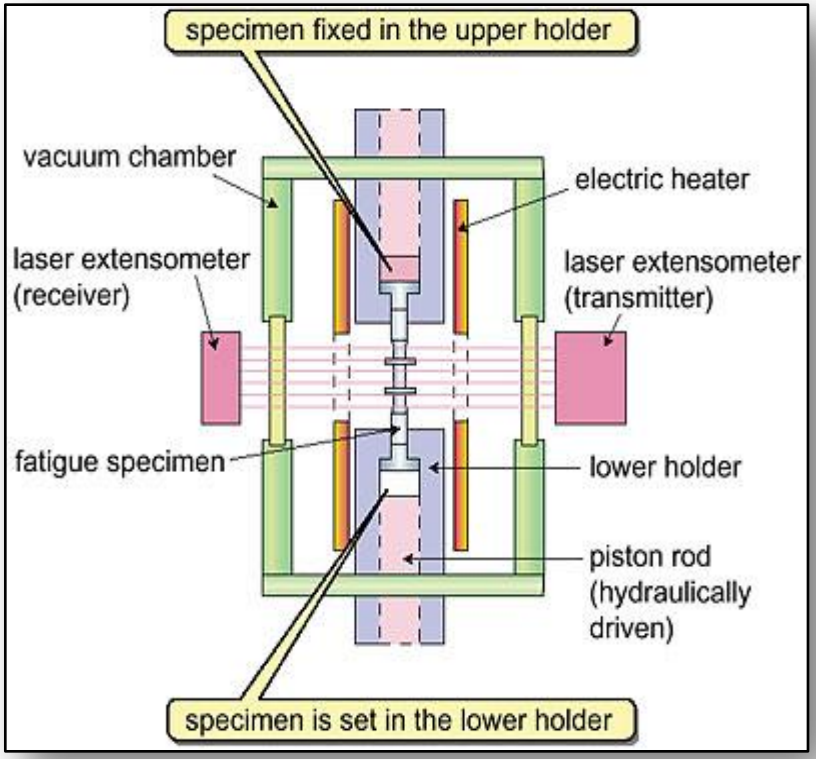
- Equidistant markings are made on the test piece such that the length of markings is a sub multiple of the initial gauge length.
- The markings should be made very carefully with an accuracy of ±0.5mm.
- After testing, the final gauge length is measured on the longest broken part of the test piece, taking care of the following considerations –
  - Limits of the measuring section should be located at least 5d from the fracture section and at least 2.5d from the ends
  - The measuring gauge length should be at least equal to the product standard
  - The percentage elongation is calculated as-

$$\frac{Lf - Lo}{Lo} \times 100$$

Where,
Lf = Final gauge length
Lo = Initial gauge length

Elongation Test

	Fe 415	Fe 500	Fe 550
Elongation percent (min)	14.5	12	8



Formwork

- Formwork shall be designed and constructed so as to remain sufficiently rigid during placing and compaction.
- Shall be such as to prevent the loss of slurry from the concrete.
- Characteristic load with appropriate partial safety factors for limit state design.
- The face in contact with the concrete shall be cleaned and treated with form release agent.
- Shall not be removed until concrete has achieved a strength of at least twice the stress to which the concrete may be subjected at the time of removal.

Stripping Time*

- **Vert. formwork to columns, walls, beams- 16-24 hrs**
- **Soffit formwork:**
  - Slabs 3 days
  - Beams 7 days
- **Props to slabs:**
  - Span upto 4.5 m 7 days
  - Span above 4.5 m 14 days
- **Props to beams:**
  - Span upto 6 m 14 days
  - Span above 6 m 21 days

Note: **For Ordinary Portland Cement, other cement and lower temperature, the stripping time recommended above may be suitably modified. As a suggestive measures the above values may be increased by 20%.**

CHECK LIST FOR ACHIEVING QUALITY IN CONSTRUCTION

CHECK LIST FOR ARCHITECTURAL DRAWINGS

- Locations of Doors / Windows / Rolling Shutters / Jalis and Their Elevations & Schedules. The Openings Should Not Touch RC Column.
- Sewage And Plumbing Details. (Depression In WC/Bath/Kitchen Area)
- Water Proofing Details Over Roof. (1 : 100 Slope)
- Show Outlets For Balconies & Roofs In Drawings.
- Elevation of Plinth Level Vis A Vis Road Level & Contour/Bench Mark.
- Proper Slope to Roof & Floors.

CHECK LIST FOR GENERAL CIVIL DRAWINGS

- Foundation Depth Vis A Vis Safe Bearing Capacity.
- North Line and Co-ordinates of Any one Point on Structure.
- Type & Grade of Cement/Concrete/Steel/Reinforcement
- Co-relate Between Design Drawings and Tender Documents W.R.T. Cost, Specifications & Quantities.
- Levels of Plinth Beams /Tie Beams / Floor Beams.
- Column Links;; Details of Staircase;; Brick Work In Foundation;; Check Distance Between Grid Lines.
- Check Levels of Beams in Chedules/Details/Elevations.
- Development Length, Lap Length & Cover.

CHECK LIST FOR STRUCTURAL DESIGN

- Are design calculations consistent with the geometry of the final plans ?
- Insure that design calculations are neat and that the results are clearly shown and are readily understandable to the reviewer. Do not omit steps and references.
- That the design is complete, i.e. that a design for "all structural components has been included.
- Has the foundation system been designed with regard to any differential settlement which may cause undue stress upon supported elements ?
- Walls are designed to resist lateral loads due to backfill materials.
- Pipe sleeves are provided in foundation walls where required for penetrations.

CHECK LIST FOR STRUCTURAL DESIGN

- The manner of establishing footing depths is consistent with existing topography, and existing site conditions with respect to any required clearing and grubbing, demolition, removal or accommodation of existing utilities or other construction.
- Other recommendations of the soils report have been complied with, such as minimum footing depth, magnitude of active/passive/at rest soil pressures, SBC etc.
- The reinforcing provided meets the minimum percentage and temperature requirements of IS: 456-2000.
- Concrete members are properly sized and detailed to provide required cover and spacing between bars at bar splices and connections.
- A bar bending diagram is added where required for clarity.

CHECK LIST FOR STRUCTURAL DESIGN

- Depressed areas in slabs, when required for toilet, kitchen etc. have been indicated and reinforcement placement for this condition is clearly detailed.
- Column center dimensions, wall thickness, and other necessary dimensions are shown.
- An adequate number of details for the construction are shown. Too many details are better than too few.
- Where required, a detail is provided for future extension of any columns, or future connections to any columns.
- Additional reinforcement has been placed at the discontinuous ends of construction joints.
- Coursing of masonry walls and partitions is modular.
- Horizontal joint reinforcing is provided where required.

CHECK LIST FOR STRUCTURAL DESIGN

- In concrete frame structures, a detail has been provided showing the method of supporting the masonry wall.
- Interior non-load bearing partitions have adequate strength to support heavy doors and frames. Consider the impact forces of opening and closing. 100 MM minimum thickness masonry to be used.
- For masonry design, the maximum effective width for the wall stiffeners compression flange shall be limited to six (6) times the wall thickness or the bar spacing as determined by minimum reinforcement requirements dictated by wind or Seismic loads.

CHECK LIST FOR AGGREGATES AT SITE

- Type of aggregate (natural rounded, natural irregular, crushed cubical, crushed flaky, crushed gravel etc.)
- Size of Agg. (40 mm, 20 mm, 10 mm, etc.)
- Presence of deleterious materials (clay coating, clay lumps, mica, alkali slag, coal residues, organic matter, etc.)
- Need for washing ?
- Protection against accidental ingress of soil or dust on which material is unloaded at site
- Protection against ingress of snow or ice in extreme cold weather or protection against high ambient temperatures

CHECK LIST FOR CONCRETING

- Week of manufacture/ Date of receipt of cement at site.
- Presence of supervisor for batching of materials.
- Adequacy of manpower for batching.
- Storage of cement in dry and moisture free shed or stacked above ground level and covered with plastic sheets.
- Addition of water at site controlled by slump measurement.
- Farma boxes strong yet light with handles long enough to facilitate proper handling.
- Availability of correct size and number of farma boxes (volumetric batching).
- Availability of proper slump cone and proper and adequate number of cube moulds.
- Inspection of mix after unloading - uniform, cohesive (not segregated) and of right workability (slump).

CHECK LIST FOR CONCRETING

- Workability drop/ Segregation of mix in the containers (gamelas) during the journey.
- Reinforcement cages have adequate chairs and spacers to take the load of the workers transporting concrete without getting shifted or disturbed (effective depth and clear cover).
- Concrete dumped vertically maximum 1.0 m without hitting any obstruction (formwork, reinforcement etc.).
- Placing in layers of uniform thickness between 150 to 300 mm, however, not more than 500 mm in any case.
- Level of top layer maintained uniformly during placement.
- Concrete allowed to dry gradually at the end of curing period.
- Surfaces completely covered preferably with plastic sheet or wet hessian or burlap.

NORMAL DEFECTS IN FORM WORK

- The props or supports of form work were not in plumb and cross braced.
- The ground supports to props or shores were poor and therefore the formwork settled.
- Wedges were not tightened properly to the shores.
- There was insufficient thickness of shuttering unable to bear lateral pressure imposed by wet concrete, specially in columns.
- Shuttering plates were not cleaned and oiled or oiled with dirty oil.
- There were many insufficient and loose connections in centering and shuttering.
- Form work was removed before time.
- The shuttering was poorly made with cracked and warped timber planks having lot of holes and knots.
- Effective depth between top and bottom reinforcement not disturbed.

CHECK LIST FOR QUALITY CONTROL OF RCC WORKS

- Proper grading of aggregates as per mix design. Aggregates should not be from disintegrated or soft rock. It should not contain dust, earth & sand or any other foreign matter.
- Proper grading of sand as per mix design. Monitor silt content and bulkage.
- Water for mixing and curing. Potable water should be used.
- Carry out slump test at regular intervals to ensure proper workability.
- Carry out adequate number of cube tests at 7 & 28 days. Calculate standard deviation & find out whether the cube results have failed or passed as per IS:456-2000 guide lines.
- Make adequate number of cover blocks & chairs as per the required clear cover of various members.
- Get reinforcement physical test certificate from supplier/manufacturer.

CHECK LIST FOR QUALITY CONTROL OF RCC WORKS

- Ensure that binding wires are adequately used for tying up of reinforcements.
- Check spacing/length of hooks and overlaps. Laps shall be staggered.
- Check vertical & horizontal alignment & strength of centering and shuttering.
- Ensure that thickness/width of section is adequate for inserting vibrator, else inform the design office for possible revision.
- Ensure proper curing for required number of days. Use curing compound, if member is not easily accessible.
- Check size, location & orientation of cutouts, inserts & bolts.
- Make proper access/ walking arrangement over slab for proper inspection & to avoid any damage to reinforcements.
- Check adequate availability of cement, aggregate, sand, admixtures & water before commencing concreting.

OBSERVED DEFECTS IN RC WORKS

- Storage of cement was very poor, The first in, first out principle was not adopted.
- The source of water which was used during construction was not potable. Ground water contained high quantity of chlorides & sulphates.
- The water used for R.C.C. was dirty, contained soap as the storage tank was being utilized for washing clothes and for bathing by labourers.
- RC work was sagging.
- The slopes provided in balcony slabs, chajjah etc. were not proper.
- The steel reinforcement cage for the R.C.C. work was not in proper position. The cage was twisted and dimensionally not stable.
- The cover of the reinforcement was not uniform and the reinforcement cage was touching the shuttering at few places.

OBSERVED DEFECTS IN RC WORKS

- Proper cover blocks were not used and many of the blocks were detached from the steel to which they were to be bound.
- Cover blocks were made out of very weak concrete. Sometimes even stones were used as cover blocks.
- The sections of R.C.C. beams, columns etc. were less when compared to the sections shown on the structural drawing.
- column beam junctions were seen to be extensively honeycombed.
- The overlaps were inadequate and not staggered. The placement of steel was improper and not in the position as required
- The steel was not provided of the full length as shown in drawing.
- The column reinforcement at roof level was not bent into the beam for making a proper joint. The steel was just cut and left.
- In case of R.C.C. parapet, the steel was provided on the wrong face.


Slogan

“IS YOUR COLUMN READY FOR FORM WORK TO PLACE?”

- LATERAL TIE RODS ARE PLACED IN POSITION?
- **THEY ARE BENT AND TIED WITH BINDING WIRE?**
- HOOKS ARE BENT TO 135 DEGREES IN STIRRUPS OF COLUMN?
- COVER BLOCKS ARE PLACED IN POSITION?

“ARE SLAB AND BEAMS READY FOR CASTING?

- ALL HOOKS OF STIRRUPS ARE BENT TO 135 DEGREES?
- OUTER BARS OF BEAM ARE TIED WITH THE COLUMN’S MAIN BAR WITH TIE RODS?
- CHAIRS ARE PROVIDED UNDER TOP REINFORCEMENT OF SLAB?
- SECONDARY BEAMS ARE RESTING OVER PRIMARY BEAMS.
- COVERS IN BEAM AND SLAB ARE PROVIDED?
- CASTING SHALL BE FIRST DONE IN COLUMN AND BEAM AND THAN INTO THE SLAB.

IMPORTANT POINTS FOR ASSURING BRICKWORK QUALITY

- MARK THE WALLS OF THE SHAFT WHICH ARE NOT TO BE DONE BEFORE PLUMBING WORK.
- LAYOUT FOR BRICK WORK SHALL BE PERFECT & SIZE OF ROOM BE NOT COMPROMISED. ALL REFERENCE GRIDS SHOULD ALSO BE CHECKED WITH EACH OTHER FOR THEIR ACCURACY.
- THICKNESS OF JOINTS SHALL NOT BE MORE THAN 12MM.

IMPORTANT POINTS FOR ASSURING BRICKWORK QUALITY

- ALL JOINTS ARE CLEANED AND RACKED.
- NO JOINT SHALL BE LEFT HOLLOW.
- WALL IS IN PLUMB.
- IN HALF BRICK THICK WALL 8MM DIA. STEEL BARS ARE TO BE PROVIDED AFTER EVERY FOURTH COURSE. IN 125MM TH.AAC BLOCK WORK,IT SHALL BE PLACED AFTER EVERY SECOND COURSE.
- DATE OF BRICK WORK BE WRITTEN OVER IT FOR ENSURING ITS PERIOD OF CURING, i.e. 7 DAYS.

IMPORTANT POINTS FOR ASSURING BRICKWORK QUALITY

- WIDTH FOR DOOR AND WINDOW OPENING, (INC. 20MM MARGIN FOR PU FOAM) SHALL BE ACCURATELY LEFT.
- CHASE CUTTING FOR CONDUITING/ PLUMBING WORK MUST BE DONE BY USING THE MECANICAL CHASE CUTTER.
- CHASE CUTTING WOULD START AFTER 7 DAYS OF B/W COMPLETION.
- SHIFTING OF AAC BLOCKS AND FLY ASH BRICKS, IN EACH TOWER, (FROM THEIR RESPECTIVE STACKS AT GROUND), SHALL BE DONE VERY CAREFULLY. THERE SHALL NOT BE ANY WASTAGE DUE TO CARELESSNESS.

IMPORTANT POINTS FOR ASSURING BRICKWORK QUALITY

- MORTAR SHALL BE PREPARED USING MEASURING BOXES.THE MIXING OF MORTAR SHALL BE DONE IN MORTAR PAN OR SOME ARRANGEMENT BE MADE SO THAT MORTAR SHALL NOT BE IN DIRECT CONTACT WITH FLOOR SURFACE.
- THERE SHALL NOT BE ANY UNUSED MORTAR LEFT DURING LUNCH PERIOD.
- VERTICAL JOINTS IN THE ADJACENT COURSES SHALL BE STAGGERED.

IMPORTANT POINTS FOR ASSURING BRICKWORK QUALITY

- MASON MUST BE EQUIPED WITH SET SQUARE, PLUMB BOB, SPIRIT LEVEL, TAPE, WATER LEVEL PIPE, THREAD FOR KEEPING ALIGNMENT, TROWL, TOOL FOR RACKING OF JOINTS, VASOOLI ETC.
- INCASE OF HALF BRICK/BLOCK MASONRY, THE END GAP BETWEEN WALL AND BEAM SHALL BE FILLED UP BEFORE ELECTRICAL PEOPLE START DOING CHASES CUTTING, OTHERWISE THE CHANCES OF DAMAGE TO THE WALL ARE MORE AS IT IS FREE FROM ONE END.
- IT IS ALSO NOTICED THAT WHEREVER LIGHT IS NOT SUFFICIENT, SOME LIGHTING ARRANGEMENT SHALL ALSO BE MADE

IMPORTANT POINTS FOR ASSURING BRICKWORK QUALITY

- BRICK WHICH IS GOOD IN SHAPE SHOULD BE SELECTED FOR MAKING JAMB/ SILL OF DOOR AND WINDOW OPENING OR ANY OTHER LOCATION WHERE WIDTH OF THE WALL IS TO REMAIN EXPOSED.
- TOTAL HEIGHT OF BRICK WORK WHICH CAN BE ACHIEVED IN A DAY SHALL NOT BE MORE THAN 90 CM.

PLASTERING WORK NEEDS ATTENTION:

- BEFORE STARTING PLASTERING WORK, ALL THE RELEVANT DATAS, RELATING TO TYPE OF FINISH, SIZE OF ROOM, SIZE OF DOOR & WINDOW OPENING, TYPE OF FLOORING, PROVISION OF FALSE CEILING, etc. SHALL BE COLLECTED BY THE TOWER INCHARGE.
- CHIPPING OF BEAM & COLUMN SURFACE, IF IT IS NOT IN LINE WITH THE BRICK WORK.
- GAP BETWEEN BRICK WORK AND SLAB NEEDS TO BE FILLED WHEN PLASTERING IS DONE.

PLASTERING WORK NEEDS ATTENTION:

- LEVELS SHOULD BE MARKED AT 500MM HEIGHT FROM FFL IN LIFT LOBBIES, IN EACH FLOOR.
- ALL BRICK WORK, WHICH HAS BEEN DAMAGED DUE TO SERVICES, SHALL BE MADE GOOD BEFORE START OF PLASTERING.
- CHICKEN MESH TO BE PROVIDED OVER CHASE CUTTING WHEREVER TWO OR MORE CONDUITS ARE PROVIDED.

PLASTERING WORK NEEDS ATTENTION:

- NO GI/CI PIPES WOULD RUN IN SHAFT UNTIL PLASTERING OF THE INTERNAL WALL OF THE SHAFT HAS BEEN COMPLETED.
- PLASTER SHOULD BE SO ACCURATE THAT THE POP THICKNESS SHOULD NOT EXCEED BY 4MM.
- PLASTER SHOULD BE DONE TO THE FULL WALL HEIGHT IN ROOMS WHERE WOODEN FLOORING IS THERE.
- REPAIR OF BOTTOM, ‘JAD MARAMATT’ SHOULD BE DONE NEATLY AND CURING COMPOUND SHOULD BE USED THERE.

PLASTERING WORK NEEDS ATTENTION:

- NO PLASTER REQUIRED FOR JAMS OF DOORS IN HALF BRICK WALLS (INTERNAL). FRAMES SHALL BE FIXED WITH PU FOAMS DIRECTLY OVER THE BRICKS / AAC BLOCKS.
- HOWEVER, PLASTER IS REQUIRED ON THE JAMS OF THE MAIN DOOR FRAME TO RECEIVE THE PLY VENEER CLADDING. 1070X2410 MM OPENING NEEDS TO BE PROVIDED FOR MAIN DOOR.
- WHEREVER THE FALSE CEILING IS TO BE DONE, PLASTERING SHALL BE JUST 1” ABOVE THE FALSE CEILING LEVEL.

PLASTERING WORK NEEDS ATTENTION:

- PROVIDE THE GROOVE AT THE JUNCTION OF BRICK WORK AND BEAM AT THE TOP FLOOR.
- CENTRE OF THE FAN BOX NEEDS TO BE CHECKED BY THE ELECTRICAL DEPARTMENT IN EACH ROOM BEFORE PLASTERING WORK IS DONE.
- ENSURE THAT ALL THE ELECTRICAL BOXES ARE SEALED WITH THERMACOL AND CELLO TAPE, SO AS TO AVOID THEIR DAMAGE BY PLASTERING MORTAR.
- AT ALL THE JUNCTION BOXES AND FAN BOXES THE EDGES SHOULD BE SHARP.

PLASTERING WORK NEEDS ATTENTION:

- SPILT MORTAR TO BE USED INSTANTANEOUSLY.
- GROOVING NEEDS TO BE DONE AFTER SECOND COAT OF PLASTERING, USING PROPER SIZE WOODEN PHANTIE.
- AFTER A DAYS WORK THE WORK OF PLASTERING /POP SHALL BE CHECKED FOR IT LINE, LEVEL AND PLUMB.
- PLASTERING DATES NEEDS TO BE MENTIONED ON WALLS TO ENSURE ADEQUATE CURING

CRITICAL AREAS IN FINISHING:

- GRID MARKING IN CORRIDORS.
- STAIR CASE
- CORRIDOR
- LIFT AREA
- SHAFT IN SUNKEN PORTION
- SUPERVISOR'S ARE DIRECTED TO SAY HELLO TO EACH MASON AFTER EVERY 2 HRS.

WATER PROOFING WORK

- The work of water proofing is required to be executed in Sunken Area, i.e. in toilets & kitchen and in balconies. This work will be taken up only after the plumbing/ sanitary pipe work is completed.

- The area required to be provided with water proofing shall first be made clear of any external material, like concrete residue, dust, dry or wet garbage. At the same time any pointed formation over the surface of the floor shall also be removed.

- Final cleaning is done with the help of brush.

WATER PROOFING WORK

- The first coat of tapecrete slurry, shall than be applied in the ratio of 1:2 (1 polymer liquid: 2 cement), by weight. It is 0.126kg of polymer P-151required for covering an area of 1sqm. The surface of concrete shall be saturated wet. The entire mix shall be consumed before 45 minutes or so. The gap between two coats shall be 2 to 4 hours. No water is applied over the surface of water proofing unless all the coats are applied.

- Then, corner or junction (2.5cm x 2.5cm) of wall and slab, is taken up for applying one, additional coat of P-151 polymer, in the ratio of 1:2:5 (1 P-151 : 2 Cement : 5 Silica Sand), however using 0.10 kg of polymer P-151required for covering an area of 1sqm.

WATER PROOFING WORK

- After this second coat of Tapecrete Slurry is applied, in the same ratio as for first coat.
- Subsequently, third coat is also applied, with the difference that the consumption of P-151 will now be at the rate of 0.253 kg per Sqm.
- Finally, after 48 hours or so, 12mm thick 1:4 protection plaster is done, in order to save the coating of Tapecrete from some possible damage.
- The entire pipes periphery shall now be sealed with mortar.
- Hydro test than shall be conducted, to check the quality of water proofing.
- Filling in sunken area shall be carried out very carefully, so that the waterproofing is not get disturbed.