Technical specification

BRICK WORK

5.1 Indian standards

The following IS with latest revision apply to this section:

<table>
<thead>
<tr>
<th>LS. No.</th>
<th>Subject</th>
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</thead>
<tbody>
<tr>
<td>195-1963</td>
<td>Specification for fire clay mortar for laying fire clay refractory bricks (second revision)</td>
</tr>
<tr>
<td>702-1988</td>
<td>Specification for industrial bitumen (second revision)</td>
</tr>
<tr>
<td>1077-1986</td>
<td>Specification for common burnt clay building bricks (fourth reversion)</td>
</tr>
<tr>
<td>1526-1960</td>
<td>Sizes and shapes for fire bricks (230mm. series)</td>
</tr>
<tr>
<td>1580-1969</td>
<td>Specification for bituminous compounds for water proofing and caulking purposes (first reversion)</td>
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<tr>
<td>1905-1980</td>
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</tr>
<tr>
<td>2116-1980</td>
<td>Specification for sand for masonry mortars (first revision)</td>
</tr>
<tr>
<td>2386 (Part II) 1963</td>
<td>Methods of test for aggregates for concrete. Part II - Estimation of deleterious materials and organic impurities.</td>
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<tr>
<td>2691-1988</td>
<td>Specification for burnt clay facing bricks (second revision)</td>
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<td>4832 (Part II) 1969</td>
<td>Specification for chemical resistance mortars, Part II, Resin type.</td>
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<tr>
<td>5454-1978</td>
<td>Methods for sampling of clay building brick (first revision)</td>
</tr>
<tr>
<td>6165-1971</td>
<td>Dimension for special shapes of clays bricks.</td>
</tr>
</tbody>
</table>

MATERIALS

5.2 CEMENT

Unless otherwise indicated, Cement shall be Ordinary Portland cement, 43 grade conforming to IS 8112 of approved make/brand. Use of any other grade of cement in case of extreme emergency shall be with the specific approval from the consultant and Engineer – in – Charge.

5.3 DELETED

5.4 Sand for Masonry Mortars

Unless otherwise indicated, sand for mortars shall consist of natural sand, crushed stone sand or crushed gravel sand or a combination of any of these conforming to IS 2116-1980., specification for sand for masonry mortars. Sand shall be hard, durable, clean and free from adherent coatings and shall not contain clay and impurities such as iron pyrites, alkalis, salts, coal, mica, shale or similar laminated or other materials exceeding the specified limits.

5.4.1 The maximum quantities of clay, fine silt and fine dust in sand shall not be more than 5 percent by mass. Organic impurities shall be below that obtained, by comparison with the standard solution specified in 6.2.2 of IS 2386 (Part II)-1963. Method of test for aggregate for concrete, Part II Estimation of deleterious material and organic impurities.

5.5 DELETED
5.6 Common Burnt Clay Building Bricks

5.6.1 Common burnt clay building bricks (hereinafter termed as bricks) shall conform to the requirements laid down in IS 1077-1992, specifications for Common burnt clay building bricks. The class of bricks (based on minimum average compressive strength) viz 3.5(or35), 5(or50) as mentioned below, shall be as indicated. Bricks shall be neither overburnt nor under burnt and shall be free from cracks, or any other such defects.

5.6.2 Sub Class A bricks shall have smooth rectangular faces with sharp corners and shall be uniform in color. Sub Class 'B' bricks may have slight distorted and round edges provided no difficulty arise on this account in laying of uniform courses.

5.6.3 Dimensions: Size of bricks shall be as indicated. Standard of bricks are as under:

5.6.4 Tolerance:

<table>
<thead>
<tr>
<th>Type of Bricks</th>
<th>Nominal Size</th>
<th>Actual Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>Modular Bricks</td>
<td>20x10x10cm</td>
<td>19x9x9 cm</td>
</tr>
<tr>
<td>Old size Bricks(FPS)</td>
<td>9x4.5x3 inches or 23x11.3x7.5 cm or 25 x 12.5 x 7.5 cm</td>
<td>9x4-3/8x2-3/4 inches</td>
</tr>
</tbody>
</table>

Tolerance

The permissible tolerance on the dimensions of the bricks, unless otherwise indicated, shall be +/-3 Percent for Sub Class A bricks and +/-8 Percent for Sub Class B bricks. To verify conformity within tolerance limit, twenty whole bricks selected at random from the stack shall be arranged upon a level surface successively for measuring the length, width and height, in contact with each other and in a straight line.

5.6.5 General Quality:

Bricks may be hand or machine moulded and shall be made from suitable soils. They shall be free from cracks, flaws and nodules of free lime. Bricks of 7.5 and 10 cm thickness (height) shall be moulded with frog 1 to 2 cm deep on one of its flat faces. Bricks of 4 cm or 5 cm height and those by an extrusion process may not be provided with frogs.

5.6.6 Compressive Strength:

The compressive strength of any individual brick shall not fall below the minimum average compressive strength specified for corresponding class of brick.

5.6.7 Water Absorption:

The average water absorption of bricks, after immersion in cold water for 24 hours shall not be more then 20 percent for bricks upto class 12.5 and 15 percent for higher class of bricks.

5.6.8 Efflorescence:

The rating of efflorescence of the bricks shall not be more than moderate (For bricks upto Class 125)

5.6.9 Handling and Storage of Bricks:

Bricks shall not be dumped at site. They shall be stacked in regular tiers on even ground as they are unloaded to minimize breakage and defacement of bricks. Bricks selected for facing and any particular purpose / situation of use shall be stacked separately.

WORKMANSHIP

5.7 Masonry Mortars
5.7.1 Proportioning

Mortars shall be of the mix as indicated. The mixes specified are by volume. Mix proportions of cement mortars specified are in the proportions of cement to dry sand. If moist sand is used, necessary allowance shall be made for bulking.

Cement shall be measured by weight. 50 Kg of cement shall be taken as equal to 0.035 cum to determine bulk. The quantity of water to be added to the mortar shall be such that working consistency is obtained. Excess water shall be avoided.

5.7.2 Preparation of Cement Mortar:

Mixing shall be done preferably in a mechanical mixer. If done by hand mixing operation shall be carried out on a clean watertight platform. Cement and sand shall be mixed dry in the required proportion to obtain a uniform colour. The required quantity of water shall then be added and the mortar hoed back and forth for 5 to 10 minutes with additions of water to a workable consistency. In the case of mechanical mixing, the mortar shall be mixed for at least three minutes after addition of water. Cement mortar shall be freshly mixed for immediate use. Any mortar which has commenced to set shall be discarded and removed from the site.

5.7.3 Time of Use of Mortars:

Mortar with cement as an ingredient shall be used as early as possible after mixing, preferably within half an hour from the time water is added to the mix or at the latest within one hour of its mixing. The mixing of mortar shall be planned in such a way that the same is consumed with in half an hour considering the quantum of work and manpower deployment.

5.7.4 Workability of Masonry Mortars:

The working consistency of the mortar is usually judged by the worker during application. The water used shall be enough to maintain the fluidity of the mortar during application, but at the same time it shall not be excessive leading to segregation of aggregates from the cement.

5.8 Setting Out

All brickwork shall be set out and built to the respective dimensions, thickness and heights, as indicated.

5.9 Scaffolding

Scaffolding shall be strong to withstand all dead, live and impact loads which are likely to come on them. Scaffolding shall be provided to allow easy approach to every part of the work, overhand work shall not be allowed.

For exposed brick facing double scaffolding having two sets of vertical supports shall be provided. For brickwork, which is to be plastered over, single scaffolding may be provided. In single scaffolding one end of the putlogs shall rest in the hole provided in the header course of brick masonry. Not more then: one header for each putlog shall be left out. Such holes shall not be allowed in the case of pillars or narrow masonry portions between openings which are less than one meter in width or are immediately under or near the structural member supported by the walls. The holes left shall be made good on removal of scaffolding to match with the face work / surrounding area.

5.9.2 Timber or bamboo scaffolds shall be erected in accordance with the provisions contained in IS 3696 (Part 1)-1987, Safety code for scaffolds and ladders, Part I-Scaffolds, to ensure safety of workman and others. Steel scaffolding shall be erected in accordance with the provisions contained in IS 2750, Specification for steel scaffolding and relevant provisions of IS 3696 (part I).

5.10 Soaking of Bricks

Bricks shall be soaked in water before use for a period for the water to just penetrate the whole depth.
of the bricks. Alternatively bricks may be adequately soaked in stacks by profusely spraying with clean water at regular intervals for a period not less than six hours. When bricks are soaked, they shall be removed from the tank sufficiently early so that at the time of laying they are skin-dry. Such soaked bricks shall be stacked-on a clean place where they are not again spoiled by dirt, earth, etc.

NOTE : The period of soaking may be easily found at site by a field test in which the bricks are soaked in water for different period and then broken to find the extent of water penetration. The least period that corresponds to complete soaking will be the one to be allowed for in the construction work.

NOTE II : If the bricks are soaked for the required time in water that is frequently changed the soluble salts in the bricks will be leached out, and subsequent efflorescence will be reduced.

5.11 Laying

All loose materials, dirt and set lumps of mortar which may be over the surface on which brickwork is to be freshly started, shall be removed with a wire brush and surface wetted slightly. Bricks shall be laid on a full bed of mortar. When laying, the bricks shall be properly bedded and slightly pressed with handle of trowel so that the mortar can get into all the pores of the bricks surface to ensure proper adhesion. All the joints shall be properly flushed and packed with mortar so that no hollow spaces are left. Care shall be taken to see that the required quantity of water is added to the mortar to the mixing platform to obtain required consistency. Addition of water during laying of the course shall not be permitted. In case of walls two brick thick and over, the joints shall be grouted at every course in addition to bedding and flushing with mortar.

5.11.1 While using old size bricks (FPS conventional bricks) top courses of all plinths, parapets, steps and top of walls below roof slab or floor slab shall be laid with bricks on edge, applicable in case of traditional bricks unless directed otherwise. Care shall be taken that the bricks forming top courses and ends of wall are properly keyed into position.

5.11.2 Bricks shall be laid with frog up. However when the top courses are exposed, bricks shall be laid with frog down, care shall be taken to fill the frogs with mortar before embedding the bricks in position.

5.11.3 All quoins shall be accurately constructed and the height of courses checked with storey rods as the work proceeds. Acute and obtuse quoins shall be bonded, where practicable, in the same way as square quoins; obtuse quoins shall be formed with squint showing a three quarter bricks on the other.

5.12 Bond

All bricks work shall be built in English Bond, unless otherwise indicated. Half brick walls shall be built in stretcher bond. Header bond shall be used for walls curved on plan for better alignment. Header bond shall also be used in foundation footings; stretchers may be used when the thickness of wall renders use of headers impracticable. Where the thickness of footings is uniform for a number of courses, the top courses of the footing shall be of headers.

5.12.1 Half or cut bricks shall not be used except where necessary to complete the bond.

5.12.2 Overlap in stretcher bond is usually half bricks and is obtained by commencing each alternate course with a half bricks. The overlap in header bond, which is usually half the width of the bricks, is obtained by introducing a three quarter bricks in each alternate course at quoins. In general, cross-joints in any course of brickwork shall, not be nearer than a quarter of bricks length from those in the course below or above it.

5.13 Uniformity

The bricks work shall be, built in uniform layers; corners and other advanced work shall be raked back. No part of a wall during its construction shall rise more then one meter above the general construction level, to avoid unequal settlement Parts of walls left at different levels shall be properly raked back. Tooothing may be done where future extension is contemplated but shall-not be used as
an alternative to raking back.

For Half brick partition to be keyed into main walls, indents shall be left in the main walls.

5.14    Alignments and Prepends

The walls shall be taken truly plumb or true to the required batter, where specified. All courses shall be laid truly horizontal and all vertical joints shall be truly vertical. Vertical joints in the alternate courses shall come directly one over the other. (Quoins, jambs, and other angles shall be properly plumbed as the work proceeds. The maximum permissible tolerance in masonry shall be as under:

(a) Deviation from vertical within a storey per 3m height       6mm
(b) Deviation from vertical in the total height of a building 12.5mm
(c) Deviation of bed joints from horizontal
   (i) in any length upto 12m                                6mm
   (ii) in any length over 12m                               12.5mm total

5.15 Thickness of Joints .

Thickness of joints shall be such that four courses and three joints taken consecutively shall measure as follows unless otherwise specified:
   (i) Old size brick -Equal to four times of actual thickness plus 4cm
   (ii) Modular brick -Equal to 39 cm

In cases of soakage pits, cesspools, manholes and the like, the thickness of joints upto 15mm may be adopted. Where brick work to match the existing work, the joints shall be of the same thickness as in the existing work.

5.16 Striking Joints

Where no pointing, plastering or other finish is indicated, the green mortar shall be neatly struck flush. Where pointing, plastering or other finish is indicated, the joints shall be squarely raked out to a depth not less than 10mm for plastering and 15mm for pointing.

5.17 Protection against damage

Care shall be taken during construction that edges of jambs, cills, heads etc. are not damaged. In inclement weather, newly built work shall be covered with gunny bags or tarpaulin so as to prevent the mortar from being washed away.

5.18 Curing

The brick work shall be constantly kept wet for at least seven days.

5.19    Facing

In case of walls one bricks thick and under, at least one face shall be kept even and in 'proper plane, while the other face may be slightly rough. In case of walls more then one brick thick, both the faces shall be kept even and in proper plane.

For exposed brickwork selected brick of the specified class and subclass shall be used for the face work. Where however, use of facing bricks is indicated; brick walls shall be faced with facing bricks. No rubbing down of brick work shall be allowed.
Brick work shall be plastered pointed or otherwise finished, as indicated. Joints of external faces of brick walls in foundation up to 15 mm below ground level and of internal faces of bricks walls in foundation and plinth below sub-floor level shall be struck flush when the mortar is green, as the work processed.

5.20 Cleaning

Face of brickwork shall be cleaned on the same day it is laid and all mortar droppings removed.

5.21 Brickwork Curved on Plan

Brickwork Curved on Plan to a radius exceeding 6m shall be built as described for general brickwork but where the inner radius is 6 meter or less, all courses shall be of header with bricks roughly cut to the radius wedge shaped joints, unless otherwise indicated.

5.22 Architectural features

5.22.1 Architectural brickwork shall be laid integral with brickwork so as to form proper bond with the main work and in such a way that the main structure is not weakened. In corbels, over sailing courses etc. no course shall project more than one fourth of the brick length beyond the course immediately below. In such cases, all bricks shall be laid as headers. The bricks shall be purpose made were specified or cut and dressed to the required shape wherever necessary. Mitres and stops to splayed bull nosed, rounded or moulded angles, rebates, etc. shall be provided as required or directed.

5.22.2 In important works a special template (wooden or, steel) shall be prepared as per drawing to guide the laying of bricks in moulded work. Where plastering is specified, the template shall be prepared taking into account the thickness of plaster.

5.23 Half Brick Walls-Reinforced

The bricks shall be laid in stretcher bond in cement and sand mortar (1:4) or as indicated. The reinforcement may be in the form of mild steel flat or round bars or deformed bars as indicated and as described. The diameter of bars or thickness of flats bars shall not exceed 8 mm. In case where the reinforcements cross inside a joint, the diameter/thickness of reinforcement shall not exceed 8 mm. The reinforcement shall be used in every third courses of the brickwork. They shall be securely anchored at their ends where the partitions bond. The inlaid steel reinforcement shall be completely embedded in mortar. Overlaps in reinforcement, if any shall be not less than 30 cm. The cover that is the mortar interposed between the reinforcement bar and brick shall be not less than 6 mm. The mortar covering the direction of joints shall be not less than 15 mm.

5.24 Construction Details

5.24.1 Chases, Rebates, Reveals, etc.:

Chases, Rebates, Reveals, etc., shall be formed in wall as required to receive frames, floors, pipes, conduits, corrugated sheets, etc. as required or indicated.

5.24.2 Beam Filling:

Beam filling shall be executed to the full thickness of the walls by cutting and fittings brickwork around ends of rafters, joists, etc., and leaving air-space where directed and making good in mortar as for adjacent brickwork.

5.24.3 Bedding Wall Plates, etc.:

Wall plates lintels, templates, cover stones, etc. shall be bedded in the same mortar as for adjacent brickwork unless otherwise indicated and finished to match brickwork. Walls shall be levelled and prepared to receive wall plates, etc., as required.

5.24.4 Fixing of Wooden Frames
Timber doors and windows frame shall be fixed as the brick work proceed without gap between the masonry and the frames. The doors and windows frames may also be fixed in prepared opening at contractor's option. Fixing shall be done generally with hold fasts securely embedded in the brick work. The chases shall later be filled up with cement and sand mortar (1:3) or concrete (1:2:4) type B-O in case of bigger chases. Hold fasts shall be fixed in the brick work for the specified length and then turned up at the end into a cross joint. Hold fasts shall be given with protective coat of bitumen to avoid rusting. Wooden faces in contact with brick work shall be treated with good preservative as indicated.

5.24.5 Fixing of Metal Frames:

Metal frames shall be fixed into prepared openings and not built in as the walls go up. Steel doors and windows shall be fixed in the openings as described in "Steel and Iron work".

5.24.6 Holes for pipes etc:

All necessary holes for pipes, air flues, ventilators, etc. and mortices, where required for dowels, bolts, etc., shall be cut or formed as work proceeds and grouted in cement and sand mortar 1:3 or cement concrete 1:2:4 as required and made good.

5.24.8 Provision for Services Installations:

To facilitate taking service lines later without inordinate cutting of completed work, sleeves and chases shall be provided during the construction itself.

5.24.9 Fastening and Fixing stocks:

All holdfasts, securing bolts and other fixings for fittings etc., shall be securely built in as the work proceeds. Such sleeves in external walls shall be sloped down outward so as to avoid passage of water inside.

5.24.10 Bearing of Floors, Roofs, etc:

Tops of walls bearing the edges of RCC floors, roof slabs, beams or lintels shall be finished with a layer of cement mortar (1:4), 15 mm thick and the plastered surface while washed; unless otherwise indicated. Where the bottom of slab does not coincide with the level of brick course after cement plaster, the level shall not be made up with cut bricks. The gap shall be made-up either by increasing the thickness of slab at bearing or where feasible by using brick tiles, so that the bearing is directly on the plaster layer.

**PLASTERING AND POINTING**

14.1 Indian Standards

The following IS apply to this Section:

<table>
<thead>
<tr>
<th>I.S.No.</th>
<th>Subject</th>
</tr>
</thead>
<tbody>
<tr>
<td>1542-1977</td>
<td>Specification for sand for plaster (First revision)</td>
</tr>
</tbody>
</table>

14.2 Definitions

(a) The term 'Plastering' shall cover all type of rough or fair finished plastering, rendering, floating and setting coat or finishing coat, screed, etc., in cement mortar.

(b) “Dubbing out” shall mean filling in hollows in the surface of wall and roughly leveling up irregular or out of Plumb surface prior to rendering.
"Rendering" or "rendering out" shall mean the plaster coat, which is applied following the "Dubbing out" or the final coat in case of one coat work.

"Floating coat" shall mean the second coat in a three coat plaster work, to bring the rendering coat to a true and even surface before the setting or finishing coat is applied.

'Setting or Finishing coat' shall mean final coat in a two or three coat Plaster work.

"Thickness of Plaster' shall mean the minimum thickness at any point on a surface. This dose not include thickness of dubbing out.

The term "even and fair" as referred to finishing of the plastered surface shall mean a surface finished with a wooden float;

The term "even and smooth" as referred to finishing of the Plastered surface shall mean a surface leveled with wooden float and subsequently smoothed with a steel trowel.

MATERIALS

14.3 Cement

Unless otherwise indicated, cement shall be .Ordinary Portland Cement 43 grade confirming to IS-8112-1989 as specified in Section for concrete.

14.4 DELETED

14.5 Sand

Unless otherwise indicated, sand for plastering and pointing shall conform to IS 1542-1977, Specification for sand for Plaster. Sand shall consist of natural sand, except where, crushed stone sand or crushed gravel sand or a combination of any of these are indicated. The sand shall be hard, durable, clean and free from adherent coating and organic matter and shall not contain any appreciable amount of clay balls. Sand shall be obtained from approved sources.

14.5.1 Deleterious Materials:

Sand shall not contain any harmful impurities such as iron pyrites, alkalies, salts, coal, mica shade or similar laminated materials, soft fragments, sea shells and Organic impurities in such quantities as to affect adversely the hardening, the strength and the durability or the appearance of the Plaster or applied decoration or to cause corrosion of metal lathing or other metal in contact with Plaster. The maximum quantities of clay, fine silt, fine dust shall be not more than 5 per cent by weight. Origin impurities in the sand shall not exceed the following limit 'that the colour of the "liquid is low that indicated by comparison with the standard solution specified 6.2.2. of IS 2386 (Part II)-1963'.

14.5.2 The particle size grading of sand for plaster and pointing work shall be as under, unless otherwise specified to conform to the sample maintained by the GE for the purpose.

<table>
<thead>
<tr>
<th>IS Sieve designation</th>
<th>Percentage Passing by Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>10mm</td>
<td>100</td>
</tr>
<tr>
<td>4.75 mm</td>
<td>95-100</td>
</tr>
<tr>
<td>2.36 mm</td>
<td>95-100</td>
</tr>
<tr>
<td>1.18mm</td>
<td>90-100</td>
</tr>
<tr>
<td>600 microns</td>
<td>80-100</td>
</tr>
<tr>
<td>300 microns</td>
<td>20-65</td>
</tr>
<tr>
<td>150 microns</td>
<td>0-5</td>
</tr>
</tbody>
</table>

NOTE : Where the grading falls outside the limits of grading zones of sieves other than 600 micron IS sieve by a total amount not exceeding 5 percent, it shall be regarded as falling within the grading. This tolerance shall not be applied to percentage passing the 600 micron IS sieve or to percentage passing any other sieve size on the finer limit.
NOTE:- Sand whose grading falls outside the above limits shall be processed to comply with the standard by screening through a suitably sized sieve and/or blending with required quantities of suitable sizes of sand particles.

14.6 Aggregates

All aggregates other than sand shall conform to IS 383-1970, Specification for course and fine aggregates from natural sources for concrete. Refer Section 4-concrete.

14.7 Integral water Proofing Compound

Refer Section 4-Concrete.

14.8 Metal Lathing

Metal Lathing shall be of wire netting or expanded metal is indicated.

14.9 Lime Putty (Neeru)

Lime Putty shall be obtained by slaking fat lime with fresh water and sifting it. Putty shall be kept moist until used and the quantity prepared at a time shall not be more than that can be consumed in 7 days.

14.10 Water

Water used for mixing and curing shall be clean, free from deleterious matter and also from unusual proportions of dissolved salts. Sea water or tidal actuary or brackish water shall not be used. Water fit for drinking is normally suitable.

WORKMANSHIP Scaffolding

Where possible, independent scaffolding shall be used to obviate the subsequent restoration of masonry in put log and other bricks in the work. Stage scaffolding shall be provided for ceiling plaster.

Preparation of Mortar for Plastering and Pointing Cement and Cement Lime Mortar:

These shall be prepared as described in Section 5-brickwork. These shall quantities as required and applied within 30 minutes of mixing.

Proportioning Mixes:

All mixes specified are by volume.

Preparation of Background for Application of Plaster Cleanliness:

All dirt, dust and other foreign matter on masonry and laitance on the concrete surface shall be removed by watering and brushing as required. If the background contains soluble salts, particularly sulphates, the application of plaster shall be done only after the efflorescence of the salt is complete and the efflorescence is completely removed from the surface. Any trace of algae or moss formation shall be removed.

Joints in brickwork, stone masonry and hollow block masonry be racked out to a depth of not less then 10 mm as the work proceeds. Local projections in brickwork and masonry beyond the general wall face shall be trimmed off where necessary.

Roughness:

Smooth surfaces of in-situ concrete walls and ceilings etc. shall be roughened by wire brushing, if it is not hard; and by hacking or bush hammering if it is hard, to provided for proper adhesion. Projecting
burrs of mortar because of gaps at joints in shuttering shall be removed. The surface shall be scrubbed clean with wire brushes. In addition concrete surface shall be pock marked with a ponot less than 3 mm deep.

**Suction Adjustments:**

Adequate drying intervals shall be made by tool at spacing of about 50 mm, the pocks made to be allowed between the erection and plastering to bring the surface suitable for suction adjustment. High rate of suction makes the plaster weak porous and friable. The wall shall not be soaked but only damped evenly before applying the plaster. If the surface becomes dry in spots, such areas shall be moistened again to restore uniform suction. Excessive water leads to failure of bond between the plaster and the background.

**Evenness:**

Any local unevenness must be leveled and projections removed to avoid variance in thickness of plaster.

**14.13.6 Immobility**

Differential movements between the background and the plaster due to moisture change, temperature change, structural settlement, deflection, etc. causes cracks. The major part of such movements shall be allowed to set in before the plaster is applied.

**14.13.7 Precaution against Discontinuity Background:**

All straight cut groove through the plaster at the junction of wall to ceiling may be provided where directed.

**14.13.8** Holes left in the wall after removing scaffolding, shall be field up with the respective masonry and the patch plastered up true and in conformity with rest of the wall so that no sign of Patch work shows cut.

**14.14 Plastering-Generally**

14.14.1 The type and mix of mortar for plastering, the number of coats to be applied, and surface finish of the plaster and the background to which the plaster is to be applied shall be as indicated.

14.14.2 The mortar of dubbing out and rendering coat shall be the same type and mix. Dubbing out may be executed as a separate coat or along with the rendering coat.

14.14.3 Plastering operations shall not be started until all necessary fixtures such as door and window names, mantle pieces are completed and all pipes and conduits to be embedded have been installed and surface to be plastered have been passed by the EIC.

**14.14.4 Protection:**

All existing work and fitting that are likely to be damaged in the application of plastering shall be protected. Care shall be taken to avoid, as far as possible, the splashing of mortar on to the finished surfaces such as joinery, paintwork and glazing; all such splashes shall be cleaned off immediately.

14.14.5 Screeds 15x15 cm shall be, laid vertically and horizontally not more than 2m apart to serve as guide in bringing the work to an even surface.

14.14.6 Plastering shall be done from top to bottom and care shall be taken to avoid joints in continuous surface.

**14.14.7 Maintenance of Proper Time Intervals:**

To avoid breakdown of adhesion between successive coats, drying shrinkage of first coat shall be allowed to be materially completed before a subsequent coat is applied.
14.14.8 All comers arises angles, junctions shall be truly vertical or horizontal as the case may be and shall be carefully finished. Rounding or chamfering of comers, arises and junctions shall be carried out with proper templates to the required size. Plastering of cornices, decorative features, etc. shall normally be completed before the finishing coat is applied.

14.14.9 In suspending the work at the end of the day, the plaster shall be cut clean to the both horizontally and vertically. When recommencing the plastering, the edge of the old work shall be scraped clean and wetted with cement slurry before plaster is applied to the adjacent area.

14.14.10 Partially set and dried mortar shall not be retampered for use.

14.14.11 Cleaning on completion: On completion all work affected by plastering and pointing shall be left clean special care shall be taken when removing any set mortar nom glass and joinery, etc. to avoid damaging their surface.

14.14.12 Trueness of Plastering System:
The finished plaster surface shall not show any deviation more than 4 mm when checked with straight edge of 2 m length placed against the surface.

14.15 One Coat Plaster Work

Mortar shall be firmly applied to the masonry walls and well pressed into the joints and forcing it into surface depressions to obtain a permanent bond. The plaster shall be laid in a little more than the required thickness and leveled with the wooden float. On concrete walls, rendering shall be dashed on to roughened surface to ensure adequate bond. The dashing of rendering coat shall be done using a strong whipping motion at right angles to the face of walls. The surface shall be finished even and fair, unless indicated to be finished even and smooth.

14.16 Two coat Plaster Work

14.16.1 First Coat:

The first coat of the specified thickness shall be applied in a manner similar to one coat plaster work. Before the first coat hardness, the surface of the cement plaster shall be scored to provided key for second coat. The rendering coat shall be kept damp for atleast two days. It shall then be allowed to become thoroughly dry.

14.17.3 Finishing coat

Before starting to apply the finishing coat, the second coat shall be damped evenly. Mortar shall be applied from top to bottom, wherever possible, in the operation to eliminate joining marks. The surface shall be finished as specified for one coat plasterwork.

14.18 Neeru Finish

After applying and finishing the undercoats and before they set the finishing coat of specially prepared lime putty about 1.5 mm thick shall be well polished with a trowel.

14.19 Sand faced Plaster

After the undercoat of cement and sand mortar 1:4., not less than 10 mm thick, has been applied and finished, the final coat of cement and sand mortar 1:4 shall be applied to a thickness not less than 5 mm and brought to an even surface with a wooden float. The surface shall than be tapped gently with a wooden float lined with cork to retain a coarse surface texture; care being taken that the tapping is even and uniform.

14.20 Curing

Each coat shall be kept damp, continuously for at least two days. Moistening shall commence as soon as the plaster has hardened sufficiently and is not susceptible to injury.” The water shall be applied preferably by using a fine fog spray. Soaking of wall shall be avoided, and only as much water as can be readily absorbed shall be used. Excessive evaporation on the sunny or windward sites of buildings in hot dry weather shall be prevented by hanging mattings or gunny bags on the outside of the plaster
and keeping them wet.

14.20.1 After the completion of finishing coat, the plaster shall be kept wet for at least seven days and shall be protected during that period from extremes of temperature them wet.

14.21 Water Proofing Plaster

Integral water proofing compound shall be mixed with cement in the proportion indicated by weight. Care shall be taken to ensure waterproofing material gets well and integrally mixed with cement and does not run out separately when water is added.

14.22 Metal Lathing

Lathing shall be tightly stretched before nailing and secured with 25 mm galvanized steel staples at 20 cm centers, if the studding is of wood and with 0.90 mm iron tying if the studding is of steel. Edges of lathing shall be lapped 50 mm at the sides and wired together with 1.25 mm tying wire. Overlaps shall not occur at angles or curves. End laps shall occur only at supports. Before plastering the surface of metal lathing shall be brushed over with thin cement slurry.

14.23 Pointing

14.23.1 The type and mix of mortar for pointing and the type of pointing shall be as indicated.

14.23.2 Racking out joints

Joints of new brick work or block or stone masonry shall be raked out (without damaging the brick work or masonry) when the mortar is green to such a depth that the minimum depth of new mortar measured from either the sunk surface of the finished pointing or from the edge of the brick / block shall not be less than 10 mm. The raked out joints shall be well wetted before application of mortar.

14.23.3 Application of Mortar and Finishing:

The mortar shall be pressed firmly into the raked out joints, with a pointing trowel according to the type of pointing required. The mortar shall not be spread over the corners, edges or the surface of the masonry. When pointing is air dry, it shall be rubbed smooth with the trowel and shall then be finished with proper tool. The surface of masonry shall be cleaned of all mortar.

14.23.4 Pointing on Random Rubble / Polygonal Rubble Stone Masonry:

The pointing shall follow the natural irregularities in line and surface of stone.

14.23.5 Raised Pointing (Masons V Joints and Bastrad Truck): Raised pointing shall project from the wall facing with its edges cut parallel so as to have a

14.23.6 Curing: The pointing shall be kept wet for seven days. During this period it shall be suitably protected from all dangers