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3.0 MASONRY

3.1.1 Scope

The Work under this section consists of providing and constructing all masonry true to lines & levels as shown on the drawings and as specified herein.

The work shall be co-ordinated in such a manner that built-in items such as flashing, dowels, anchor bolts, doors/window, frames, conduits and outlet boxes etc. are furnished and installed as the masonry work progresses.

It includes supply by the Contractor of all materials, labour, plant, tools, scaffolding, curing etc. complete in all respect as required for the work.

List of IS Codes.

1)	IS:1661	-	Code of practice for cement lime plaster finish on walls & ceilings
2)	IS:4101	-	Code of practice for external facings & veneers
3)	IS:1597 (Parts 1 & 2)	-	Code of practice for construction of stone masonry
4)	IS:1609	-	Code of practice for laying damp proofing treatment using bitumen felts.
5)	IS:2212	-	Code of practice for Brick work
6)	IS:2250	-	Code of practice for preparation and use of masonry mortar
7)	IS:2185	-	Specification for concrete masonry units
	IS:2185 (Part 1)	-	Hollow & Solid concrete blocks of normal weight
	IS:2185 (Part 2)	-	Hollow & Solid light weight concrete blocks
	IS:2185 (Part 3)	-	Autoclaved Cellular (aerated) concrete blocks
8)	IS:2572	-	Code of Practice for construction of Hollow Concrete Block Masonry

3.2 Brick Masonry

3.2.1 Material

3.2.1.1 First Class Bricks

These shall be sound, hard tough, rectangular in shape and size, well burnt of uniform deep red, cherry or copper colour and shall conform to IS:1077. No overburnt or underburnt bricks shall be used.

The bricks shall be of approved make and free from modules of tree lime, cracks, flaws, chips, stone or humps of any kind. These shall not show any sign of efflorescence. The nominal size shall be 23 x 11.5 x 7.5 cm. These shall have sharp and square sides and parallel faces to ensure uniformity in the thickness of the course of brick work. All bricks shall be machine moulded and kiln burnt if not otherwise approved by the Engineer. The bricks shall be homogeneous in texture and give a clear ringing sound on being struck, and shall have minimum compressive strength of 50 kg/sq.cm or as specified and shall not absorb water more than 20% of its dry weight when soaked in cold water at room temp. for 24 hours.

3.2.1.2 Second Class Bricks

These shall conform to specifications for 1st class bricks except that some surface cracks are allowable. these shall have minimum compressive strength of 35 kg/sq.cm

3.2.1.3 Locally Available Bricks

In case 1st class bricks are not available, then locally available best quality brick samples will be submitted for the approval of Engineer. However, the Compressive strength of locally available bricks shall not be less than 35 kg/sq.cm.

Bricks to be used shall be approved by the Engineer. Samples of such approved bricks shall be deposited with Engineer and all the bricks brought subsequently therein after for construction shall be as per approved samples. All the bricks should be unloaded by hand. Bricks shall be carefully and systematically stacked at locations as directed by the Engineer. Such stack shall contain equal number of bricks preferably not more than 3000 Nos.

Engineer may order the following tests on bricks: Dimensional tolerance, Water absorption, Efflorescence, Compressive strength. The contractor shall arrange for tests as required without extra payment.

3.2.1.4 Sand

This shall be dry coarse sand of approved quality conforming to IS:383. 100% of the sand shall pass through I.S. sieve No. 240 and not more than 15% to 35% through Sieve No.30. Sand shall have a fineness modulus between 2.1 to 2. Sand shall be clean angular free from dust, clay or any other impurities. Percentage of clay or total impurities shall not be more than 5% by weight.

Sand for use in masonry mortar shall conform to IS:2116 including grading. Sand for use in plaster shall conform to IS:1542 including grading.

3.2.1.5 Mortar

Brick work shall be laid with specified Mortar to be prepared in accordance with IS:2250. It shall be made of cement and sharp coarse sand and shall be made in small quantities so as to be used within 30 minutes. The cement and sand in the required proportion., and classification shall be first mixed dry thoroughly and then water added and mixed to a sufficiently thick consistency as required by the Engineer. No left over mortar shall be used. Mortar which has partially set shall not be retempered by mixing additional material or water.

The unit of measurement for cement shall be of a bag of cement weighing 50 Kg. and shall be taken as 0.035 cu.m. Other ingredients in specified proportion shall be measured in boxes of 25 x 35 x 40 cm size. Sand shall be measured on the basis of dry volume. In case of damp sand, its quantities shall be increased suitably to allow for bulkage.

Mortar proportions will be as follows : [If not otherwise mentioned]

1) One cement and 6 sand for all brickwork in foundation.
2) One cement and 5 sand for all brickwork in superstructure.
3) One cement and 4 sand for 115 mm thk. partition walls.

3.2.2 Soaking of Bricks

Bricks required for masonry shall be thoroughly soaked in clean water before use for at least six hours until air bubbles cease to come out. The practice of dipping the bricks in water just before use shall not be allowed. The soaked bricks shall be kept on wooden planks or brick platform to avoid earth being smeared on them.

3.2.3 Laying

Brick work shall be laid in English Bond unless otherwise specified. Half or cut bricks shall not be used except where needed to complete the bond. Each course shall be perfectly straight horizontally and transversely. The walls shall be taken up truly plumb; if battered, the batter is to be truly maintained. The level of the brick work in vertical walls shall be checked up at every one metre interval.

Bricks shall be laid with frogs upward. While laying, bricks shall be thoroughly bedded and flushed in mortar and tapped into position with a wooden mallet and the superfluous mortar removed.

Walls of all structures shall be carried up regularly in all cases, leaving no part, one metre lower than another. If this cannot be adhered to the brick work shall be racked back at an angle not more than 45°, so as to maintain a uniform and effectual bond, but racking back should not start within 60 cm of a corner.

Partially or totally set exposed surface of the masonry shall be cleaned, roughened and lightly wetted so as to obtain the best possible bond with new work. All loose bricks and mortar shall be removed. All masonry walls shall be bonded. Each course at corners and intersections and shall be bonded or anchored to connecting work.

No deductions or additions in measurement shall be made on any account for the following:

a) ends of dissimilar materials(i.e joints, beams, lintels, posts,girders, rafters, trusses, corbels, steps etc.) upto 500 sq.cm. in section and

b) opening upto 0.1 sq.m in section. However, full deduction from masonry work shall be made for notches kept in the wall for pipeline.

At all angles forming the junction of any two walls, the brick shall, at each alternate course, be carried into each of the respective walls so as to thoroughly unite the work. The brick work shall not be raised more than 14 courses per day.

All iron fixtures, pipes, conduits, drains, sleeves, bolts, hold fasts for doors and windows etc. which are required to be built in walls, shall be embedded in cement mortar or cement concrete as specified as the work proceeds.

All uneven, irregular and disturbed brick work shall be pulled down and rebuilt with fresh bricks at the contractor's expenses.

3.2.4 Joints

Thickness of joints shall be restricted to 6mm in first class brick work and 10mm in second class brick work (unless any wider vertical joints upto 13mm are necessary to give the required thickness of the wall).

All bed joints shall be normal to the pressure acting upto them i.e. horizontal in vertical walls, radial in arches and at right angles to the face in battered relating walls. The vertical joints in alternate course shall come directly one over the other and shall be truly vertical. Care shall be taken that all joints are fully mortared (proportion as specified Schedule of Items) well flushed up and in case where no pointing is to be done neatly struck as the work proceeds. The joints in faces which are to plastered or pointed shall be squarely raked out to a depth of 12 mm while the mortar is still green. The raked joint shall be well brushed to remove the loose particles. At the junction of concrete and masonry wall, G.I. Chicken wire mesh, 150 mm wide and 22 SWG shall be provided, prior to plastering. After the work, the faces of brick work shall be cleaned with wire brush so as to remove any splashes of mortar during the course of raising the brick work.

3.2.5 Curing

Green work shall be protected from rain by suitable covering. Masonry work as it progresses be kept thoroughly well watered on all faces for atleast 7 days after completion. Proper watering can with nozzles must be used for this purpose. The top of masonry work shall be kept flooded at the close of the day by forming fillet or mortar 40mm high round the edges of top course and filled with water.

3.2.6 Scaffolding

Double scaffolding sufficiently strong so as to withstand all loads likely to come upon it and having two sets of vertical supports shall be provided. Where two sets of supports are not possible the inner end of the horizontal scaffolding pole shall rest in a hole provided in the header course only.

Only one header for each pole shall be left out. Such holes however shall not be allowed in pillars under one metre in width or immediately near the skew backs of arches. Such holes shall be filled up immediately after removal of scaffolding.

3.2.7 Brick work in partition walls

It will be carried out as detailed in brickwork above, except concrete band of 115 x 75 mm in M-15 grade concrete and 8 dia. tor steel bars tied with 8 dia. tor steel stirrup @300 c/c to be provided at 90 cm. interval. Suitable dowels shall be left from RC columns or shall be welded with steel stanchions. Half brick walls shall have bricks laid in stretcher bond.

3.3 RUBBLE MASONRY

3.3.1 Stone

The stone for the works except where otherwise described shall be of the best quality procurable complying with IS:1597 (Part 1). No stone with flaws, or traversed with seams of perishable materials or quarry faced, or otherwise in any way defective shall be allowed to be used and the Engineer may reject and refuse to permit the use of any stone which, in his opinion, is unfit for the work.

3.3.2 Method of laying

Stone Masonry, wherever required, shall conform to the requirements of IS:1597 and shall be composed generally of large stone weighing about 25 kgs. The corner stones shall be squared on all joints and beds, and shall be hammer and chisel dressed, true and square for atleast 75 mm back from the corner face, and the joints for atleast 40 mm. The faces of the stones to be hammer dressed, and "bushing" shall not project more than 40 mm. The stone shall be clean, flat bedded, properly selected for their places and carefully laid with a suitable proportion of smaller stones and chips to fill up the interstices. The mortar including the constituents shall conform to the requirements of IS:2250.

The Masonry work shall be done in C.M. (1:6) or as directed by Engineer. The masonry shall be uncoursed or brought to courses as specified. The whole masonry shall be hand set solidly bedded and surrounded with mortar on every side except the face. There shall be no hollows or dry portions in work nor pinning in the face and no joint shall be more than 10mm thick. The face stone shall be flat bedded. Through stones covering the whole width or thickness of the walls, or 600 mm long where the walls are thicker than 600 mm are to be provided. At least one bond stone or a set of bond stones shall be provided for every 0.5 sq.m. of area of wall surface. The faces of the walls shall be strictly straight. The masonry shall be shaded from the sun, and kept wet for not less than 7 days after completion.

All fixtures plugs, frames shall be placed securely as the work proceeds and not after completion of the masonry.

3.4 CONCRETE BLOCK MASONRY

3.4.1 Hollow and solid concrete blocks:

These shall conform to the requirements of IS:2185 - Specification for hollow and solid concrete blocks except with regard to the mix of cement concrete and sizes of aggregates which shall be as indicated. Hollow blocks shall be sound, free from cracks, broken edges, honey combing and other defects that would interfere with the proper placing of block.

3.4.1.1 The concrete mix used for blocks shall not be richer than 1 part by volume of cement to 6 parts by volume of combined aggregate before mixing.

3.4.2 Dimensions and Tolerances

3.4.2.1 Concrete masonry building units shall be made in sizes and shapes to fit different construction needs. They include stretcher, corner, double corner or pier, jamb, header, bull noise, and partition block.

3.4.2.2 Concrete Block-hollow (open or closed cavity) or solid shall be referred to by its nominal dimensions.

The nominal dimensions of concrete block shall be as follows:

Length	:	400, 500 or 600 mm
Height	:	200 or 100 mm
Width	:	50, 75, 100, 150, 200, 250 or 300 mm

In addition, block shall be manufactured in half lengths of 200, 250 or 300 mm to correspond to the full lengths.

The maximum variation in the length of the units shall be not more than ± 5 mm and maximum variation in height and width of unit, not more than ± 3 mm.

3.4.3 Classification

3.4.3.1 Hollow (open and closed cavity) Concrete Blocks:

The hollow (open and closed cavity) concrete blocks shall conform to the following three grades:

(a) Grade 'A' – These are used as load bearing units and shall have a minimum block-density of 1500 kg/cu.m. These shall be manufactured for minimum average compressive strengths of 3.5, 4.5, 5.5 and 7.0 N/mm^2 respectively at 28 days (See Table below).

(b) Grade 'B' – These are also used as load bearing units and shall have a block density less than 1500 kg/cu.m but not less than 1000 kg/cu.m. These shall be manufactured for minimum average compressive strengths of 2.0, 3.0 and 5.0 N/mm^2 respectively at 28 days (See Table below).

(c) Grade 'C' – These are used as non-load bearing units and shall have a block density less than 1500 kg/cu.m. but not less than 1000 kg/cu.m. These shall be manufactured for minimum average compressive strength of 1.5 N/mm^2 at 28 days (see Table below).

Solid Concrete blocks shall conform to:

(d) Grade 'D' – The solid concrete blocks are used as load bearing units and shall have a block density not less than 1800 kg/cu.m. These shall be manufactured for minimum average compressive strengths of 4.0 and 5.0 N/mm^2 respectively (See Table below).

3.4.4 Physical Requirements

3.4.4.1 Compressive Strength – The average crushing strength of eight blocks, when determined in accordance with IS:2185 shall be not less than as specified in table given below.

TABLE

Type	Grade	Density of Block Kg/mm^3	Min. Average Compressive Strength of Units N/mm^2	Min. Strength of Individual Units N/mm^2
(1)	(2)	(3)	(4)	(5)
Hollow (open & closed cavity) load bearing unit	A(3.5) A(4.5) A(5.5) A(7.0) B(2.0) B(3.0) B(5.0)	Not less than 1500 Less than 1500 but not less than 1000	3.5 4.5 5.5 7.0 2.0 3.0 5.0	2.8 3.6 4.4 5.6 1.6 2.4 4.0
Hollow (open and closed cavity) non-load bearing units	C(1.5)	Less than 1500 but not less than 1000	1.5	1.2
Solid load bearing units	D(5.0) D(4.0)	Not less than 1800	5.0 4.0	4.0 3.2

3.4.4.2 Drying Shrinkage – The drying shrinkage of the blocks (average of three blocks), when unrestrained, shall be determined in accordance with IS:2185 and shall not exceed 0.1 percent.

3.4.4.3 Moisture Movement – The moisture movement (average of three blocks), when determined in the manner described in IS:2185, shall not exceed 0.09 percent.

3.4.4.4 Water Absorption – The water absorption (average of three blocks), when determined in the manner described in IS-2185 shall not be more than 10 percent by mass.

3.4.4.5 Face shells and webs shall increase in thickness from the bottom to the top of the unit. Depending upon the core moulds used, the face shells and webs shall be flared and tapered or straight tapered, the former providing a wider surface for mortar. The thickness of the face shell and web shell be not less than the values given in Table below.

TABLE

Nominal Block Width	Face shell Thickness, Minimum	Thickness of Web. Min.	Total Web Thickness per Course in any 200 mm length of Walling Min.
(1)	(2)	(3)	(4)
100 or less	25	25	25
Over 100 to 150	25	25	30
Over 150 to 200	30	25	30
Over 200	35	30	38

3.4.5 Curing and Drying

The blocks shall be cured in an immersion tank or in a curing yard and shall be kept continuously moist for at least 14 days. When the blocks are cured in an immersion tank, the water of tank shall be changed at least every four days.

After curing, the blocks shall be dried in shade before being used on the work. They shall be stacked with voids horizontal to facilitate through passage of air. The blocks shall be allowed to complete their initial shrinkage, before they are laid in wall.

3.4.6 Construction of Masonry

If hollow blocks are used, their hollows shall be filled up with cement concrete 1:3:6 using 12.5 mm nominal size aggregates, where required by Engineer.

3.4.7 Wetting of Blocks

Blocks need not be wetted before or during laying in the walls. In case the climate conditions so require, the top and the sides of the blocks may only be slightly moistened so as to prevent absorption of water from the mortar and ensure the development of the required bond with the mortar.

3.4.8 Laying

Blocks shall be laid in mortar, as indicated and thoroughly bedded in mortar, spread over the entire top surface of the previous course of blocks to a uniform layer of not more than 10 mm thickness.

All courses shall be laid truly horizontal and all vertical joints made truly vertical. Blocks, shall break joints with those above and below for not less than quarter of their length. Precast half length closers (and not cut from full size blocks) shall be used. For battered faces, bedding shall be at right angles to the face unless otherwise directed. Care shall be taken during construction to see that edges of blocks are not damaged.

3.4.9 Provision for Door and Window Frames

A course of solid concrete block masonry shall be provided under door and window openings (or a 10 cm thick precast concrete sill block under windows). The solid course shall extend for atleast 20 cm beyond the opening on either side. For jambs of very large doors and windows either solid units are used, or the hollows shall be filled in with concrete of mix 1:3:6 using 12.5 mm nominal size aggregates.

3.4.10 Provisions for Roof

The course immediately below the roof slab shall be built with solid blocks. The top of the roof course shall be finished smooth with a layer of cement and coarse sand mortar 1:3, 10 mm thick and covered with a thick coat of white wash or crude oil, to ensure free movement of slab.

3.4.11 Intersecting Walls

When two walls meet or intersect and the course are to be laid up at the same time, a true masonry bond between at least 50% of the units at the intersection is necessary. When such intersecting walls are laid up separately, pockets with 20 mm maximum vertical spacing shall be left in the first wall laid. The corresponding course of the second wall shall be built into these pockets.

3.4.12 Fixtures, fittings, etc. shall be built into the masonry in cement and coarse sand mortar 1:3 while laying the blocks where possible. Hold fasts shall be built into the joints of the masonry during laying.

Holes, chases, sleeves, openings etc. of the required size and shape shall be formed in the masonry with special blocks while laying, for fixing pipes, service lines, passage of water etc. After service lines, pipes etc. are fixed, voids, left, if any, shall be filled up with cement concrete 1:3:6 (1 cement : 3 coarse sand : 6 stone aggregate 20 mm nominal size) and neatly finished.

3.4.13 Finishes

Rendering shall not be done to the walls when walls are wet. Joints for plastering or pointing as specified shall be raked to a depth of 12 mm.

3.5 MASONRY WITH AUTOCLAVED CELLULAR BLOCKS

3.5.1 Autoclaved cellular blocks for masonry shall conform to IS:2185 Part 3 and shall be procured from approved manufacturer. Manufacturer's literature and samples shall be approved by Engineer prior to ordering the blocks at site.

3.5.2 The blocks shall be stacked in dry, well-ventilated areas. These blocks shall not be used below ground or in plinth. Damp proof course shall be provided before starting superstructure masonry.

3.5.3 Construction of Masonry

Cement mortar 1:6 using portland cement shall be used in masonry. It is not necessary to soak the blocks before their use in masonry. Their surfaces shall be wetted sparingly and afterwards water shall be sprinkled for curing of masonry joints especially in hot weather. As to breaking of joints, specifications for brick masonry work shall be adopted for guidance. It is essential to avoid future cracks

in plaster at opening corners. For this purpose, door and window openings should be provided with 2 Nos. 6 mm bars extending to 0.6 M on either side. The bars should be placed in the joints just below the opening for windows. Similar reinforcement should also be provided at the top of the opening (doors and windows) in the course immediately above the lintel.

Inter-locking shall not be done at junctions of load bearing and non-load bearing partition walls. Connections between these walls can be achieved by:

a) Nailing galvanised strips across every third joint with 12 mm galvanised or aluminium nails, or
b) 125 mm cut nails in every third joint
c) 6 mm dia. Bars 200 mm long or
d) Chicken mesh

Inter locking at junction of two load bearing walls shall be done as in brick masonry. At junction between conventional and cellular block masonry, chicken mesh shall be provided in the plaster to avoid future cracking at the corners and junctions.

Unsupported walling shall not exceed in height 18 times the thickness of wall and horizontally 24 times the thickness of wall for load bearing walls. For partition or non-load bearing walls, the unsupported length and height shall not be more than 36 times the thickness of wall. The wall shall be wetted sparingly before plaster.

3.6 PLASTERING

3.6.1 Preparing of surface

The surface to be plastered shall be thoroughly cleaned so that it is free from dust, dirt, salts, etc. The joints of masonry work shall be raked out to the depth of atleast 12 mm. Cement concrete surfaces shall be cleaned with wire brush. The surface in both cases shall be washed properly and kept wet for 4 hours before plastering is commerced.

3.6.2 Mortar

Cement and sand shall be thoroughly mixed in the proportion specified and water shall be added to form an easily workable paste. In no case shall mortar which has been allowed to stand for more than an hour after mixing to be used.

3.6.3 Application of Plaster

Plaster, when more than 12 mm thick, shall be applied in two coats a base coat followed by the finishing coat. Thickness of the base coat shall be sufficient to fill up all unevenness in the surface, no single coat, however, shall exceed 12 mm in thickness. The lower coat shall be thicker than the upper coat, the overall thickness of the coats shall not be less than the minimum thickness shown on the drawings. The undercoat shall be allowed to dry and shrink before applying the second coat of plaster. The undercoat shall be scratched or roughened before it is fully hardened to form a mechanical key. The method of application shall be 'thrown on' rather than 'applied by trowel'.

The entire plastering job inside and outside shall be a thoroughly sound and workmanlike job. All corners and angles shall be true to plumb or level. All plane surface shall be levelled or plumbed and shall contact a 3 m straight edge in its entire length with not more than 3 mm variation either way.

The plastering shall start from top and gradually worked down towards floor. It shall not, at any place, be thinner than specified. To ensure even thickness, plaster in about 15 cm wide strip shall be first applied horizontally and vertically at not more than 2 meter interval over the entire surface to serve as gauge. The surface of these gauged areas shall be truly in the plumb and plane of finished plaster surface. The mortar shall then be applied on the wall or other surface between the gauges and finished even. All corners shall be rounded to a radius of 12 mm unless otherwise specified. Rounding or chamfering corners, junctions etc. where required shall be done without extra payment. The contractor shall not be paid for any extra thickness of plaster than as specified.

In case of sand-faced and rough cast plaster, specific instructions in the specification of the same shall be followed for coats and finishing techniques. In case of neat cement and neeru finish plaster specific instructions in the specification of the same shall be followed.

Any cracks which appear in the surface and all portions which sound hollow when tapped or are found to be soft or other defects shall be cut out in rectangular shape and redone as directed to match smooth and even with the original surface.

3.6.4 Curing

Curing shall start 24 hours after the plaster is laid. It shall be kept wet for 7 days. During this period it shall be suitably protected from all damages at the contractor's expense as directed.

3.6.5 Scaffolding

As described in brick masonry work.

3.6.6 13 mm Neeru Cement Finished Plaster in CM as specified

Plaster shall be smooth finished with neat cement slurry.

3.6.7 13mm Neeru Plaster in CM 1:4

After completion of plaster for the panel in hand. Neeru shall be applied as given below:

1. Preparation

   Fat lime of best quality shall be slaked and mixed with sufficient water to form a thick paste. It shall then be passed through a fine 3 mm mesh to remove all unslaked particles and foreign matter and allowed to mellow under water for atleast 10 days. The surplus water on top shall then be allowed to run off and the top layer of lime formed into putty shall be skimmed off and well mixed sand and jute. The proportion of sand shall be of 1 cu.m. fine washed sand (passing through I.S. sieve No.60) to 4 cu.m. of lime putty. The jute shall be finely chopped and shall be used in the proportion of 1 kg. per cu.m. of mortar.

2. The mixture shall be properly ground to fine paste between two stones or in a mill. The 'neeru' thus prepared shall be kept moist until used and no more than what can be consumed in 15 days shall be prepared at a time.

3. The 'Neeru' as prepared above shall be applied to the prepared surface with a steel trowel to a thickness not exceeding 3 mm and rubbed and polished to perfectly smooth and even finish working from top to bottom. While trowelling is going on, soap stone powder contained in thin muslim bags shall be dusted over the surface and worked in.

4. Ready mix Neeru, if used, shall be obtained from approved manufacturer. A sample plaster finish shall be carried out at site and approved by Engineer prior to ordering the material at site. Manufacturer's instructions shall be followed in the sample as well as in the actual work.

3.6.8 13 mm Water-proof Plaster in CM 1:4

Water proof-cement plaster shall be specified herein before for cement plaster work except for the following.

In the preparation of cement and sand mortar, cement shall be mixed with 2% approved waterproofing compound or as per manufacturer's instructions and as directly by the Engineer.

3.6.9 20 mm Sand-face Plaster

Sand face plaster shall consist of two layers. The first layer shall be generally 12 mm average thick cement plaster with cement sand of 1:4 mix (1 cement : 4 sand) and shall be rough finished carried out by wire brush scarifying on wet plaster. Over this a second layer, average 8 mm thick, of cement sand plaster in the proportion of 1:2 mix shall be applied. The second layer of plaster shall be laid only after the first layer has sufficiently dried. The surface of the sand face plaster shall be finished rough with sponge or as directed by the Engineer.

3.6.10 Rough Cast Cement Plaster

The cement shall be thoroughly mixed with sand and gravel in the proportion of 1 cement : 2 sand : 1 aggregate. The gravel shall be of a size passing through 6 mm mesh but retained completely on 2 mm mesh. The constituents shall be thoroughly mixed dry until the mix is homogeneous. Water shall then be added gradually to the required extent and the material turned over sufficiently to give a homogeneous mass of uniform colour. Mortar shall be applied to the wall in 2 coats with force to a thickness of 20 mm and finished to a uniform surface. No more mortar shall be prepared than can be used up with half an hour.

3.7 POINTING

3.7.1 Scope

Work includes providing, mixing CM 1:3 and applying cement pointing on masonry surfaces indicated in the item, including all materials, labour, plants, tools, equipment, scaffolding racking etc. required to complete the job in all respects.

3.7.2 Type of pointing

Pointing shall be of the type specified such as “flush”, “recessed” (weathered, keyed, ruled etc.), “tuck” etc.

3.7.3 Preparation of surface

All joints in masonry shall be raked out at least 12 mm deep when the mortar is firm but not wet. The joints shall be brushed clean of dust with wire brush and wetted thoroughly for 6 hours before pointing is commenced.

3.7.4 Application & Finishing

The mortar shall be pressed into raked out joints with a point trowel and finished either flush, sunk or raised according to type of pointing specified in the drawings or as directed. The superfluous mortar shall be cut off from the edges of the lines and the surfaces of masonry shall be cleaned of all mortar. Finish shall be free of slick spots, cut faces and other blemishes.

Finished work of pointing shall be to exact size and shape stipulated with edges straight, neat and clean. No smearing of cement mortar shall be allowed and the entire work shall be carried out in most workmanlike manner.

3.8 Drip Mould

Drip mould shall be provided on underside and not more than 50 mm from outer edge in chajjas and projection of roof slab and at places indicated by the Engineer and shall be of minimum 10 mm in depth and 20 mm in width and well rounded from either in plaster or concrete while casing. It shall be neat finished. The size and shape shall have to be approved by the Engineer.

3.9 Damp Proof Course

Unless otherwise specified Damp-proof course shall be 40 mm thick ‘artificial stone’ in proportion 1:1½3 cement, sand, stone chips (10 mm down) with admixture of a waterproofing compound as approved by the Engineer.

3.10 Mode of Measurement

1. Brick and stone Masonry shall be measured on Cu.m. basis. The rate shall be inclusive of material supply, labour, tools and tackles, raking of joints, providing recesses and openings, embedding fixtures, laying, curing, double scaffolding, cleaning area etc. complete including all taxes and levies.

2. Brick work in partition walls will be measured on sq.m. basis. The area will be inclusive of material supply, labour, tools and tackles, laying, providing R.C. band as specified, curing, double scaffolding, cleaning area etc. complete and including all taxes and levies. Providing and laying reinforcement shall be measured and paid separately.

3. Plastering

The payment for plastering shall be made on square metre basis. Deduction shall not be made for opening less than 0.5 sq.m. and Jambs, sills and soffits etc. shall not be measured. For opening of area between 0.5 sq.m. and 3.0 sq.m. each, deduction shall be made at 50% of the opening area and no payment made jambs, soffits, sills, etc. For opening of area above 3 sq.m. each, deduction shall be made for full area of opening but jambs, soffits, and sills shall be measured. All measurements shall be separately made for each face. The rate shall include the cost of scaffolding and swing needed for the work with labour and materials and all complete including all taxes and levies.

4. Pointing

The payment shall be made on sq.m. basis. Deductions for voids shall be as per plastering item. The rate shall include cost of all materials, labour, scaffolding, curing, cleaning the masonry faces etc. complete.

5. Damp proof course

The payment shall be made on sq.m. basis inclusive of all materials, labour, shuttering if required.

END