

7 MASONRY

7.1 Materials

- 7.1.1 Material used for masonry and plastering work shall conform to Section 3 - CONCRETE WORKS.
- 7.1.2 Masonry work shall be done with cement bricks or blocks of approved quality unless specified otherwise.
- 7.1.3 The blocks shall be free from excessive amounts of salt or other impurities and shall be inspected and approved by the Consultant.

7.2 General

7.2.1 Execution Drawing

- 7.2.1.1 Work shall be complied with this specification unless otherwise stated on particular Specification or Drawings. Any work not specified shall be discussed and directed by the Consultant. Execution drawing of block or brick alignment (inclusive of indication for hanging bolt, wood plug and conduit pipe), detail reinforcement, window opening, and other requirement shall be prepared and submitted for the Consultant.

7.2.2 Stake-Board

- 7.2.2.1 Stake-board shall be provided at each 5 m in length and shall be inspected by the Consultant for the accuracy, firmness and secure ness. However, suitable ruler, plumb bob and leveller shall be provided for minor performance of cement block and bricks.

7.2.3 Transportation and storing

- 7.2.3.1 Care shall be taken for damage during transportation of materials and any defect of natural finished concrete blocks or bricks shall be rejected.
- 7.2.3.2 Different size of material shall be stored separately and projected from dirt and other impurities.

7.2.4 Curing

- 7.2.4.1 Any shock or load shall not be applied until concrete mortar or other fills hardened. Corner, projection and top of cement block or brick work shall be protected from rain, dryness, cold, damage and stain by covering.
- 7.2.4.2 Void between blocks or bricks shall not be intruded by rainwater.

7.3 Block work

7.3.1 Material

- 7.3.1.1 Blocks shall be of standard quality low permeability blocks with no defects and sample shall be submitted for approval of the Consultant.
- 7.3.1.2 Blocks shall be 75x100x200mm MCPW solid block double layer (200 mm thick) for external walls and single layer (100 mm thick) for internal walls (internal solid block masonry only at ground floor and all toilets). The average compression strength should be not less than 2.8N/mm² and shall comply with physical requirements of ISO 6073: 1981

7.3.2 Horizontal reinforcement for concrete block wall

7.3.2.1 Horizontal reinforcement shall be provided at end of wall adjoining to concrete column. Reinforcing bar shall be anchored into end block and column.

7.3.2.2 Horizontal reinforcing bar for block wall shall be 6 mm diameter at 1000 mm intervals.

7.3.3 Placing Blocks & Bricks

7.3.3.1 Cement blocks shall be saturated with water and joint shall be cleaned.

7.3.3.2 Bonding mortar shall be used immediately after mix, and mixed mortar left for more than one hour shall be rejected.

7.3.3.3 Vertical and horizontal joint of blocks shall be filled completely and suitable with mortar on line shall not be moved or rearranged. Joint and surface of block of exposed finished block wall shall be cleaned immediately after joint is filled.

7.3.3.4 In case concrete block wall is attached to structural concrete, block wall shall be placed before concreting structure.

7.3.3.5 Mortar for joint shall be touched with steel trowel before hardened and exposed joint shall be finished with uniform width and planned without roughness or cavity.

7.3.3.6 Height for placing block per day shall be maximum 1.2 m unless otherwise specified.

7.3.4 Joints

7.3.4.1 The thickness of joints shall not exceed 10 mm and the joints shall be rated (13 mm dup.) when the mortar is still floor, so as to provide for proper bond for the plaster. Any mortar which falls on the floor from these joints or removed due to raking of joints shall not be reused.

7.3.5 Lintel

7.3.5.1 Lintel shall be reinforced concrete as approved or directed by the Consultant.

7.3.5.2 Main reinforcing bar shall be anchored more than 40D (40 x diameter of the bar) at both end.

7.3.5.3 In case lintel is prefabricated, shop drawing shall be submitted for approval of the Consultant.

7.3.6 Frame of Opening

7.3.6.1 In case frame is temporarily installed before placing of blocks, frame shall be firmly placed and joiner shall be bonded with mortar as placing each block at side and top of frame.

7.3.6.2 In case frame is installed after placing of blocks, joiner shall be bonded with additional mortar at space or every two blocks or more.

7.3.6.3 Back of frame shall be filled and compacted with mortar by providing shuttering board.

7.3.6.4 Wood plug and anchor bolt shall be covered with mortar or concrete.

7.3.7 Piping

7.3.7.1 Principally, piping shall not be placed in block wall unless piping block is in use.

7.3.7.2 In case electric conduit pipe is placed in cavity of concrete blocks, care shall be taken not to obstruct reinforcing bar, and cavity shall be completely filled.

7.3.7.3 In case chipping and piping on face of blocks is unavoidable, performance shall confirm to instruction of the Consultant.

7.3.7.4 Joiner and supporter for exposed piping shall be buried at joint which back is filled or otherwise approved by the Consultant.

PLASTERING**7.4 General**

7.4.1 All masonry walls shall have smooth finished cement plaster on both sides with a surface setting coat of neat cement applied within an hour of the completion of rendering.

7.4.2 Cement rendering to floor shall be same as above.

7.5 Materials and Storage

7.5.1 Plaster materials which are affected by moisture such as plaster and cement shall be stored properly

7.5.2 Materials used for plastering shall conform to those of Section 3 - Concrete Works. Grading of sand, however, shall be as in table below

Grading of sand	Mortar plastering	Plastering
5mm sifting thorough 100%	for first coat	for first coat and dubbing out
0.15mm sifting less than 10%	for finish coat	
2.5mm sifting through 100%	for finish coat	for second coat
0.15mm sifting less than 10%		

7.5.3 White cement or filler or similar shall confirm to the requirements of Portland cement, BS.12.

7.5.4 The use of mixtures shall be approved by the Consultant's representative. The amount of admixture shall be such that it affects mortar strength very little.

7.5.5 Mixing volume ratio of mortar shall be as in table below:

Base	area of application	first coat cement: sand	Dabbing out cement: sand	Finish coat cement: sand
Masonry blocks	Floor	-	-	1:4
	Interior wall	1:4	1:4	1:4
	Exterior wall	1:4	1:4	1:4

7.6 Thickness of Coating

Standard thickness of coating (mm)

Base	Area of application	First coat	Dubbing out	Second coat	Finish coat	Total
Masonry block	Floor	-	-	-	as per dwg	as per
	Interior wall	8	-	8	4	dwg
	Exterior wall	8	-	8	4	15
						15

7.6.1 Thickness of coating shall be standard thickness of coating unless otherwise indicated on the Drawings.

7.7 Finish

7.7.1 Type of finish and work schedule

Type	Work Schedule	Notes
1. Smooth Trowel finish	Shall be applied flat by metal trowel Shall be finished by pressing with the trowel.	Before applying second coat, corner and edge shall be screed well.
2. Wooden float finish	Shall be applied by wooden float	

7.8 General Preparation

- 7.8.1 Remove efflorescence, laitance, dirt and other loose material by thoroughly dry brushing.
- 7.8.2 Remove all traces of paint, grease, dirt and other materials incompatible with coating by scrubbing with water containing detergent and washing off with plenty applying coatings unless specified other wise.
- 7.8.3 In Situ Concrete Surfaces: Scrub with water containing detergents to ensure complete removal of mould oil, surface retards and other materials incompatible with coating. Rinse with clean water and allow drying, unless specified otherwise.
- 7.8.4 Organic Growths: Treat with fungicide to manufacturer's recommendations and bush off.
- 7.8.5 Hacking For Key: Roughen specified surfaces thoroughly and evenly by removing the entire surface to a depth of 3mm by scabbling, bush hammering or abrasive blasting. Clean surfaces by washing and brushing.
- 7.8.6 Smooth Concrete Surfaces: where no keying or mix or bonding agent is specified, wet smooth concrete surfaces immediately before plastering.

7.9 External Plastering

- 7.9.1 Dissimilar Solid Backgrounds for Plastering: where plaster is to be continued without break across joints between dissimilar solid backgrounds which are rigidly bonded together, cover the joints with a 200 mm wide mesh strip (back grounds in the same plane) or with the corner mesh (internal angle) fixed at not more than 600 mm centers along both edges, unless specified or otherwise.
- 7.9.2 Dissimilar Solid Backgrounds for Plaster: where plaster is to be continued without break and without change of plane across the face of a 300 mm and rigidly bonded to the background.
 - 7.9.2.1 Cover the face of the column /beam/ lintol with building paper extending 25 mm on the adjacent background.
 - 7.9.2.2 Over lay with expanded metal lathing extending 50mm beyond the edges of the paper and securely fixed with masonry nails at not less than 100 mm centres along both edges.
 - 7.9.2.3 Alternatively, an approved paper and mesh lathing may be used.

- 7.9.3 Dissimilar Solid Backgrounds for Rendering: where rendering is to be continued without break across joints between dissimilar solid backgrounds which are in the same plan and rigidly bounded together, cover joints with a 150 mm wide strip of building paper overlaid with 300 mm wide metal lathing fixed at not more than 600 mm centres along both edges unless specified other wise.
- 7.9.4 Service Chases: cover with steel mesh strip fixed at not more than 600 mm centres along both edges.
- 7.9.5 Conduits bedded in under coat to be covered with 90mm wide jute scrim budded in finishing coat mix, pressed flat and trowelled in. Do not lap ends of scrim.

7.10 Internal Plastering

- 7.10.1 Accuracy of plaster 15 mm thick or more: maximum permissible gap between an 1800 mm straight edge and any point on the surface to be 3 mm.
- 7.10.2 Dubbing Out: If necessary to correct inaccuracies, dub out in thickness of not more than 10 mm in same mix as first coat. Allow each coat to set before the first is applied. Cross scratch surface of each dubbing out coat immediately after set.
- 7.10.3 Metal Mesh Lathing: Work undercoat well in to interstices to obtain maximum key.
- 7.10.4 Under Coats: generally to be not less than 8 mm with thickness greater than 16 mm applied as two equal coats. Rule to even surfaces and cross scratch - end coat to provide a key for the next hand applied coat.
- 7.10.5 Cement Based Under Coats: all to dry out thoroughly but not rapidly, to ensure that drying shrinkage is substantially complete before applying next coat.
- 7.10.6 Dissimilar Backgrounds: where scrim or lathing or beads are not specified, cut through plaster with a fine blade in a neat, straight line at junctions of:
 - 7.10.6.1 Plastered rigid sheet and plastered solid backgrounds.
 - 7.10.6.2 Dissimilar solid backgrounds
- 7.10.7 Smooth Finish: trowel or float to product a tight matt, smooth surface with no hollows abrupt change of level or trowel marks. Do not use water brush and avoid excessive trowelling and over polishing.

7.11 External Rendering

- 7.11.1 Dubbing Out: if necessary to correct inaccuracies, dub out in thicknesses of not more than 10 mm in same mix as first coat. Allow each coat to dry before the next is applied. Cross scratch surface of each dubbing out coat immediately after set.
- 7.11.2 Under Coats for hand applied finishes
 - 7.11.2.1 Apply first undercoat or dubbing out coat by throwing from a trowel.
 - 7.11.2.2 Coats to be no less than 8mm thick, with thickness greater than 16mm applied as two equal coats. On weak backgrounds first under coat to be not less than 10 mm thick.
 - 7.11.2.3 Brush down each under coat to remove dust and loose particles and wet thoroughly before application of next coat.
 - 7.11.2.4 Cross scratch under coat without penetrating the coat, to provide key for following coat(s).
- 7.11.3 Drying: Keep each coat damp for the first three days by covering with polythene sheet and/or spraying with water. Thereafter prevent from drying out too rapidly. Work in shade when ever possible.

- 7.11.4 Allow each coat to dry out thoroughly to ensure that drying shrinkage is substantially complete before applying next coat.
- 7.11.5 Playing Floated Finish: Finish with wood or other suitably faced float to give an even texture.
- 7.11.6 Do not draw excessive laitance to surfaces.

7.12 Metal Mesh Lathing / Reinforcement For Plastered/Coatings.

- 7.12.1 Lathing has to be provided as reinforcement for plastering in columns, walls or specified in drawings products.

7.12.2 Products:

- 7.12.2.1 Plain Expanded Metal Lathing: To B.S 1369 with a minimum weight of 1.9 kg/mm². Manufacturer to approval of the Consultant.
- 7.12.2.2 Wire Ties: Unless other specified, annealed iron, galvanized to B.S 443.
- 7.12.2.3 Clout Nails: galvanized steel or stainless steel nails to B.S 1202: Part 1, table 3.
- 7.12.2.4 Staples: Galvanized steel wire staples to B.S 1494: Part 2.

7.12.3 Workmanship

- 7.12.3.1 Framing: fix securely and accurately to help ensure that coatings on lathing , when finished, are true to line and level , within specified tolerances and free from cracks, rippling, hollows, ridges and sudden changes of levels.
 - 7.12.3.2 Runners/Bearers spanning between concrete beams/ribs: fix with 3mm wire ties twisted around 38 mm X 10 gauge screws driven well into fixing blocks or plugs in sides of beams/ribs.
 - 7.12.3.3 Wire Ties: twisted ends tightly together, cut off surplus and bend ends of wire away from face of coating.
 - 7.12.3.4 Plain Expanded Metal Lathing:
- 7.13 Stretch lathing and fix securely in accordance with manufacturers recommendations to give a taut, firm base for plaster/ rendering.
 - 7.14 Fix with the long way of the mesh at right angles to supports and with all strands sloping in the same direction.
 - 7.15 Lap side edges not less than 25 mm. Lap ends 50mm at supports and 75 mm between supports. Laps must not occur within 100 mm of angles or bends.