



EARTHEN WALL BUILDING MASONRY

1.0. SCOPE

The work under this section of the specification consists of furnishing all plant, labor, equipment, appliances, materials and in performing all operations in connection with supplying and constructing block masonry, complete in strict accordance with this section of the specifications and applicable drawings and subject to the terms and conditions of the Contract. The scope of this section of specification is covered with detailed specification as laid down herein.

2.0 APPLICABLE CODES AND STANDARDS

Latest editions of the following ASTM Standards referred to herein, are applicable to these Specifications.

2.1 Pakistan Standards Institution

232 Ordinary Portland Cement.

2.2 ACI Codes

ACI 530 Building Code Requirements for Masonry Structures

ACI 530.1 Specifications for Masonry Structures

2.3 ASTM Standards

ASTM E 2392M – 10^{E1} Standard Guide for Design of Earthen Wall Building Systems

ASTM C 216 Facing Blocks (Solid Masonry units made from clay or shale)

ASTM C 67 Sampling and Testing Blocks

3.0 SUBMITTALS

3.1 Manufacturer's Data

Submit two copies of the manufacturer's specifications and other data for each type of block and accessory required. Instructions shall be included for handling, storage, installation, and protection of units and accessories.

3.2 **Samples**

Submit three samples of each type of block and accuracy required, also samples of the full range of exposed texture to be used in the completed work.

3.3 **Test Reports**

Reports for compressive strengths of block.

4.0 **MATERIALS**

4.1 **Cement**

All Portland cement shall conform to the requirements of ASTM C 150.

All water used in the manufacture of blocks and in the preparation of mortar shall be free from objectionable quantities of silt, organic matter, alkali, salts and other impurities. The water shall be tested in accordance with BS-3148, where directed by the Engineer.

4.2 **Blocks**

Building bricks shall conform to the requirements of ASTM E 2392M – 10^{E1}. Building blocks shall be 240 x 220 x 115 MM and as approved. The Contractor shall submit samples of building blocks for approval prior to commencement of work. Defective blocks shall not be used.

5.0 **PLACING**

The methods and equipment used for transporting the blocks shall be such as will not damage the block.

The locking of a male face of one block with the female face of another or the locking of the bed of one block with the ridge of the one below it is called Interlock.

The recessed under surface of the block is referred to as the bed. The raised top surface of the block is called the Ridge. The side face of the block with an extension is called the Male face. The side face of the block with a recess is called the female face.

The male face must point outwards and corners must be built in a cyclic order.

To start the first layer lay mortar at the corners and adjust corner blocks in position. Ensure that the first layer is truly vertical by checking with a level.

Ensure that the first layer is truly horizontal by checking with a spirit level over at least 3 simultaneous joints.

Slide blocks one on top of another to interlock them in place leaving no gaps between them.

Block laying must proceed in one direction only so that male and female faces can interlock.

Blocks must be lightly hammered in place using a rubber hammer to achieve 'true interlock' to avoid gaps between blocks.

Check plumb at every course and check level at each joint across the entire length of the wall.

All horizontal joints shall be parallel. Work required to be embedded in the block masonry shall be installed as the work progresses. At the completion of the work all holes or defective mortar joints shall be cut out and repointed.

They shall be laid true to line, level and plumbs, all joints shall be perfectly straight, parallel and sharp. Facing block of irregular shape, size, damaged and defective edges and faces shall be repaired, if they can't repaired they will be replaced. Works done with defective edges and faces blocks shall be repaired and if not able to be repaired the Contractor shall replace, without additional cost, all defective works.

6.0 CURING AND REPAIR

If, after the completion of any block masonry work, the block is not in alignment or level, or does not conform to the lines and levels, shown on the drawings, or shows a defective surface, it shall be removed and replaced by the Contractor, without additional cost to Engineer. Repair or patching of the defective area will be acceptable if given, in writing, to the Engineer.

7.0 CONCRETE BLOCK MAKING

7.1 The blocks shall be machine compressed and molded. They shall be operated according to the instructions laid down by the manufacturers.

7.2 Care shall be exercised in the handling of all concrete blocks. No damaged blocks shall be used in the work.



8.0 PROPERTIES OF BLOCKS

- 8.1 All blocks shall be of the size and shape required to complete the work shown in the Drawings or as instructed by the Engineer.
- 8.2 The Contractor shall provide test certificates showing the average minimum crushing strength of the blocks prior to the commencement of the construction. The block strengths are to be determined in accordance with ASTM E 2392M – 10^{E1} Standard.

9.0 TOLERANCES

All tolerances shall be as per requirements of ACI-530.1

10.0 DAMP PROOF COURSES

All damp proof courses unless otherwise specified shall be 2 inch thick, consisting of cement concrete having a 28 day minimum cube strength of 21 N/mm², mixed with approved quality water proofing compound as per manufacturer's specifications and shall be laid at required levels as per drawings and instructions of the Engineer. The damp proof course shall be tamped, consolidated, leveled and edges and corners made to the requirements of the relevant drawings including finishing and curing complete.

Add a damp proof plastic layer to prevent water absorption. Add this DPC course by using a 250 – 350 micron plastic rolled out under mortar level in housing and in walling above the block bedded in mortar.

No separate payment will be made for providing and laying damp proof course.

11.0 CLEANING AND PROTECTION

At the completion of the work, all holes, and defective mortar joints shall be cut and repointed. Exposed masonry shall be protected against staining or other damage and excess mortar shall be cleared off the surfaces as the work progresses. All exposed masonry shall be clean, smooth, fine and shall be of acceptable finish approved by the Engineer.

12.0 MEASUREMENT AND PAYMENT

12.1 General

Except otherwise specified herein or elsewhere in the Contract Documents, no measurement and payment will be made for the under mentioned specified works related to the relevant items of the Bills of



Quantities. The cost thereof shall be deemed to have been included in the quoted unit rate of the respective items of the Bills of Quantities.

12.1.1 Cutting & chiseling of masonry wherever required.

12.1.2 Cement sand mortar used in laying blocks including wastage.

12.1.3 Curing and repairing the masonry work.

12.1.4 All joint reinforcing bars, reinforcing anchor bars and dovetail anchors.

12.1.5 Loading, Transportation, unloading, stacking at site, multiple re- and handling.

12.2 **Block Masonry**

12.2.1 Measurement

In case of different thickness of slab in different areas or room or for any other reason whatsoever, if chiseling of masonry is required the Contractor shall do so at his own cost. Where, for any reason whatsoever, the height of the wall is short of ceiling height of the actual height shall be made good with Class "C" concrete. This concrete shall neither be measured nor be paid under item of concrete but will be paid for under item of masonry. Similarly where the lintel heights are such that the Contractor has to chisel the masonry or provide cast-in-place concrete to make up the height of the course, no payment will be made for chiseling, but where such cast-in-place concrete is provided, payment for the same will be made at the unit rate for masonry.

Measurement of acceptably completed works of block masonry at any height will be made on the basis of number of cubic feet provided & installed in position as shown on the drawing or as directed by the Engineer.

12.2.2 Payment

Payment will be made for acceptable measured quantity of block masonry on the basis of unit rate per cubic feet quoted in the Bills of Quantities & shall constitute full compensation for all the works related to the item.