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Indian Standard

CODE OF PRACTICE FOR LAYING BURNT CLAY BRICK FLOORING

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BUREAU OF INDIAN STANDARDS
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI 110002

Indian Standard

CODE OF PRACTICE FOR LAYING BURNT CLAY BRICK FLOORING

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Indian Standard

CODE OF PRACTICE FOR LAYING BURNT CLAY BRICK FLOORING

0. FOREWORD

0.1 This Indian Standard was adopted by the Indian Standards Institution on 22 August 1970, after the draft finalized by the Flooring and Plastering Sectional Committee had been approved by the Civil Engineering Division Council.

0.2 The usefulness of burnt clay bricks as flooring material consists mainly in their good wearing quality and facility for quick installation. They are used for heavy duty floors subject to rough use and high wear. Generally, ordinary bricks conforming to IS : 1077-1966* could be used for the flooring of low cost temporary sheds, cattle sheds, courtyards, footpaths, etc. Heavy duty bricks conforming to IS:2180-1960† or IS: 3583-1966‡ could be used for locations of floors subject to heavy wear and tear, such as stores, godowns and platforms. The performance of the brick flooring would depend on the quality of the bricks and the care with which the bedding is prepared and the laying is done. Generally bricks laid on edge give a better performance than when laid flat. This standard gives necessary guidance in laying of brick flooring with a view to obtaining better durability and good wear resistance and does not intend to cover the method of laying of acid resistant bricks.

0.3 In the formulation of this standard due weightage has been given to international co-ordination among the standards and practices prevailing in different countries in addition to relating it to the practices in the field in this country.

0.4 For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS: 2-1960§. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

*Specification for common burnt clay building bricks (*first revision*).

†Specification for heavy duty burnt clay building bricks.

‡Specification for paving bricks.

§Rules for rounding off numerical values (*revised*).

1. SCOPE

1.1 This standard covers the method of laying burnt clay brick flooring.

2. TERMINOLOGY

2.0 For the purpose of this standard the following definitions shall apply.

2.1 Base Concrete — Concrete provided below the layer of bricks.

2.2 Bedding — The layer of mortar applied to the sub-grade and brought to a definite level in which the flooring bricks are set.

2.3 Sub-grade — The prepared base on which the bedding mortar is applied.

3. NECESSARY INFORMATION

3.1 For efficient planning and execution of the work detailed data and information as given below shall be taken into account:

- a) Floor area to be covered;
- b) Nature of use to which the floor is subjected to;
- c) Type and size of bricks to be used in the flooring;
- d) Details of sub-grade;
- e) Type of bedding and jointing;
- f) Level of the flooring related to a datum; and
- g) Location and size of openings, if any, to be left out.

3.2 For the purpose of selecting bricks, floors shall be classified into two types:

- a) Light duty floors subject to pedestrians and light wheeled traffic; and
- b) Heavy duty floors subject to large number of pedestrian and moderately heavy wheeled traffic from trolleys and carts and to heavy wear and tear as in factories, pavements, platforms, railway stations, etc.

3.3 Arrangements shall also be made for proper exchange of information between those engaged in laying the flooring and all others whose work will be affected.

4. MATERIALS

4.1 Aggregates — The aggregates used for base concrete and for mortar shall conform to IS : 383-1963*.

*Specification for coarse and fine aggregates from natural sources for concrete (revised).

4.2 Cement — Cement conforming to IS : 269-1967* or IS : 455-1967† or IS : 1489-1967‡ shall be used.

4.3 Lime Concrete — Lime concrete shall conform to IS : 2541-1965§.

4.4 Lime Mortar — Lime mortar for bedding and jointing shall conform to IS : 1625-1962||.

4.5 Water — Water used shall be clean and free from excess amounts of deleterious materials. Potable water is generally considered satisfactory for use.

4.6 Bricks — For light duty floors and for dry brick pavings, the flooring bricks shall conform to IS : 1077-1966¶. For heavy duty floors, the flooring bricks shall conform to IS : 2180-1962** or IS : 3583-1966††.

5. HANDLING AND STORAGE OF MATERIALS

5.1 The delivery of bricks shall be so arranged as to minimize handling. Adequate precaution shall be taken to prevent damage to bricks while unloading. Clean dry space shall be provided at the site for the storage of all materials. Cement and lime shall be stored under cover. The materials shall be stored in accordance with IS : 4082-1967‡‡.

6. LAYING THE FLOORING

6.1 Laying the Base Concrete

6.1.1 Light duty floors may be provided with concrete base. Heavy duty floors shall be provided with concrete base. The concrete used for the sub-grade shall generally be of lime concrete with brick or stone aggregates prepared in accordance with IS : 2541-1965§. Lean cement concrete mix of 1 : 5 : 10 (1 cement : 5 sand : 10 coarse aggregate) may also be used.

6.1.2 Where required, light duty floors should be provided with base concrete at least 75 mm thick. For heavy duty floors at least 150 mm thick base concrete should be provided.

*Specification for ordinary, rapid hardening and low heat Portland cement (*second revision*).

†Specification for Portland blastfurnace slag cement (*second revision*).

‡Specification for Portland pozzolana cement (*first revision*).

§Code of practice for use of lime concrete in buildings.

||Code of practice for preparation and use of lime mortar in buildings.

¶Specification for common burnt clay building bricks (*first revision*).

**Specification for heavy-duty burnt clay building bricks.

††Specification for paving bricks.

‡‡Recommendations on stacking and storage of construction materials at site.

6.1.3 If the sub-grade consists of lime concrete, it shall be allowed to set for seven days, and the flooring shall be laid within the next three days. If the sub-grade is of lean cement concrete, the flooring shall be commenced within 48 hours of laying the sub-grade, failing which, the surface of the sub-grade shall be roughened with steel wire brushes, wetted by sprinkling water and smeared with a coat of cement slurry at 2.75 kg of cement per square metre so as to get a good bond between sub-grade and flooring.

6.1.4 The sub-grade shall be provided with the slope required for the flooring for proper drainage. Where sub-grade is not provided, the earth below shall be properly sloped, watered, rammed and compacted. Before laying floor, it shall be moistened.

6.1.5 Where subsidence is to be avoided, a layer of sand 75 mm thick may be provided under the base concrete.

6.2 Bedding — Before the concrete sub-grade is finally set, lime mortar or lime cement mortar not less than 10 mm thick shall be spread evenly over the base concrete. The proportions of the bedding mortar shall be as given below:

- a) *Heavy Duty Floors* — 1 cement : 4 sand or 1 cement : 1 lime : 6 sand.
- b) *Light Duty Floors* — 1 cement : 6 sand or 1 cement : 2 lime : 9 sand.

6.3 Laying the Bricks

6.3.1 Soaking of Bricks — To reduce excessive suction, the bricks before being laid shall be soaked in clean water and then allowed to drain until they are surface dry.

6.3.2 The bricks shall be laid in plain, diagonal, herringbone or other suitable patterns. The bricks shall either be laid flat or on edge. Damaged bricks shall not be used. Broken bricks shall not be used in flooring except for closing a line.

6.3.3 Bricks shall be laid on lime mortar or cement mortar bed and each brick shall be properly bedded flat or on edge and set by gentle tapping with handle of trowel or wooden mallet. The inside faces of the bricks shall be smeared with mortar, before the next brick is laid and pressed against it. On completion of a portion of flooring, the vertical joints shall be fully filled with mortar from the top. The surface of the flooring during laying, shall be frequently checked with a straight edge at least 2 metres long, so as to obtain a true surface with the required slope. In case of flat brick flooring, bricks shall be laid with frog down. When laid flat in plain courses, the units shall be bonded to break joints at half the length of the bricks.

6.4 Joints — Bricks shall be so laid that all joints are full of mortar. The thickness of the joints shall be between 8 to 10 mm. The joints shall be flush pointed after being raked out 10 mm deep while the mortar is still green. The raked joints shall be well brushed to remove dust and loose particles and well wetted, and shall be refilled with cement mortar (1 cement : 3 sand).

6.5 Curing — The flooring shall be kept wet for at least 7 days after completion. In case of cement lime mortar, curing shall commence two days after the laying and shall continue for seven days.

7. DRY BRICK PAVING

7.1 The bricks without soaking in water shall be laid dry, flat or on edge, on 12 mm thick mud mortar laid to required slope on the sub-grade. The mud mortar shall be prepared in accordance with 7.2. The bricks may be laid in plain, diagonal, herringbone or other suitable patterns. For dry brick flooring base concrete is not required.

7.1.1 After laying the bricks the joints shall be filled with fine sand.

7.2 Mud Mortar

7.2.1 Soil for Mud Mortar — The soil shall be free from vegetable roots, gravel (of particle size greater than 2 mm) and coarse sand. Other coarse material shall not exceed 10 percent by weight. The soil shall also be free from harmful and efflorescent salts. The plasticity index of the soil shall be between 9 and 12 percent.

7.2.2 Preparation of Mud Mortar — The dry soil shall be reduced to fine powder and mixed with water in a pit. The soil mix shall be allowed to mature for a period of about 7 days. During this period, it shall be worked up at intervals with feet and spades so as to get pugged into a homogeneous mass free from lumps and clods.

The consistency of the mortar shall be adjusted by taking it in a trowel and observing how it slides off the face of the trowel. The mortar shall readily slide off, but at the same time shall not be so wet as to part into large drops before falling.

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