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*Indian Standard*

RECOMMENDATIONS FOR DIMENSIONS  
AND WORKMANSHIP OF NATURAL BUILDING  
STONES FOR MASONRY WORK

*( First Revision )*

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

# Indian Standard

## RECOMMENDATIONS FOR DIMENSIONS AND WORKMANSHIP OF NATURAL BUILDING STONES FOR MASONRY WORK

( *First Revision* )

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# *Indian Standard*

## RECOMMENDATIONS FOR DIMENSIONS AND WORKMANSHIP OF NATURAL BUILDING STONES FOR MASONRY WORK

*( First Revision )*

### 0. FOREWORD

**0.1** This Indian Standard (First Revision) was adopted by the Indian Standards Institution on 15 May 1970, after the draft finalized by the Stones Sectional Committee had been approved by the Civil Engineering Division Council.

**0.2** Data in regard to the dimensions and workmanship of the natural building stones, based on the information collected up to the year 1957, by this Institution were included in the earlier version of this standard which was published in 1957. In the next 13 years considerable changes in the method of construction of stone masonry have occurred so as to keep in line with the latest development in the building construction. It has been, therefore, found necessary that this standard should be revised and its requirements should now be based on the practice followed in this country by the various organizations like Military Engineering Services, Central Public Works Department, Railways, State Public Works Departments, etc.

**0.3** Details regarding construction of stone masonry have been prescribed separately in IS: 1597 (Part I)-1967\* and IS: 1597 (Part II)-1967†. In this standard recommendations in regard to the dimensions and workmanship of the natural building stones which are required for the various types of the stone masonry have been covered.

**0.4** The Sectional Committee responsible for the preparation of this standard has taken into consideration the views of producers, consumers and technologists, and has related the standard to the manufacturing and trade practices followed in the country in this field.

**0.5** For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated,

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\*Code of practice for construction of stone masonry: Part I Rubble stone masonry.

†Code of practice for construction of stone masonry: Part II Ashlar masonry.

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.

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## 1. SCOPE

1.1 This standard lays down recommendations for the dimensions and workmanship of natural building stones used for various types of stone masonry.

## 2. TERMINOLOGY

2.0 For the purpose of this standard, the definitions given in 2 of IS: 1597 (Part I)-1967† shall apply.

## 3. DIMENSIONS AND TOLERANCES

3.1 The recommended dimensions of natural building stones measured at edges shall be as given in Table 1.

3.1.1 The recommended dimensions given in Table 1 have been worked out on the basis that the thickness of the mortar joints are 3 mm for ashlar masonry, 6 mm for block in course and 10 mm for square rubble.

3.2 **Tolerances**—The following tolerances shall be allowed on the dimensions:

a) For stones required in ashlar masonry:

- |                       |            |
|-----------------------|------------|
| 1) Length and breadth | $\pm 5$ mm |
| 2) Height             | $\pm 3$ mm |

b) For stones required for other than ashlar masonry:

- |                       |                          |
|-----------------------|--------------------------|
| 1) Length and breadth | $+ 5$ mm }<br>$-10$ mm } |
| 2) Height             | $\pm 5$ mm               |

## 4. WORKMANSHIP

4.1 In the case of stratified rocks, stones for building purposes shall be so quarried and dressed that when set in the building, the stones are laid along the plane of stratification.

\*Rules for rounding of numerical values (*revised*).

†Code of practice for construction of stone masonry: Part I Rubble stone masonry.

TABLE 1 DIMENSIONS OF NATURAL BUILDING STONES

( Clause 3.1 )

Sl. No.	TYPE OF MASONRY	LENGTH mm	BREADTH mm	HEIGHT mm
i)	Stones for ashlar	597	297	297
		697	347	347
		797	397	397
ii)	Stones for block in course	394	194	194
		494	244	244
iii)	Stones for square rubble	90	90	90
		140	90, 140	90, 140
		190	90, 140, 190	90, 140, 190
		240	90, 140, 190	90, 140, 190
		290	90, 140, 190, 240	90, 140, 190, 240, 290
		390	90, 140, 190, 240, 290	90, 140, 190, 240, 290
		440	90, 140, 190, 240, 290	90, 140, 190, 240, 290
		490	90, 140, 190, 240, 290	90, 140, 190, 240, 290
590	90, 140, 190, 240, 290	90, 140, 190, 240, 290		
iv)	Stones for random rubble	May be of any size and shape but not less than 150 mm in any direction		
v)	Stones for sills and lintels	a) 890, 990, 1 090, 1 190, 1 290	90, 190, 290, 390, 490	90, 140, 190
		b) 1 390, 1 490, 1 590, 1 690, 1 790	190, 290, 390, 490, 590	140, 190, 240, 290
vi)	Stones for arches, domes and circular moulded work	The dimensions depend on the particulars of the curve		
vii)	Coping stones	190, 290, 390, 490, 590, 690, 790	200, 300, 400, 500, 600	100, 150, 200
viii)	Kerb stones	390, 490, 590, 690, 790	100, 200, 300	300, 400, 500

**4.2** No sharp protrusions, pinnings or depressions shall be allowed on any side of building stones, appropriate to each type of masonry described in 4.3.

### **4.3 Dressing of Stones**

#### **4.3.1 Ashlar Masonry**

**4.3.1.1 Plain ashlar**—Every stone shall be cut to the required size and shape, chisel dressed on all beds and joints so as to be free from bushing; dressed surface shall not show a depth of gap of more than 3 mm from straight edge placed on it. The exposed faces and joints, 6 mm from the face shall be fine tooled so that a straight edge can be laid along the face of the stone in contact with every point. All visible angles and edges shall be true and square and free from chippings. The corner stones (quoins) shall be dressed square and the corners shall be straight and perpendicular.

**4.3.1.2 Ashlar sunk or moulded**—Dressing shall be done in the same manner as in plain ashlar (*see 4.3.1.1*). The faces shall then be gauged, cut, grooved, rebated, sunk or plain moulded as required for the work. For this purpose a full size layout of the moulding shall be prepared on platforms for which sheet templates shall be cut and the stone dressed to the templates to a uniform and fine finish. The dressed surface shall not be more than 3 mm from straight edge placed on it. All visible angles and edges shall be true and free from chippings. The faces of joints, 6 mm from the face shall also be fine tooled so that a straight edge placed on it, is in contact with every point. It shall be finest surface that can be given to a stone with the chisel and with rubbing.

**4.3.1.3 Ashlar rough tooled**—The dressing of stone blocks shall be similar to plain ashlar (*see 4.3.1.1*) except that face exposed in view shall have a fine chisel draft 2.5 mm wide round the edges and shall be rough tooled between the draft such that the dressed surface shall not deviate more than 3 mm from the straight edge placed over it.

**4.3.1.4 Ashlar block in course**—The stones are dressed all squared, and the faces are usually hammer-dressed.

**4.3.2 Random Rubble Masonry**—Stones shall be hammer-dressed on the face, the sides and the beds to enable these to come in proximity with the neighbouring stone. The bushing on the face shall not be more than 40 mm on an exposed face.

#### **4.3.3 Coursed Rubble Masonry**

**4.3.3.1 Coursed rubble (first sort)**—Face stone shall be hammer-dressed on all beds and joints so as to give them approximately rectangular shape. These shall be square on all joints and bed faces. The bed joints faces shall be chisel drafted for at least 80 mm back from the face and for the

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side joints faces at least 40 mm. No portion of the dressed surface shall show a gap more than 6 mm from straight edge placed on it. The remaining unexposed surface portion of the stone shall not project beyond the surface of bed and side joints. The requirements regarding bushing shall be same as for random rubble masonry (see 4.3.2).

**4.3.3.2 Coursed rubble (second sort)**—All requirements are the same as for coursed rubble (first sort) (see 4.3.3.1) except that no portion of dressed surface of joints shall show a depth of gap more than 10 mm from a straight edge placed on it.

**4.3.4 Stones for Arches, Domes or Circular Moulded Work**—The dressing shall be done in the same manner as for ashlar sunk or moulded (see 4.3.1.2) except that for arch or dome work, the stones shall be dressed to the required shape so that the surface of joints shall be truly radial.

**4.3.5 Stones for Moulded and Carved Columns**—The dressing shall be done in the same manner as for plain ashlar (see 4.3.1.1). The surface of joints with the adjoining stones shall be truly vertical, horizontal, radial and circular as the case may be. The face may be dressed to uniform curves of planes as required for the work.

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Fax : 91 11 3234062, 91 11 3239399, 91 11 3239382

Telegrams : Manaksanstha  
(Common to all Offices)

## Central Laboratory:

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Telephone  
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