

IS : 1200 (Part III) - 1976
(Reaffirmed 1992)

Indian Standard

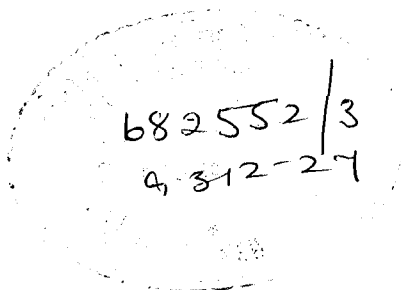
METHOD OF MEASUREMENT OF BUILDING AND CIVIL ENGINEERING WORKS

PART III BRICKWORK

(Third Revision)

Third Reprint AUGUST 1993

UDC 69'003'12 : 693'2



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BUREAU OF INDIAN STANDARDS
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Indian Standard

METHOD OF
MEASUREMENT OF BUILDING AND
CIVIL ENGINEERING WORKS

PART III BRICKWORK

(Third Revision)

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METHOD OF
MEASUREMENT OF BUILDING AND
CIVIL ENGINEERING WORKS

PART III BRICKWORK

(Third Revision)

0. FOREWORD

0.1 This Indian Standard (Part III) (Third Revision) was adopted by the Indian Standards Institution on 19 July 1976, after the draft finalized by the Civil Works Measurement Sectional Committee had been approved by the Civil Engineering Division Council.

0.2 Measurement occupies a very important place in planning and execution of any civil engineering work from the time of first-estimates to final completion and settlement of payments for the project. Methods followed for measurement are not uniform and considerable differences exist between practices followed by one construction agency and another and also between various Central and State Government departments. While it is recognized that each system of measurement has to be specifically related to the administrative and financial organizations within the department responsible for work, a unification of the various systems at technical level has been accepted as very desirable, specially as it permits a wider circle of operation for civil engineering contractors and eliminates ambiguities and misunderstandings arising out of inadequate understanding of various systems followed.

0.3 Among the various civil engineering items, measurement of buildings was the first to be taken up for standardization and this standard having provisions relating to all building works, was first published in 1958 and then revised in 1964.

0.4 In the course of usage of this standard by various construction agencies in the country, several clarifications and suggestions for modifications were received and as a result of study, the Sectional Committee decided that its scope, besides being applicable to buildings, should be expanded so as to cover civil engineering works like industrial and river valley project works.

0.5 Since various trades are not related to one another, the Committee decided that method of measurement for each trade as given in IS : 1200-1964* be issued separately as a different part, which will be helpful to specific users in various trades. This part covering method of measurement of brickwork applicable to building as well as civil engineering works was, therefore, issued as a second revision in 1970.

0.6 In the course of use of this standard in the past five years based on suggestions received, certain amendments were issued to this standard. This third revision has been prepared to incorporate these amendments.

0.7 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 measurement, 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.

1. SCOPE

1.1 This standard (Part III) covers the method of measurement of brickwork in buildings and civil engineering works.

NOTE — The method of measurement of refractory brickwork is covered in IS : 1200 (Part VI)-1974‡.

2. GENERAL

2.1 Clubbing of Items — Items may be clubbed together provided that break up of clubbed items is on the basis of detailed descriptions of items as stated in this standard.

2.2 Booking of Dimensions — In booking dimensions, the order shall be consistent and generally in the sequence of length, breadth or width and height or depth or thickness.

2.3 Measurement—All work shall be measured net in the decimal system, as fixed in place, as given below:

- a) Dimensions shall be measured to the nearest 0.01 m,
- b) Areas shall be worked out to the nearest 0.01 m², and
- c) Cubic contents shall be worked out to the nearest 0.01 m³.

*Method of measurement of building works (revised).

†Rules for rounding off numerical values (revised).

‡Method of measurement of building and civil engineering works : Part VI Refractory works (second revision).

2.4 Description of Item — Description of each item shall, unless otherwise stated, be held to include, where necessary, conveyance, delivery, handling, unloading, storing, waste, return of packings, necessary scaffolding, tools and tackle.

2.5 Waste — All measurements of cuttings shall, unless otherwise stated, be deemed to include consequent waste.

2.6 Deduction — Where minimum area is defined for deduction of an opening, void or both, such area shall refer only to opening or void within the space measured.

2.7 Work to be Measured Separately — Work executed in the following conditions shall be measured separately:

- a) Work in or under water,
- b) Work in liquid mud,
- c) Work in or under foul positions,
- d) Work interrupted by tides, and
- e) Work in snow

2.7.1 Levels of high and low water tides, where these occur, shall be stated.

2.7.2 Where springs requiring pumping are encountered, dewatering shall be measured against a separate specific provision made for the purpose [see 2.7 of IS: 1200 (Part I)-1974*].

2.8 Bills of Quantities — Items of work shall fully describe materials and workmanship, and accurately represent the work to be executed.

2.9 Measurement in Stages — Work shall be measured in the following categories in convenient stages stating height or depth:

- a) Below ground/datum line, and
- b) Above ground/datum line.

NOTE — Ground/datum line may be specified in each case.

3. BRICKWORK GENERAL

3.1 Bricks and mortar to be used for brickwork shall be fully described. Where it is proposed to specify a bond other than English bond, it shall be so stated.

*Method of measurement of building and civil engineering works: Part I Earthwork (third revision).

3.1.1 The item of general brickwork shall be deemed to include the following:

- a) Raking out joints for plastering or for pointing done as a separate process or finishing joints flush as work proceeds;
- b) Preparing tops of existing walls and the like for raising;
- c) Rough cutting and waste for forming gables, cores of arches, splays at eaves and the like and all rough cutting in the body of brickwork, unless otherwise stated;
- d) Plumbing to angles;
- e) Forming reveals to jambs where fair cutting on exposed faces is not involved;
- f) Leaving holes for pipes, etc;
- g) Building in holdfasts, air bricks, fixing bricks, etc;
- h) Building in ends of beams, joists, slabs, lintels, sills, trusses, etc;
- j) Forming openings and flues for which no deduction is made (see 4.1.5);
- k) Bedding wall plates, lintels, sills, roof tiles, corrugated sheets, etc, in or on walls if not covered in respective trade ; and
- m) Leaving chases of section not exceeding 50 cm in girth.

3.1.2 The following categories of brickwork shall be included with general brickwork:

- a) Footings;
- b) Battered (measured net). Battered surfaces shall, however, be measured separately in square metres as an extra-over;
- c) Eaves or beam fillings, no deduction being made for joists, rafters, etc;
- d) Brickwork (excluding refractory brickwork) in chimney breasts, chimney stacks, smoke or air flues (except independent chimney shaft as in factories for steam boilers); and
- e) Pilasters, plain copings and sills.

NOTE — In the case of receding courses of panels, recess shall not be deducted.

4. MEASUREMENT

4.1 Brickwork shall generally be measured in cubic metres, unless otherwise stated.

4.1.1 Walls one brick thick and less shall each be measured separately in square metres stating thickness.

4.1.2 Walls exceeding one brick thick but not exceeding three bricks in thickness shall be measured in multiples of half-brick which shall be deemed to be inclusive of mortar joints. Where fractions of half-brick occur due to architectural or other reasons, measurement shall be taken as follows:

- a) Up to $\frac{1}{2}$ brick — actual measurement, and
- b) Exceeding $\frac{1}{2}$ brick — full half-brick.

4.1.3 For walling which is more than three bricks in thickness actual thickness of wall shall be measured.

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

- a) Ends of dissimilar materials (that is, joists, beams, lintels, posts, girders, rafters, purlins, trusses, corbels, steps, etc); up to 0.1 m^2 in section;
- b) Opening up to 0.1 m^2 in area (see Note);
- c) Wall plates, bed plates, and bearing of slabs, *CHAJJAS* and the like, where thickness does not exceed 10 cm and bearing does not extend over the full thickness of wall;
- d) Cement concrete blocks as for hold fasts and holding down bolts;
- e) Iron fixtures, such as wall ties, pipes up to 300 mm diameter and hold fasts for doors and windows; and
- f) Chases of section not exceeding 50 cm in girth.

NOTE — In calculating area of an opening, any separate lintel or sills shall be included with the size of the opening but end portions of lintel shall be excluded [see 4.1.4(a)] and extra width of rebated reveals, if any, shall also be excluded.

4.1.5 *Fireplaces, Chimneys, etc* — Brickwork (excluding refractory brickwork) in chimney breasts, chimney stacks, smoke or air flues not exceeding 0.2 m^2 in sectional area shall be measured as solid, and no extra measurement shall be made for pargetting and coring such flues. Where flues exceed 0.2 m^2 in sectional area, deduction shall be made for the same, and pargetting and coring flues measured in running metres, stating size of flue. Apertures for fireplaces, shall not be deducted and no extra labour shall be measured for splaying of jambs and throating.

4.1.6 *Pillars / Columns* — Pillars shall be fully described and measured in cubic metres. Where pillars of different sections and shapes are involved their numbers shall be stated in addition in each case. Pillars shall be measured and kept separate as under:

- a) Rectangular or polygonal on plan,
- b) Curved on plan to any radius, and
- c) Any other type.

NOTE — Rectangular pillar/column shall mean a detached masonry portion such that its breadth does not exceed 3 times its thickness and thickness itself does not exceed 3-brick lengths.

5. CIRCULAR BRICKWORK

5.1 Brickwork circular on plan to a mean radius not exceeding 6 m shall be measured separately and shall include all cutting and waste and templates.

5.1.1 Brickwork circular on plan to a mean radius exceeding 6 m shall be measured separately and included with general brickwork.

6. BACKING TO MASONRY

6.1 Brickwork in backing to masonry shall be measured separately stating average thickness; description shall include all cutting and waste for bonding.

7. HONEYCOMB BRICKWORK

7.1 Honeycomb brick walling shall be measured in square metres stating thickness and pattern of honeycombing. Honeycomb opening shall not be deducted.

8. INDEPENDENT CHIMNEY SHAFTS

8.1 Brickwork in independent chimney shafts (as for large steam boilers) shall be measured net inclusive of all cutting, waste and templates and kept under the following categories:

- a) Rectangular on plan,
- b) Polygonal on plan, and
- c) Curved on plan to any radius.

8.1.1 Height of chimney from ground/datum line shall be stated (*see 2.9*).

9. CAVITY WALLS

9.1 Forming of cavity shall be measured in square metres stating width of cavity and shall include ties and their number per square metre. Material, size and shape of ties shall be described.

9.2 Measurement of cavity shall be taken along a plane at centre of cavity, deduction being made for all openings and solid portions of walls.

9.3 Labour and material for closing cavities at jambs, sills and heads of openings shall be described and measured separately in running metres.

9.4 Use of cores for keeping cavity clear and forming requisite weep and vent holes shall be described.

10. REINFORCED BRICKWORK

10.1 Reinforced brickwork shall be measured and kept separate from general brickwork and unless otherwise stated reinforcement shall be measured separately [see IS: 1200 (Part VIII)-1975*].

11. BRICK NOGGING

11.1 Brickwork above one brick in thickness shall be included with general brickwork; brickwork one brick and less in thickness shall be measured as described in 4.1.1. Dimensions shall be measured overall.

11.1.1 Timber work shall be measured separately [see IS: 1200 (Part XXI)-1973†].

12. BRICKWORK WITH FAIR FACE OR ARCHITECTURAL APPEARANCE

12.1 Brickwork with fair face or architectural appearance shall be measured separately.

13. BRICKWORK IN ARCHES, VAULTS OR STAIRCASES

13.1 Brickwork in arches, vaults or staircases shall be measured separately; work in selected uncut bricks and in purpose made or fair cut and rubbed bricks shall be so described and measured separately and shall include centering for spans up to 2 m. For spans exceeding 2 m, centering shall be measured separately [see IS: 1200 (Part V)-1972‡]. Cutting to skews shall be included in the description.

14. UNDERPINNING

14.1 Brickwork in underpinning shall be measured separately and an item for extra labour and material in wedging up on top of underpinning shall be measured in square metres as length multiplied by width of top course.

15. FAIR CUTTING OF BRICKWORK

15.1 Fair cutting exceeding 10 cm in width or in girth in splayed angles, weatherings, cornices, quoins, etc (where purpose-made bricks are not used), shall be measured separately in square metres.

*Method of measurement of building and civil engineering works : Part VIII Steel work and iron work (*third revision*).

†Method of measurement of building and civil engineering works : Part XXI Woodwork and joinery (*second revision*).

‡Method of measurement of building and civil engineering works : Part V Form work (*second revision*).

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15.2 Fair cutting not exceeding 10 cm in width or girth, such as in splays and chamfers, shall be measured in running metres, stating width/girth.

15.3 Circular fair cutting shall be measured separately in square metres.

16. BRICK EDGINGS

16.1 Brick edgings, as to roads and the like, shall be described and measured in running metres.

17. FILLETING

17.1 Filleting in mortar, as in flashings on roofs, shall be described and measured in running metres stating shape and sectional area of fillets.

18. BROKEN GLASS COPING

18.1 Broken glass coping laid along with brickwork shall be measured in square metres and described stating thickness of mortar and weight of broken glass per square metre of coping.

19. DAMP-PROOF COURSES

19.1 Damp-proof course shall be described and measured in square metres stating thickness. Description shall include levelling up and/or preparing brickwork to receive the treatment and use and waste of form work, if required.

19.1.1 Vertical and horizontal damp-proof courses shall be measured separately.

20. BRICKWORK AROUND STEEL JOISTS (ENCASING)

20.1 Encasing brickwork to steel joists or beams, steel stanchions, etc, shall be measured in cubic metres.

20.2 Volume occupied by joists shall not be deducted except in case of boxed stanchions or girders in which case box portion only shall be deducted.

20.3 Extra labour in cutting and fitting brickwork around steel joists, stanchions, girders, etc, shall be measured separately in square metres of finished surfaces.

21. SILLS, CORNICES, ETC

21.1 Plain corbels, string courses, aprons, friezes, sills, cornices, drip courses, oversailing courses, and other projections, etc, of splayed, bullnosed or any other type of purpose-made or cut bricks shall be fully described and measured in running metres stating depth and width of projection. No deduction shall be made from masonry of wall for the bearing portion of drip course, bearing of moulding and cornice.

22. BRICK TILE WORK

22.1 Brick tile work shall be measured separately and the rules for measuring ordinary brickwork shall be followed.

23. CHASES, REBATES, ETC

23.1 Cutting chases, rebates, throatings, grooves, etc, in brickwork shall be measured in running metres stating girth and classified as follows:

- a) Not exceeding 10 cm in girth, and
- b) Exceeding 10 cm but not exceeding 20 cm in girth.

23.1.1 Chases, rebates, etc, exceeding 20 cm in girth shall be measured in square metres (girth $\times$ length).

24. CUTTING HOLES

24.1 Cutting holes through brickwork including making good shall be measured per centimetre of depth of cutting and shall be classified as follows:

- a) Holes not exceeding 400 cm² in area, and
- b) Holes exceeding 400 cm² and not exceeding 0.1 m² in area.

25. CUTTING OPENINGS

25.1 Cutting openings exceeding 0.1 m² in area in walls one brick thick and less shall be measured in square metres and in walls exceeding one brick thick shall be measured in cubic metres.

26. TOOTHING AND BONDING

26.1 Where new walls are bonded to existing walls, an item of labour and material in cutting, tothing and bonding shall be measured in square metres of vertical face in contact with new work only.

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