SRI LANKA STANDARD 855 PART 1: 1989

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SPECIFICATION FOR

CEMENT BLOCKS

PART 1- REQUIREMENTS

SRI LANKA STANDARDS INSTITUTION

SPECIFICATION FOR CEMENT BLOCKS
PART 1 : REQUIREMENTS

SLS 855 : Part 1 : 1989

(Attached AMD 164 and Errata Sheet)

Gr. 10

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SRI LANKA STANDARD
SPECIFICATION FOR CEMENT BLOCKS
PART 1 : REQUIREMENTS

FOREWORD

This Standard was authorized for adoption and publication as a Sri Lanka Standard by the Council of the Sri Lanka Standards Institution on 89-07-25, after the draft, finalized by the Drafting Committee on Precast masonry units, had been approved by the Civil Engineering Divisional Committee.

Cement blocks are available as solid blocks, hollow blocks and cellular blocks, and commonly made of cement sand mixes or concrete mixes. Although they are of recent origin compared to other building materials such as stone and brick, the demand in the construction industry for these blocks is significant at present.

Popularity has led to greater use, which in turn has stimulated the use of hand casting and machine casting. Further, more and more manufacturers are taking up production of cement blocks and this trend may continue as these products become popular throughout the country. Production of a great diversity of blocks with varying sizes and tolerances, and varying properties can be harmful in the long term. Use of cement blocks in high strength applications also necessitates the need for careful quality control and regular testing of blocks. Due to more favourable environmental conditions and the common building types prevalent in Sri Lanka, strength and physical requirements can also be altered compared to those specified internationally. Thus a strong need exists for a specification for cement blocks to attain higher performance levels and greater safety, to standardize on size and tolerances of units, and to conduct necessary testing.

This part of the standard deals with requirements of solid blocks, hollow blocks and cellular blocks. Part 2 of this standard specifies test methods related to cement blocks..

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 an analysis, shall be rounded off in accordance with CS 102. The number of significant figures to be retained in the rounded off value shall be the same as that of the specified value in this standard.

In the preparation of this standard the assistance derived from the publications of the American Society for Testing and Materials, the British Standards Institution, the Bureau of Indian Standards, the Japanese Standards Association and the standards Australia is gratefully acknowledged.

1 SCOPE

This Part of the standard deals with requirements for compliance and specifies materials, sizes and dimensional tolerances and minimum performance levels for cement blocks for construction work. It covers solid, hollow and cellular blocks not exceeding 650 mm in any work size dimension. Cement blocks in which the height exceeds the length or six times the thickness are outside the scope of this standard.

Precast concrete paving blocks are also outside the scope of this standard.

2 REFERENCE

BS	CP 3	Chapter V : Part 2 : Wind loads.
BS	882	Aggregate from natural sources for concrete.
BS	1014	Pigments for Portland cement and Portland cement products.
BS	5628	Code of practice for use of masonry.
CS	102	Presentation of numerical values.
SLS	107	Ordinary Portland cement.
SLS	428	Random sampling methods.
SLS	522	Water for making concrete.
SLS	855	Cement blocks : Part 2 : Test methods

3 DEFINITIONS

For the purpose of this specification the following definitions shall apply.

3.1 block : A masonry unit which when used in its normal aspect exceeds the height or length or width specified for bricks.

3.2 solid block : A block having solid material not less than 75 per cent of the total volume of the block calculated from the overall dimensions.

3.3 cellular block : A block having one or more moulded or formed holes or cavities which do not effectively pass through the block and having solid material between 50 per cent and 75 per cent of the total volume of the block calculated from the overall dimensions.

3.4 hollow block : A block having one or more moulded or formed holes or cavities which pass through the block and having solid material between 50 per cent and 75 per cent of the total volume of block calculated from the overall dimensions.

NOTE - Moulded or formed holes do not include transverse slots to facilitate cutting.

3.5 special block : A block such as corner block, joist block (channel section), jamb block (half unit) and hollow/cellular block (for placement of reinforcements) intended for use at certain specific locations.

3.6 size : The co-ordinating size or the work size.

3.6.1 *co-ordinating size* : The size of a co-ordinating space allocated to a block, including allowances for joints and tolerances.

3.6.2 *work size* : The size of a masonry block specified for its manufacture (to which its actual size should conform within specified permissible deviations).

3.7 height : The vertical dimension of a block measured perpendicular to the base when the block is used in its normal aspect.

3.8 length : The larger dimension measured along an edge of a block in the plane which is used as the base of the block.

3.9 width : The shorter dimension measured along an edge of a block in the plane which is used as the base of the block.

3.10 compressive strength : The average value of the crushing strength of ten or more blocks tested in accordance with 4 of **SLS 855 : Part 2 : 1989**, provided that the lowest crushing strength of any individual block is not less than 75 per cent of the average value of the crushing strength of the blocks tested.

NOTE - When the lowest crushing strength of any individual block does not satisfy the above condition, the compressive strength is taken as 1.33 times the lowest crushing strength of any individual block.

3.11 drying shrinkage : The difference between the length of a specimen (cut from a block), which has been immersed in water and its length when subsequently dried, all under specified conditions. It is usually expressed as a percentage of the dry length.

3.12 wetting expansion : The difference in length of a specimen when dried to constant length and that when subsequently immersed in water, all under specified conditions. It is usually expressed as a percentage of the dry length.

3.13 block density : The density calculated by dividing the mass of a block by the overall volume including holes and cavities.

4 MATERIALS

4.1 Cement

The cement used in the manufacture of blocks shall be ordinary Portland cement conforming to the requirements of SLS 107.

NOTE - Other types of cement complying to any other national standard acceptable to the Sri Lanka Standards Institution may also be used.

4.2 Aggregates

Aggregate or aggregates used in the manufacture of blocks shall be clean and free from deleterious matter and shall conform to the requirements of BS 882.

Aggregate complying to any other national standard acceptable to the Sri Lanka Standards Institution may also be used.

In the case of hollow blocks, maximum nominal aggregate size shall be such that the minimum face shell or web thickness shall be not less than 1.75 times the maximum nominal size of aggregate.

4.3 Water

The water to be used in the manufacture of blocks shall conform to the requirements of SLS 522.

5 ADDITIVES OR ADMIXTURES

Additives or admixtures may be used either as additives to the cement during manufacture, or as admixtures to the concrete mix.

Additives or admixtures used in the manufacture may be one or more of the following :

(a) Pigments, which shall comply with **BS 1014**, or any other standard acceptable to the Sri Lanka Standards Institution ; where appropriate, they shall also be suitable for use in a product which is steam cured at atmospheric pressure or high pressure ;

(b) Substances to control or adjust the setting and hardening times of the mix ;

(c) Substances to improve the workability of the mix and reduce the permeability of the product ;

(d) Substances to cause air_entrainment, foaming or gas generation ; and

(e) Waterproofing or hydrophobic compounds.

6 DIMENSIONS AND TOLERANCES

6.1 Sizes

The purchaser shall specify the work size, that is the face dimensions and width of the block in Table 1 .

TABLE 1 - Work sizes of blocks

Length mm	Height mm	Width mm												
		75	100	115	125	140	150	175	190	200	215	220	225	250
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
390	190	X	X	X	-	X	X	-	X	X	-	-	-	-
440	140	X	X	-	-	X	X	-	X	X	-	-	X	-
440	190	X	X	-	-	X	X	-	X	-	X	X	-	-
440	215	X	X	X	X	X	X	X	X	X	X	X	X	X
440	290	X	X	-	-	X	X	-	X	X	X	-	-	-
590	140	X	X	-	-	X	X	-	X	X	X	-	-	-
590	190	X	X	-	-	X	X	-	X	X	X	-	-	-
590	215	X	X	-	X	X	X	X	-	X	X	-	X	X

NOTES

1. To obtain the co-ordinating size of a block, add the nominal joint width, which is normally 10 mm, to the length and height of the block given in Table 1 (The width remains unchanged).

2. The preferred sizes are shown in boldface.

3. Dimensions of special blocks may be suitably varied. In the case of special blocks where hollows would be subsequently filled with mortar or concrete, size of cavities (see 6.4) may also be suitably varied.

6.2 Minimum shell and web thickness for hollow or cellular blocks Hollow or cellular blocks shall comply with the following requirements :

a) When taken as the average of the measurements at their thinnest point on 20 blocks or such number as sampled in accordance with 12, the wall thicknesses of shells and of webs shall be not less than as given in Table 2, as appropriate;

b) Webs shall be of a minimum height of 70 mm, or the full height of the block less 50 mm, which ever is the greater. This requirement shall not apply to special blocks designed to form lintels or bond-beams ; and

c) Further to the minimum requirements of Table 2, the thickness of any face shell at any point shall be not less than :

1) 0.2 times the unsupported distance beyond that point in a cantilever face shell ; or
2) 0.09 times the clear distance between webs.

TABLE 2 : Minimum shell and web thickness for hollow or cellular blocks

All dimensions in millimetres

Work size block width	Minimum face shell thickness	Minumum thickness of any web	Minimum total web thickness per course in any 400 mm length of walling
100 or less	25	25	50
>100 < 150	25	25	60
>150 < 200	30	25	60
>200	35	30	75

NOTE - These minimum dimensions apply for structural reasons. Increases might be required for such purposes as fire resistance and sound insulation.

6.3 Tolerances
The maximum dimensional deviations for blocks measured in accordance with 5 of SLS ... : Part 2 : 1989 shall be as in Table 3.

TABLE 3 - Tolerances of dimensions

Dimension	Maximum dimensional deviation for blocks	
Length	+ 3 mm	- 5 mm
Height	+ 3 mm	- 5 mm
Average width	+ 2 mm	- 2 mm
Width at any point	+ 4 mm	- 4 mm

6.4 Size of cavities
The total width of cavity in any block, measured at right angles to the face of the block as laid in the wall, when determined in accordance with 5 of SLS 855 : Part 2 : 1989, shall not exceed 65 per cent of the width of the block. The volume of cavities in the block, when determined in accordance with 6 of SLS 855 : Part 2 : 1989, shall not exceed 50 per cent of the gross volume of the block.

7 SURFACE TEXTURE AND FINISH

7.1 Surface characteristics
When intended for use with rendering or plastering, the surface characteristics of the blocks shall be such as to provide a satisfactory bond.

7.2 Form
Subject to the provisions of 7.4 and the tolerance specified in 6.3, the faces of the blocks shall be flat and rectangular. Opposite faces shall be parallel and all arrises shall be square.

7.3 Joints
The bedding surfaces shall be at right angles to the faces of the blocks. The ends of the blocks which form the vertical joints may be tongued and grooved (see Fig.1a), double grooved (see Fig.1b) or plain butt (see Fig.1c).

7.4 Blocks with special faces
Blocks in the following categories may be supplied by mutual agreement between purchaser and the supplier :

a) Blocks having profiled faces ;
b) Blocks having special facing backed with concrete as an integral part of manufacture ; and
c) Blocks having a special face applied to the block subsequent to moulding.

The profile and/or facing including thickness of any integral or applied facing and its suitability for its intended purpose shall be as previously agreed between the purchaser and the supplier. Blocks with special faces shall be deemed to comply with this specification provided that the blocks conform to the test requirements appropriate to them.

8 VISUAL APPEARANCE
All blocks shall be sound, free from cracks, broken edges, honeycombing and other defects that would interfere with the proper placing of blocks or impair the strength or permanence of construction.

9 STRENGTH
By the time the blocks are despatched from the place of manufacture the blocks shall conform to the following strength requirements :

a) The compressive strength (average crushing strength of 10 blocks or more) shall be not less than 1.2 N/mm^2 (see also Appendix A) ; and

b) The corresponding lowest crushing strength of any individual block shall be not less than 75 per cent of the minimum permissible compressive strength given in (a) as tested in accordance with 4 of **SLS 855 : Part 2 : 1989.**

NOTE - Crushing strength of a block is based on the gross area calculated in accordance with 4.5.1 of SLS 855 : Part 2 : 1989, including the area of hollow portion and recessed-end portion, where applicable.

10 PHYSICAL PROPERTIES

At the time of dispatch of blocks from the place of manufacture a sample as specified in 12 shall be tested in accordance with the relevant methods given in 7,8,9 and 9 of SLS 855 : Part 2 : 1989. The average of value of the particular physical property shall not exceed the specified value in Table 4.

TABLE 4 - Methods of tests and specified values for physical properties

Physical property	specified value
Drying shrinkage	0.06 per cent
Wetting expansion	0.03 per cent
Water absorption	240 kg/m^3
Moisture content	40 per cent

11 CERTIFICATE OF COMPLIANCE

11.1 The manufacturer shall satisfy himself that the blocks conform to the requirements of this specification and, if requested, shall supply a certificate to this effect to the purchaser or his representative.

11.2 If the purchaser or his representative requires independent tests the samples shall be taken before or immediately after delivery at the option of the purchaser or his representative and the tests shall be carried out in accordance with SLS 855 : Part 2 : 1989.

11.3 Unless otherwise specified in the indent or order, the cost of the tests shall be borne as follows :

a) By the manufacturer in the event of the results showing that the blocks do not conform to this specification ; or

b) By the purchaser in the event of the results showing that the blocks conform to this specification.

12 SAMPLING AND CRITERIA FOR CONFORMITY

12.1 Lot

All cement blocks of same size, type and batch of manufacture or supply shall constitute a lot.

12.2 Scale of sampling

12.2.1 Samples from each lot shall be tested for ascertaining its conformity to the requirements of this specification.

12.2.2 Twenty blocks shall be taken from every 3000 blocks or part thereof.

12.2.3 The sample of blocks shall be taken in accordance with one of the procedures given in 12.2.3.1 or 12.2.3.2. It is preferable to do sampling of blocks in motion.

12.2.3.1 Sampling of blocks in motion

Whenever practicable, samples shall be taken when the blocks are moved as in the case of loading or unloading. The batch from where samples are to be drawn, shall be divided into a number of convenient portions and equal number of blocks shall be drawn from each portion to constitute the sample.

12.2.3.2 Sampling of blocks from a stack

The number of blocks required for the tests shall be taken at random from across the stack, the sides accessible and from the interior of the stack by opening trenches from the top.

12.2.4 The blocks shall be drawn at random. In order to ensure randomness of selection a method given in SLS 428 shall be used.

12.3 Number of tests

12.3.1 All blocks selected as in 12.2 shall be inspected for requirements given in 6,7 and 8.

12.3.2 The blocks of the sample selected as in 12.2 shall be divided into four parts and the blocks of each part shall be individually tested as given in Table 5.

TABLE 5 - Sample sizes for the specified tests

Requirement(s)	Number of blocks required per consignment of 3 000 or part thereof
Strength	10
water absorption and moisture content	3
Drying shrinkage and wetting expansion	3
Density	4

NOTE - Special blocks are not recommended for use as test specimens for the tests specified in 9 and 10.

12.4 Criteria for conformity

A lot shall be declared as conforming to the requirements of this specification if the conditions specified in 12.4.1, 12.4.2, 12.4.3 and 12.4.4 are satisfied.

12.4.1 The number of blocks not conforming to one or more requirements given in 6,7 or 8 is less than or equal to two blocks for every 20 blocks in the sample.

12.4.2 The compressive strength of the sample shall conform to the requirements of 9.

12.4.3 For water absorption and moisture content, the average value of each is less than or equal to the corresponding maximum value specified in 10.

12.4.4 For drying shrinkage and wetting expansion the average value of each is less than or equal to the corresponding maximum value specified in 10.

13 MARKING

The following particulars relating to blocks shall be clearly indicated on the delivery note, invoice, or supplier's certificate supplied with each consignment of blocks :

a) the name, address, and where available, trade mark of the manufacturer ;

b) the compressive strength in N/mm^2;

c) the length, height and width of the block ; and

d) the type of block i.e solid, hollow, cellular or special block.

NOTE - Attention is drawn to certification facilities offered by the SLSI (see the inside back cover of this standard).

APPENDIX A

COMPRESSIVE STRENGTH OF BLOCKS REQUIRED FOR SOME APPLICATIONS

The required compressive strength of a block to be used in a wall depends on the shape of the block, type of mortar used and the specific application. Thus it is not possible to specify compressive strength of blocks for a given application without conducting detailed calculations, although some typical values can be given. Table 6 gives typical values of compressive strength of blocks for some common dimensions and some applications.
In deriving the typical values of compressive strength of blocks, the following data were assumed :

a) A typical building was taken as 7.0 m wide by 9.0 m long with 3.0 m spacing between crosswalls and 3.0 m storey heights ;

b) A gabled roof of corrugated asbestos sheets with a roof slope of 12 degrees to the horizontal ;

c) The overhang of the eaves and the verges of the roof of 1.0 m measured in plan ;

d) Imposed load on the roof as 0.25 kN/m^2 and that on the floors as 3.0 kN/m^2 ;

e) Density of hollow blocks to be 1500 kg/m^3 and that of solid blocks to be 2000 kg/m^3 ;

f) Concrete floor slab of 150 mm thick spanning one way to crosswalls ;

g) Basic wind speed as 33.5 m/sec and ground roughness as category 1 of **BS CP3 : Chapter V : Part 2** : wind loads;

h) Partial safety factor for material strength of blocks as 3.5 ;

j) Table 2 of BS 5628 : Part 1 : 1985 can be extrapolated from blocks of compressive strength 2.8 N/mm^2 to cover blocks of compressive strength 1.2 N/mm^2 as:

1) The relationship in the vicinity of this region is approximately linear ;

2) This region is applicable mainly for single-storey buildings ; and

3) Influence of block compressive strength on the compressive strength of a wall, in this region, is insignificant ;

and

k) As the same wind load coefficients are used, wind loads for buildings less than those with six-storeys are higher than the actual, thus giving a conservative design.

However, Table 6 is for general guidance only and the block compressive strength shall be obtained by structural calculations considering block details, mortar designation, loadings and the specific application.

TABLE 6 - Typical values of minimum block compressive strength required for loadbearing walls of residential buildings up to six-storeys high

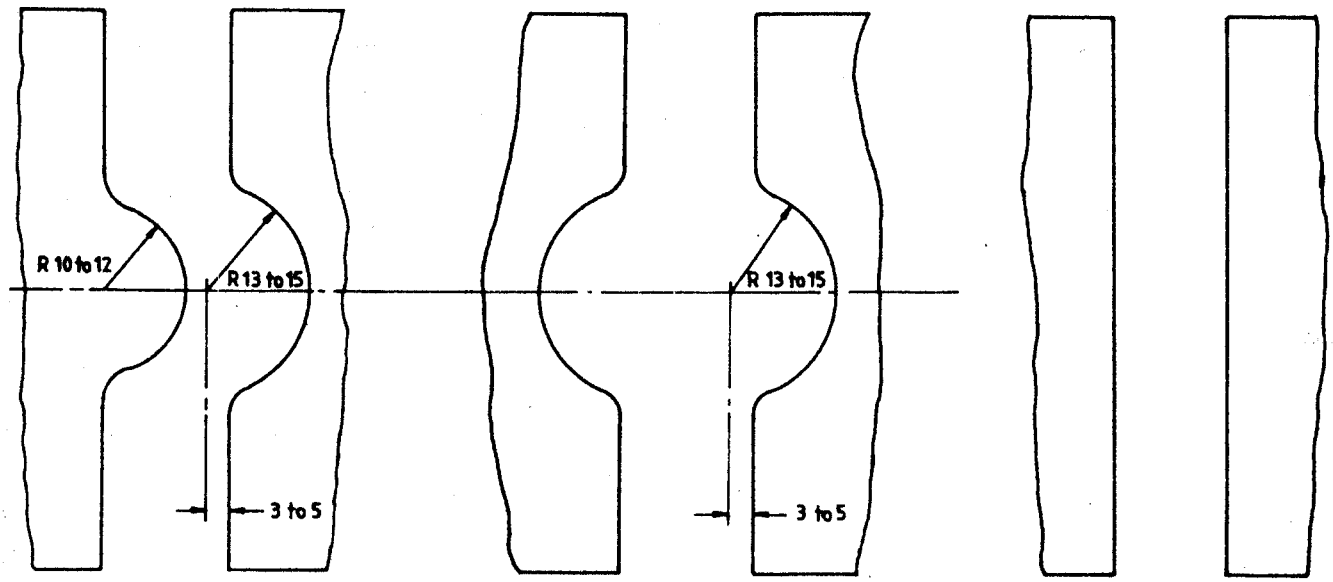
Block type and Dimensions (length x width x height) in millimetres	Mortar designation for blocklaying	Number of storeys					
		1	2	3	4	5	6
		Compressive strength of a block (N/mm^2)					
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Hollow 400 x 200 x 200	1	1.2	1.5	2.5	3.5	4.0	5.2
	2	1.2	2.0	2.5	3.5	4.0	5.2
	3	1.2	2.0	2.5	3.5	4.0	5.2
	4	1.2	2.0	2.5	3.5	4.7	6.5
Hollow 400 x 150 x 200	1	1.2	2.0	3.7	5.2	7.2	13.2
	2	1.2	2.2	3.7	5.2	8.7	17.0
	3	1.2	2.2	3.7	5.2	9.2	20.7
	4	1.2	2.2	3.7	7.0	14.5	25.7
Hollow 400 x 100 x 200	1	1.2	2.2	3.7	5.2	11.5	23.0
	2	1.2	2.2	3.7	5.2	17.5	29.0
	3	1.2	2.5	3.7	5.5	22.7	33.5
	4	1.2	2.5	3.7	15.0	28.0	41.2
Solid 400 x 100 x 200	1	1.2	2.5	3.7	5.2	6.5	9.0
	2	1.2	2.5	3.7	5.2	7.0	9.5
	3	1.2	2.5	3.7	5.5	7.2	10.0
	4	1.2	2.5	3.7	6.5	9.0	13.0

NOTES

1. Mortar designation 1=1 cement : 3 sand
2=1 cement : 3 sand; or 1 cement : ½ lime : 4 sand
3=1 cement : 5 sand; or 1 cement : 1 lime : 5 sand
4=1 cement : 8 sand; or 1 cement : 2 lime : 9 sand

2. Minimum compressive strength of block for non-loadbearing walls = 1.2 N/mm^2.

3. In instances where compressive strength of a block exceeds 10 N/mm^2, it may be worthwhile to consider an alternative block size or an alternative design.



(a) Tongue and groove joint (b) Double groove joint (c) Plain butt joint

All dimensions in millimetres

FIGURE 1 - Typical profiled ends of blocks

AMENDMENT NNO. 01 APPROVED ON 1994-02-17

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PAGE 4

Clause 1 SCOPE

Delete the existing second paragraph and substitute the following :

Pre cast concrete paying blocks, and interlocking blocks which do not require customary horizontal and vertical mortar beds for block laying are also outside the scope of this standard.

PAGE 8

Clause 6.2

Delete the existing Sub-Clause **6.2** including Table 2 and substitute the following:

6.2 Minimum shell and web thickness for hollow or cellular blocks.

When taken as the average of the measurements at their thinnest point on 20 hollow or cellular blocks or such number as sampled in accordance with 12, the wall thickness of shells and of webs shall be not less than as given in Table 2, as appropriate.

TABLE 2 - Minimum shell and web thickness for hollow or cellular blocks

All dimensions in millimetres

Work size block width	Minimum face shell thickness	Minimum thickness of any web
100 or less	25	25
> 100 ≤ 150	25	25
> 150 ≤ 200	30	25
> 200	35	30

NOTE

These minimum dimensions apply for structural reasons. Increases might be required for such purposes as fire resistance and sound insulation.

PAGE 9

Delete existing Sub-Clause **6.4 Size of cavities** and insert a new Clause **7** titled as "Design requirements".

7 DESIGN REQUUIREMENTS

7.1 Size of cavities

The total width of cavity in any block, measured at right angles to the face of the block as laid in the wall, when determined in accordance with **5** of **SLS 855 : Part 2 : 1989**, shall not exceed 65 per cent of the width of the block. The volume of cavities in the block, when determined in accordance with **6** of **SLS 855 : Part 2 : 1989**, shall not exceed 50 per cent of the gross volume of the block.

7.2 Height of Webs

Webs shall be of a minimum height of 70 mm, or the full height of the block less 50 mm, whichever is the greater. This requirement shall not apply to special blocks designed to form lintels or bond-beams.

7.3 Face shell Thickness

Further to the minimum requirements of Table 2, the thickness of any face shell at any point shall not be less than :

a) 0.2 times the unsupported distance beyond that point in cantilever face shell; or
b) 0.09 times the clear distance between webs.

7.4 Total web thickness

The minimum total web thickness per course in any 400 mm length of walling shall not be less than that specified in Table 4.

TABLE 4 - Total web thickness

All dimensions in millimeters

Work size block width	Minimum total web thickness per course in any 400 mm length of walling
100 or less	50
> 100 ≤ 150	60
> 150 ≤ 200	60
> 200	75

NOTE

Due to insertion of new Clause, 7 ***Design requirements****, numbers of the subsequent Clauses and tables would be changed respectively.*

PAGE 12

Sub-Clause, **12.3** Number of tests

Delete the existing text in Sub-Clauses **12.3.1** and **12.3.2** and substitute the following :

12.3.1 Out of the blocks of the samples selected as in **12.2,** three blocks taken at random from every 20 blocks in the sample, shall be inspected for the design requirements given in 7.

12.3.2 All blocks selected as in **12.2** shall be inspected for requirements given in **6, 8** and **9**.

NOTE

Due to insertion of new Sub-Clause ***12.3.1*** *and 12.3.2 as above, the existing Sub-Clause* ***12.3.****2 should be numbered as* ***12.3.3.***

PAGE 13

Sub-Clause, **12.4** - Criteria for conformity

Delete the text under Sub-Clause **12.4** and substitute the following.

Sub-Clause, **12.4**

A lot shall be declared as conforming to the requirements of this specification if the conditions specified in **12.4.1, 12.4.2, 12.4.3, 12.4.4** and 12.4.5 are satisfied.

Delete the existing Sub-Clause **12.4.1** and insert new Sub-Clauses **12.4.1** and **12.4.2** as follows.

12.4.1 All the blocks tested for design requirements shall conform to 7.

12.4.2 The number of blocks not conforming to one or more requirements given in **6, 8** or **9** is less than or equal to two blocks for every 20 blocks in the sample.

NOTE

*Due to this insertion of new Sub-Clause **12.4.1** and **12.4.2** as above, the existing Sub Clauses 12.4.2, 12.4.3 and 12.4.4 should be numbered as 12.4.3, 12.4.4 and 12.4.5 respectively*.

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Insert the following under **Table 6** as **NOTE 4.**

4. Dimensions referred in Column 1 of the Table 6 are the co-ordinating sizes of a block (see **3.6.1**).

ERRATUM

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Page 11

Clause 10 TABLE 4

Delete the word "water" from the phrase "water absorption" given in Column 1 of Table 4.

Page 13

Clause 12.3.2 TABLE 5

Delete the word "water" from the phrase "water absorption" given in Column 1 of Table 5.

Page 13

Clause 12.4.3

Delete the word "water" in the first sentence.

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SRI LANKA STANDARDS INSTITUTION

The Sri Lanka Standards Institution (SLSI) is the National Standards Organization of Sri Lanka established under the Sri Lanka Standards Institution Act No. 6 of 1984 which repealed and replaced the Bureau of Ceylon Standards Act No. 38 of 1964. The Institution functions under the Ministry of Science & Technology.

The principal objects of the Institution as set out in the Act are to prepare standards and promote their adoption, to provide facilities for examination and testing of products, to operate a Certification Marks Scheme, to certify the quality of products meant for local consumption or exports and to promote standardization and quality control by educational, consultancy and research activity.

The Institution is financed by Government grants, and by the income from the sale of its publications and other services offered for Industry and Business Sector. Financial and administrative control is vested in a Council appointed in accordance with the provisions of the Act.

The development and formulation of National Standards is carried out by Technical Experts and representatives of other interest groups, assisted by the permanent officers of the Institution. These Technical Committees are appointed under the purview of the Sectoral Committees which in turn are appointed by the Council. The Sectoral Committees give the final Technical approval for the Draft National Standards prior to the approval by the Council of the SLSI.

All members of the Technical and Sectoral Committees render their services in an honorary capacity. In this process the Institution endeavours to ensure adequate representation of all view points.

In the International field the Institution represents Sri Lanka in the International Organization for Standardization (ISO), and participates in such fields of standardization as are of special interest to Sri Lanka.

Printed at the Sri Lanka Standards Institution, 17, Victoria Place, Elvitigala Mawatha, Colombo 08.

SLS CERTIFICATION MARK

The Sri Lanka Standards Institution is the owner of the registered certification mark shown below. Beneath the mark, the number of the Sri Lanka Standard relevant to the product is indicated. This mark may be used only by those who have obtained permits under the SLS certification marks scheme. The presence of this mark on or in relation to a product conveys the assurance that they have been produced to comply with the requirements of the relevant Sri Lanka Standard under a well designed system of quality control inspection and testing operated by the manufacturer and supervised by the SLSI *which includes surveillance inspection of the factory, testing of both factory and market samples.*

Further particulars of the terms and conditions of the permit may be obtained from the Sri *Lanka Standards Institution, 17, Victoria Place, Elvitigala Mawatha, Colombo 08.*

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