

Wood stairs —

Part 1: Specification for stairs with closed risers for domestic use, including straight and winder flights and quarter or half landings

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- British Woodworking Federation
- Department of the Environment (Building Research Establishment)
- Department of the Environment (Building Research Establishment, Princes Risborough Laboratory)
- Department of the Environment (Housing and Construction Industries)
- Fibre Building Board Organization (FIDOR)
- Institute of Carpenters
- Joinery Managers' Association Ltd.
- London Housing Consortium
- Royal Institute of British Architects
- Scottish Development Department
- Spiral Stair Manufacturers' Association
- Timber Research and Development Association
- Timber Trade Federation

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Contents

	Page
Committees responsible	Inside front cover
Foreword	ii
1 Scope	1
2 Definitions	1
3 Sizes and tolerances	1
4 Materials and workmanship	2
5 Treads and risers	2
6 Strings	4
7 Newels	5
8 Construction	5
9 Handrails and balustrades	7
Appendix A Recommendations for site fixing of stairs	8
Appendix B Recommendations for the design of stairs with winder flights	12
Figure 1 — Glue blocks	3
Figure 2 — Typical details of stairs with winder flights	4
Figure 3 — Typical built-up newel	6
Figure 4 — Assembly details of straight flight with balustrade	9
Figure 5 — Assembly of balustrades for landings	10
Figure 6 — Assembly of bullnose step	11
Figure 7 — Clear width and going on winder flights	13
Figure 8 — Overall dimensions of winding stairs	16
Figure 9 — Calculation of centre going on winder flight	18
Figure 10 — Calculation of minimum going on winder flight	20
Figure 11 — Measurement of clear headroom on winder flight	21
Table 1 — Minimum finished sizes of members	2
Table 2 — Minimum overall sizes of stairs with three or six winder treads	15
Table 3 — Minimum overall sizes of stairs with four or eight winder treads	15
Publications referred to	Inside back cover

Foreword

This Part of BS 585, which has been prepared under the direction of the Timber Standards Committee, is a revision of BS 585-1:1984, which is withdrawn. It is a prescriptive specification for the construction of timber stairs which may include plywood risers and treads and/or edge-to-edge jointed timber and/or glue-laminated wood components.

The principal changes made in this edition are the addition of stairs with winder flights, the inclusion of plywood treads and the increase in minimum size of strings and newels for stairs with more than nine goings unsupported.

The proper functioning and durability of a stair complying with this standard depend on care in handling during transportation to, and on site, as well as careful site storage, correct installation (see Appendix A), temporary protection, finishes and maintenance. Some general advice is given in BS 5395-1.

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Summary of pages

This document comprises a front cover, an inside front cover, pages i and ii, pages 1 to 22, an inside back cover and a back cover.

This standard has been updated (see copyright date) and may have had amendments incorporated. This will be indicated in the amendment table on the inside front cover.

1 Scope

This Part of BS 585 specifies materials and construction requirements for stairs constructed of timber, which may include plywood risers and treads and/or edge-to-edge jointed timber and/or glue-laminated wood components. It applies to stairs intended primarily for use inside one-family dwellings, including one or more of the following:

- a) straight flights;
- b) winder flights;
- c) quarter landings;
- d) half landings.

This Part of BS 585 does not apply to stairs with open risers, stairs having an overall width greater than 1 220 mm, or stairs having a total going in one flight exceeding 3 800 mm.

Appendix A gives recommendations for site fixing of stairs.

Appendix B gives recommendations for the design of stairs with winder flights.

NOTE 1 For stairs constructed of wood-based materials, see BS 585-2.

NOTE 2 For guidance on the design of straight stairs, see BS 5395-1.

NOTE 3 The titles of the publications referred to in this standard are listed on the inside back cover.

2 Definitions

For the purpose of this Part of BS 585, the definitions given in BS 5395-1, BS 5578-1 and BS 6100-1.0, BS 6100-1.3.4¹⁾ and BS 6100-1.5.1 and BS 6100-4 apply, together with the following.

2.1

glue-laminated wood

wood consisting of laminations glued together, no constituent lamination being more than 50 mm or less than 8 mm thick, with the exception of facing laminations

2.2

edge-to-edge jointed

jointing of timber of the same thickness to increase the width of the component

2.3

easement

piece of timber that is added to a straight string to increase its depth so as to accommodate winder tread and riser ends

2.4

winder flight²⁾

a small group of winders encompassing not more than a half turn

¹⁾ In preparation.

²⁾ BS 6100 definition repeated for information.

2.5

going on straight flight

horizontal distance between the nosings of two consecutive treads or between the nosing of the tread and the nosing of the landing immediately above it

2.6

going on winder flight

chord length on plan between two points on consecutive tread nosings at the same radius from the geometric centre of the winder flight

NOTE See B.3.

2.7

pitch line on straight flight

notional line connecting the nosings of the treads of a stair and nosing of top of flight and extending down to the landing at the bottom of the flight

2.8

pitch line on winder flight

notional line consisting of an arc drawn about the geometric centre connecting the nosings of the treads of a stair

2.9

clear width

unobstructed width between handrail and face of newel

NOTE See B.1.

3 Sizes and tolerances

3.1 Straight flights

NOTE All sizes specified in this standard are minimum finished sizes.

The overall width of a flight including strings shall be not greater than 1 220 mm and the total going of any one flight shall not exceed 3 800 mm. The maximum permissible deviations from the work size width shall be + 0 mm, – 3 mm. All other sizes shall be in accordance with BS 5395-1.

3.2 Winder flights

The overall width of a flight including strings shall be not greater than 1 220 mm and the clear width shall be not less than 770 mm. The flight shall not encompass more than 180° in a continuous turn. The maximum permissible deviations from the work size width shall be + 0 mm, – 6 mm. All other sizes shall be in accordance with Appendix B.

4 Materials and workmanship

4.1 Materials

NOTE If stairs are required with non-opaque finishes, reference should be made to the manufacturer with regard to the quality of the timber and its finish.

4.1.1 Timber. Timber for stairs for painting shall comply with the requirements for class 3 of BS 1186-1, except that handrails shall comply with the requirements for class 1 of BS 1186-1.

4.1.2 Plywood for risers and treads. Plywood shall be used only for risers and treads. It shall have an exposed surface suitable for painting and shall comply with BS 6566.

NOTE If plywood is used for treads, the laminations may show on the nosing of the tread.

4.1.3 Glue-laminated components. Glue-laminated components shall comply with clause 8 of BS 1186-2:1988.

4.1.4 Adhesives. Adhesives used for assembly of stairs shall be:

- synthetic resin gap-filling adhesives (phenolic and aminoplastic) complying with the requirements for type BR or type MR of BS 1204-1; or
- one part polyvinyl acetate emulsion adhesives complying with BS 4071; or
- two part polyvinyl acetate emulsion adhesives complying with the relevant requirements of EN 204³⁾.

4.2 Workmanship

The quality of workmanship shall comply with BS 1186-2.

5 Treads and risers

5.1 Finished sizes

The finished thickness of a tread or a riser shall be not less than the appropriate value given in Table 1. Timber members of more than one piece shall be jointed as specified in BS 1186-2. No piece of timber shall be less than 50 mm wide on the finished face of a member except that, in a jointed tread, the front piece on which the nosing is formed shall be not less than 90 mm wide.

5.2 Housing

Risers shall be tongued or housed not more than one-quarter of the actual tread thickness, but not less than one-quarter of the minimum tread thickness given in Table 1, into the underside of treads. The lower edge of risers shall be fixed to treads at centres not exceeding 230 mm with no. 10 gauge screws to give a penetration of at least 23 mm or 1.5 times the thickness of the riser, whichever is the greater.

5.3 Glue blocking

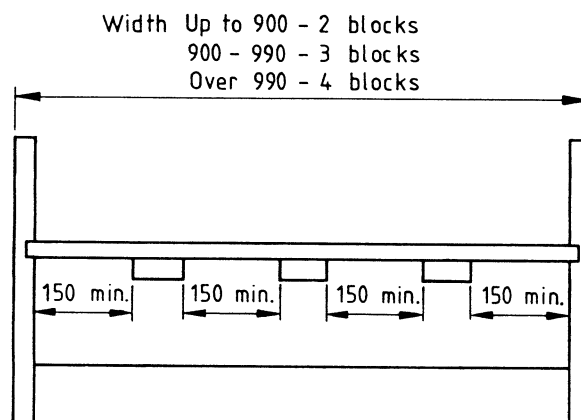
5.3.1 Straight flights. For straight flights, risers and treads shall be glue-blocked as shown in Figure 1(a), using angle blocks not less than 75 mm long and 38 mm wide on the shortest edges [see Figure 1(b)].

5.3.2 Winder flights. For winder flights, risers and treads shall be glue-blocked as shown in Figure 1(c), using angle blocks not less than 75 mm long and 38 mm wide on the shortest edges [see Figure 1(b)].

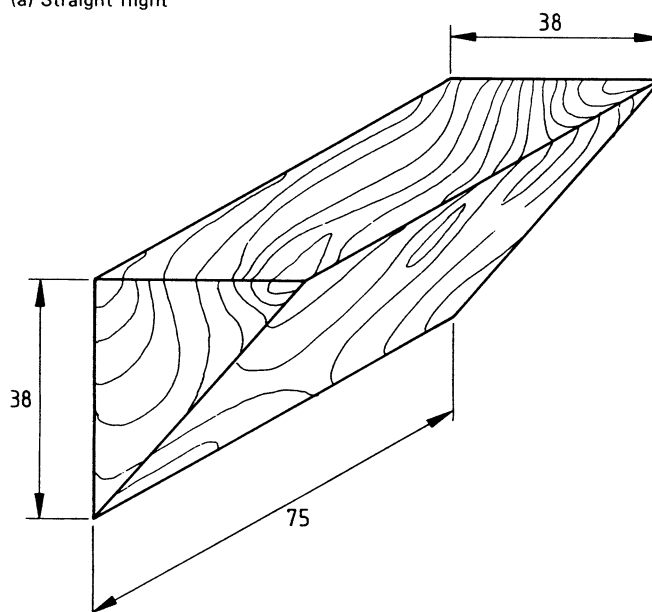
Table 1 — Minimum finished sizes of members (see note)

Support condition	Width of stair (overall including strings)	String thickness	Tread thickness	Riser thickness	Outer newel size
Supported by a side wall, or, up to 9 goings unsupported	mm Up to and including 990	mm 26	mm 20 (18 for plywood)	mm 14 (9 for plywood)	69 mm square or cross section of equivalent strength and stiffness
	Exceeding 990 but not exceeding 1 220	26	26 (24 for plywood)	14 (9 for plywood)	
More than 9 goings unsupported	Up to and including 990	32	20 (18 for plywood)	14 (9 for plywood)	90 mm square or cross section of equivalent strength and stiffness
	Exceeding 990 but not exceeding 1 220	32	26 (24 for plywood)	14 (9 for plywood)	
NOTE It is assumed that members are measured at a 20 % moisture content in accordance with BS 4471-1.					

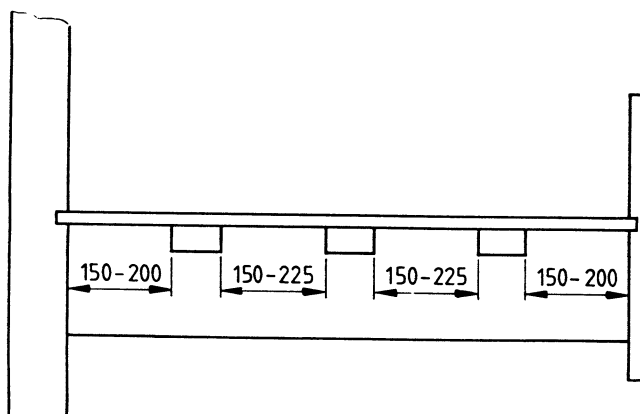
³⁾ In preparation.



(a) Straight flight



(b) Minimum sizes of blocks



(c) Winder flight

All sizes are in millimetres.

Figure 1 — Glue blocks

6 Strings

6.1 General

Strings shall have a finished thickness not less than the value given in Table 1.

NOTE Strings may be of one-piece timber or of glue-laminated section.

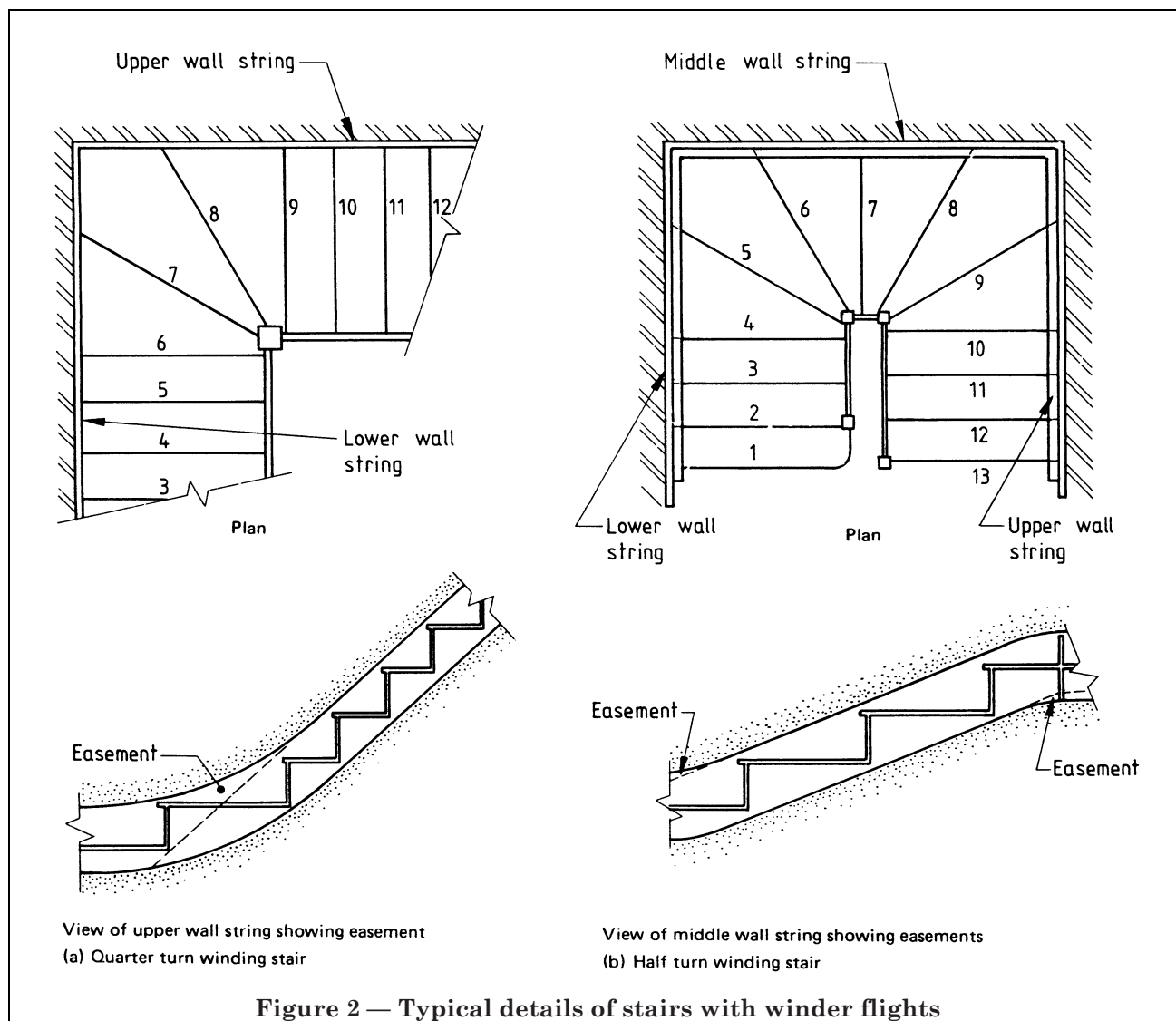
Edge-to-edge jointing of solid section timber shall be permitted provided that only two pieces, each greater than 50 mm deep, are used. The finished depth shall be not less than 215 mm.

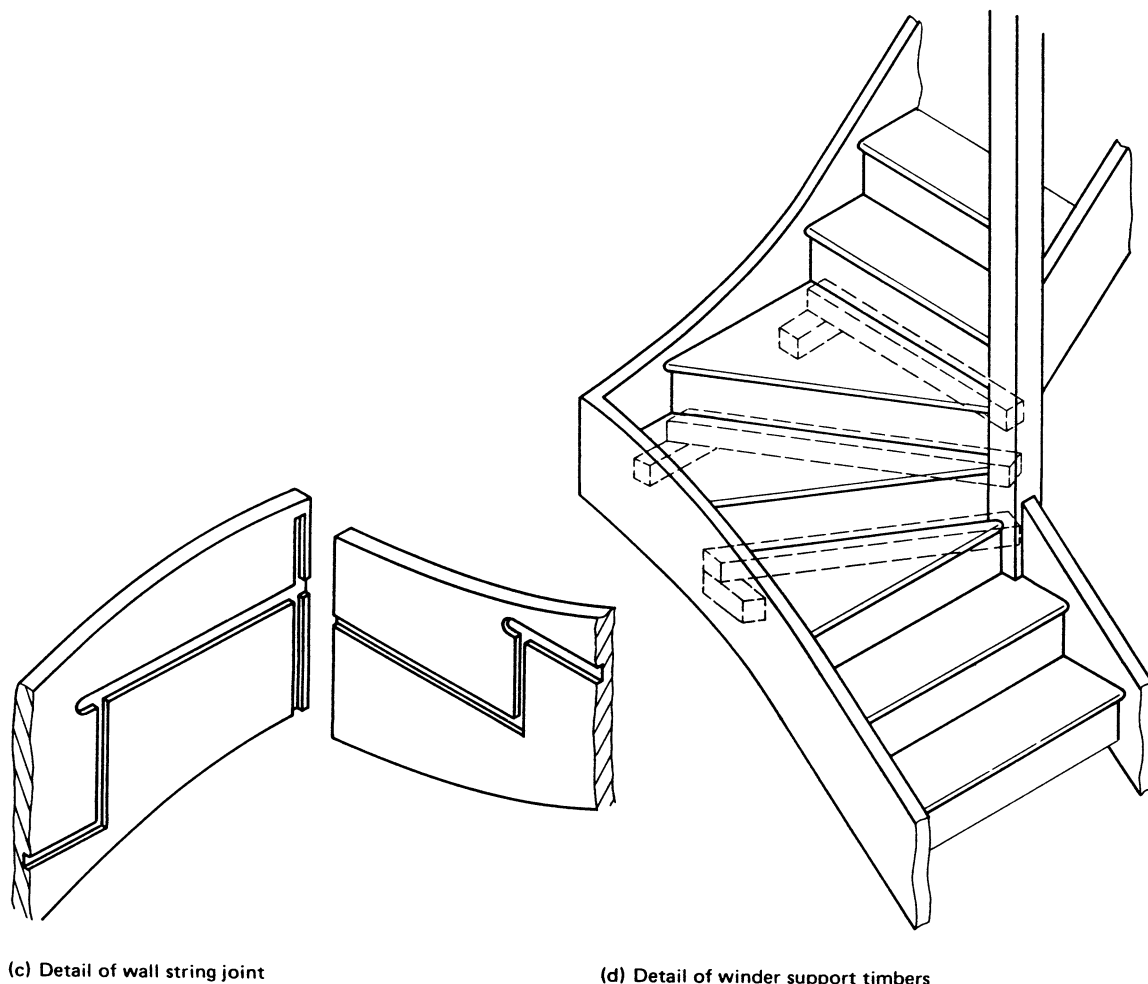
Strings shall have tapered housings not less than 12 mm deep or 0.4 times the string thickness, whichever is the greater, to receive the tread and risers, which shall be secured by glue wedging.

The ends of strings to fit into newels shall be tenoned and prepared for fixing, except where the newels are face fixed. Tenons shall be not less than 12 mm thick and not less than 45 mm long.

6.2 Winder flights

For winder flights the upper and lower wall strings from the adjacent straight flights (see Figure 2) shall be enlarged by adding easements to give the depth necessary to contain the housings of the treads and risers. The middle wall string shall be built up to the depth necessary to accommodate the housings.





(c) Detail of wall string joint

(d) Detail of winder support timbers

NOTE The tongue and groove arrangement shown assumes top fixing. For ease of erection in a confined space, it may be necessary to reverse the method of erection (see A.2.1) and hence the tongue and groove jointing of the strings. Reference should be made to the manufacturer.

Figure 2 — Typical details of stairs with winder flights (concluded)

7 Newels

7.1 Position

In the case of a free-standing stair or a stair in which neither string is supported by a wall, a newel shall be placed at every change of direction of the stair, at the top of the stair and no higher than two steps from the bottom of the stair.

7.2 Size

7.2.1 Solid outer newels shall have a minimum cross section of size as given in Table 1. Wall newels shall have a cross section of not less than 32 mm × 69 mm or shall have a cross section of equivalent strength and stiffness.

7.2.2 For winder flights, where larger newels are necessary, newels shall be either solid or built up from sections of finished thickness not less than 32 mm (see Figure 3).

7.3 Housing

Newels shall be housed not less than 12 mm deep to receive the ends of treads and risers shall be morticed for strings and handrails as required. Haunchings or notchings shall be not greater than one-third of the thickness of the newel.

8 Construction

8.1 Assembly

If stairs are supplied in kit form for assembly on site, instructions shall be provided.