

This Standard is obsolescent.
See the BSI Catalogue for details.
March 1999

BS 6579 : Part 3 : 1988

UDC 625.738 + 692.88

British Standard

Safety fences and barriers for highways

Part 3. Specification for components for
tensioned rectangular hollow section beam
(100 mm × 100 mm) safety fence

Barrières et glissières de sécurité sur autoroutes

Partie 3. Eléments de barrières de sécurité en poutre de section creuse
rectangulaire tendue (100 mm x 100 mm) — Spécifications

Sicherheitszäune und Leitplanken an Autobahnen

Teil 3. Einzelteile für Sicherheitszäune aus gespannten (100 mm x 100 mm)
Rechteckhohlprofilen

Foreword

This Part of BS 6579 has been prepared under the direction of the Road Engineering Standards Committee. The other Parts of BS 6579 either published or in preparation are:

Part 1 Specification for components for tensioned corrugated beam safety fence on Z posts

Part 2 Specification for tensioned corrugated beam safety fence on offset brackets

Part 4 Specification for tensioned rectangular hollow section beam (200 mm × 100 mm) safety fence

Part 5 Specification for open box beam safety fence (single height)

Part 6 Specification for components for open box beam safety fence (double height)

Part 7 Specification for untensioned corrugated beam safety fences

Part 8 Specification for concrete safety barriers

Appendices A and B provide additional information helpful to the users of the components.

BS 6579 is being produced at the request of users and manufacturers in order to cover the various types of safety fences and barriers available.

Fences detailed in Parts 1 to 7 have been developed already and approved for use on roads in the United Kingdom.

The designs are based on the results of static and dynamic tests carried out in the past on components and complete systems under the direction of the Transport and Road Research Laboratory (TRRL).

The safety barrier detailed in Part 8 is for use only on certain roads at the date of publication of this British Standard.

If further types are developed, BS 6579 will be revised and increased in scope to cover additions and variations.

Compliance with a British Standard does not of itself confer immunity from legal obligations.

Contents

	Page
Foreword	Inside front cover
Committees responsible	Back cover
 Specification	
0 Introduction	2
1 Scope	2
2 Definitions	2
3 Components	3
4 Tolerances	3
5 Protective finish	3
6 Marking	3
 Appendices	
A Vehicle safety fences and barriers for highways: type characteristics	4
B Transition between safety fences, bridge parapets and other types of safety fence	6
C Schedule of components	7
D Transport, handling and storage	9
E Information to be supplied	9
 Tables	
1 Vehicle safety fences and barriers for highways: type characteristics	4
2 Components for 1 km of fence	7
 Figures	
1 General arrangement of rectangular hollow section beam (100 mm × 100 mm) safety fence, type TRHS1	10
2 Details of safety fence posts	11
3 Expansion joint anchorages	12
4 Details of beams, connector plates and turn-buckles	13
5 Diagrammatical representation of fences and barriers	14

Specification

0 Introduction

0.1 The objective of providing safety fences or barriers adjacent to a highway is to reduce the consequences of vehicles leaving the carriageway and entering areas where it would be unsafe for them to travel.

Safety fences are intended to absorb some of the energy of impact and to redirect the errant vehicle, so that it follows, within a narrow angle, the line of the fence in the direction of the traffic and does not overturn.

Safety barriers are intended to provide containment without significant deflection or deformation under impact, and to redirect errant vehicles along the line of the barrier in the direction of traffic.

0.2 The safety fences and barriers for ground mounting which are the subject of BS 6579 are for use in conjunction with parapets on bridges and other structures, which are the subject of BS 6779. Although definitions in both standards have been chosen so as to align as closely as possible, there are some cases where a definition is applicable only to a particular Part of BS 6579 and does not apply generally.

0.3 No direct guidance is given in BS 6579 on the situations where safety fences and barriers should be erected or on the choice of the types described in the various Parts, but information pertaining to general characteristics of different types of safety fences and barriers is given in appendix A.

0.4 There are various situations and various methods by which transition between a safety fence or safety barrier and a bridge parapet can be assured without impairing the overall protection afforded to users of the highway.

Appendix B gives recommendations on the method of connecting rectangular hollow section beam (100 mm x 100 mm) safety fences to bridge parapets and other types of safety fence.

0.5 It is important to recognize that the performance of a safety fence can be affected by factors that are not covered by the specifications for the components. These factors include the choice of intermediate posts to suit the ground conditions and the erection and maintenance of the fence. Tensioned fences are not complete until all tensioning procedures have been satisfactorily completed.

0.6 Figure 1 illustrates the general arrangement of a tensioned rectangular hollow section beam (100 mm x 100 mm) safety fence for which the components specified in this Part of BS 6579 are intended. It is essential that the end posts and all angled beam posts are set in concrete as illustrated in figure 1. Intermediate posts (see figures 1 and 2), however, are either driven securely, or set in concrete, into the ground or mounted on bridge decks using 'bridge deck posts'. Where a tensioned rectangular hollow section beam fence is not continued over a bridge, the full height anchorages shown in figure 3 should be used. These should be set in concrete and located adjacent to the approach and departure ends of the bridge deck.

0.7 Enquiries concerning the availability of detailed drawings providing information on manufacture and installation should be made to the Department of Transport Headquarters* or Regional Offices of the Department.

0.8 Where a tensioned rectangular hollow section beam safety fence is used on a curve the limiting radius of the installation should be not less than 120 m.

0.9 The approach to the safety fence should be set back away from the traffic and flared. The flare length should be at least ten times the set back.

0.10 Appendix C gives the number of components for 1 km of safety fence.

0.11 Appendix D gives important recommendations on the transport, handling and storage of components prior to assembly on site.

0.12 Appendix E lists information that should be provided when making an enquiry or order.

0.13 If for any reason the height of the safety fence above the adjacent carriageway is affected by the raising of the running surface, action should be taken to restore the height of the safety fence to the specified dimension.

1 Scope

This Part of BS 6579 specifies requirements for the components to be used in the construction of the tensioned rectangular hollow section beam (100 mm x 100 mm) safety fence, type TRHS1, supported on Z posts. Requirements are given for materials, dimensions, protective finishes and identification.

This Part of BS 6579 does not cover erection and tensioning of the assembled fence (see clause 0).

This Part of BS 6579 does not cover the use of rectangular hollow section beam (100 mm x 100 mm) safety fence for radii less than 120 m.

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

2 Definitions

For the purposes of this Part of BS 6579 the following definitions apply.

2.1 safety fence. An installation provided for the protection of users of the highway consisting of horizontal beams mounted on posts.

2.2 safety barrier. An installation provided for the protection of users of the highway which is continuously in contact with its supporting foundation.

2.3 single sided safety fence. A safety fence having its beams on the side of the mounting posts nearest to the traffic.

2.4 double sided safety fence. A safety fence having the traffic face of its beams in front of, or in line with,

*Department of Transport, EPP Division, St Christopher House, Southwark Street, London SE1 0TE.

the traffic faces of the supporting posts, with the traffic approaching on both sides.

2.5 traffic face. The face of the safety fence or barrier that is nearer to the vehicular traffic flow.

2.6 impacting vehicle. A vehicle striking a safety fence or barrier whether or not it is redirected.

2.7 terminal. That end-section of the length of a safety fence within which the beam rises from or is brought down to an anchorage.

2.8 flaring (of the ends). The setting back of ground anchorages behind the line of a safety fence.

NOTE. Flaring is intended to reduce the risk of errant vehicles hitting or mounting the anchorages and to reduce the risk of a vehicle passing behind the safety fence.

2.9 full height anchorage. A cross-braced frame extending to the full height of a safety fence.

NOTE. Full height anchorages are used in locations where ground anchorages are not suitable.

2.10 initial installation length. The length of safety fence, obtained by setting out the position of each intermediate post from the centre of the angled beam post (the datum), when lap bolt clearances have been taken up but before beam to post connections are tightened.

2.11 adjuster assembly. A device for tensioning safety fences and adjusting the verticality of end posts.

3 Components

3.1 Beams (see figure 4)

Beams shall be formed from 100 mm × 100 mm × 5 mm hot rolled rectangular hollow sections that have dimensions complying with BS 4848 : Part 2 and that have physical properties complying with grade 50C of BS 4360.

3.2 Posts and anchorages

3.2.1 Posts and anchorages shall be made from steel complying with the following grades of BS 4360:

- (a) anchor posts: sections grade 43C, plates grade 43A;
- (b) end posts: sections grade 43C, plates 43A;
- (c) other posts: grade 43A;
- (d) full height anchorages: hollow sections grade 43C, plates and other sections grade 43A.

3.2.2 Posts and anchorages shall have dimensions as shown in figures 2 and 3 respectively, and shall comply with the following specifications:

- (a) rectangular hollow sections: BS 4848 : Part 2;
- (b) angle sections: BS 4848 : Part 4;
- (c) channel sections: BS 4.

3.3 Adjuster turn-buckles and nuts

Adjuster turn-buckles and nuts shall be made from steel complying with grade 080M40 of BS 970 : Part 1 and shall have dimensions as given in figure 4.

3.4 Connections

3.4.1 Connecting plates. Connecting plates shall be made from steel complying with grade 43A of BS 4360 and shall have dimensions as shown in figure 4.

3.4.2 Connector covers. Connector covers shall be made from hot rolled rectangular hollow section that has dimensions complying with BS 4848 : Part 2 and as given in figure 4, and that has physical properties complying with grade 43C of BS 4360.

3.4.3 Fasteners. Bolts, nuts and washers shall be made from steel and selected from the following as appropriate.

- (a) Bolts and screws shall be ISO metric black hexagon type either complying with grade 4.6 of BS 4190 or as specified in appendix C.
- (b) Nuts shall be ISO metric black hexagon nuts either complying with grade 4 of BS 4190 or as specified in appendix C.
- (c) Washers shall be black complying with BS 4320, form E as in appendix C.

NOTE. The items listed in (a), (b) and (c) are to be galvanized before use (see clause 5).

3.5 Reinforcing rings and tie bars

Reinforcement for use in concrete foundations shall be made from 10 mm diameter steel rod complying with grade 250 of BS 4449.

4 Tolerances

4.1 Tolerances on dimensions of components shall be in accordance with the appropriate dimensional specification, detailed drawings and relevant figures of this Part of BS 6579.

4.2 Deviation from the specified dimensions for materials and fabricated components shall be measured before galvanizing.

5 Protective finish

All steel components, excluding reinforcing rings and reinforcing bars, shall be hot dip galvanized, in accordance with BS 729, after fabrication.

Fasteners shall be spun galvanized.

NOTE. Where the purchaser wishes the components to be further protected by a paint system such requirements should be specified at the time of the enquiry and/or order. In this respect attention is drawn to BS 5493.

6 Marking

All beams, connectors, posts and anchorages shall be clearly marked with the following:

- (a) the number of this British Standard, i.e. BS 6579*;
- (b) the manufacturer's identification mark;
- (c) digits indicating the month and year of manufacture. (Note for example 10/88 indicates manufacture during October 1988.)

*Marking BS 6579 on or in relation to a product represents a manufacturer's declaration of conformity, i.e. a claim by or on behalf of the manufacturer that the product meets the requirements of the standard. The accuracy of the claim is therefore solely the responsibility of the person making the claim. Such a declaration is not to be confused with third party certification of conformity which may also be desirable.

Appendices

Appendix A. Vehicle safety fences and barriers for highways: type characteristics

Information on type characteristics is given in table 1. Illustrations of fence and barrier types are given in figure 5.

Table 1. Vehicle safety fences and barriers for highways: type characteristics											
Type	Reference	Material	Type of support or mounting	Post spacing	Beam position mounting height	Single/double sided	Tensioned/untensioned T/UT	Design deflection	Design vehicle mass	Vehicle speed	Design angle of departure (max.)
Corrugated beam*	TCB1	Steel	Z section steel post	3.2	Side 610	Single	T	1000	1.5	km/h (miles/h) 113 (70)	8
Corrugated beam*	TCB2	Steel	Z section steel post	1.6	Side 610	Single	T	800	1.5	113 (70)	10
Corrugated beam	TCB3	Steel	Steel or timber post with offset	3.2	Side (inclined at 15 °) 535	Double	T	800	1.5	113 (70)	10
Corrugated beam	TCB4	Steel	Single Z section steel post	3.2	Side 610	Double	T	800	1.5	113 (70)	10
Corrugated beam	UCB	Steel	Steel or timber posts with offset	3.8 (max.)	Side 525	Single or double	UT		1.5	80 (50)	10
Rectangular hollow section 100 mm x 100 mm†	TRHS1	Steel	Single Z section steel post	3.2	Top 610	Both	T	1000	1.5	113 (70)	10
Rectangular hollow section 200 mm x 100 mm	TRHS2	Steel	Single Z section steel post	3.2	Top or side 610	Both Single	T T	600 600	1.5	113 (70)	8