BRITISH STANDARD

BS 7669-3: 1994

Vehicle restraint systems —

Part 3: Guide to t he installation, inspection and repair of safety fences

Committees responsible for this British Standard

The preparation of this British Standard was entrusted by Technical Committee B/509, Road equipment, to Subcommittee B/509/12, Vehicle safety fences and barriers, upon which the following bodies were represented:

Association of Safety Fencing Contractors
British Cement Association
British Steel Industry
County Surveyors' Society
Department of Transport (Transport Research Laboratory)
Fencing Contractors Association
Fencing Industries Association
Institution of Civil Engineers
Institution of Highways and Transportation
Royal Society for the Prevention of Accidents
The Highways Agency of the Department of Transport

This British Standard, having been prepared under the direction of the Technical Committee B/509, was published under the authority of the Standards Board and comes into effect on 15 September 1994

The following BSI references relate to the work on this standard:
Committee reference B/509/12
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Amendments issued since publication

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Contents

Foreword

This Part of BS 7669 has been prepared under the direction of Technical Committee B/509 Road Equipment.

Over the last 25 years the Department of Transport, the Transport Research Laboratory, British Standards Institution and other organizations have been involved in research, testing, design and the preparation of specifications and standards for vehicle restraint systems such as safety fences, barriers and bridge parapets. Much of this work has been published in the form of Transport Research Laboratory reports, drawings, specifications and standards.

Over recent years, particularly since the introduction of quality assurance schemes for both the manufacture of components and the erection of safety fences and parapets, the need for additional advice, guidance and background information has been highlighted. In 1988 the Department of Transport and British Standards Institution agreed to the preparation of a comprehensive British Standard or Reference Manual on vehicle restraint systems.

A steering group of representatives from the British Standards Institution, Department of Transport and Transport Research Laboratory was formed to supervise the project and the following terms of reference were formulated:

> "To prepare the draft of a comprehensive document on safety fences, barriers and bridge parapets covering research and development, design, specification, manufacture, installation, repair and maintenance."

It was decided to split the Reference Manual into several Parts and the following groups were formed:

a) Working Group 1 — Part 1 (in preparation), dealing with the fundamentals of safety fences, barriers, parapets and transitions

b) Working Group 2 — Part 2 (in preparation), dealing with the specification and layout of safety fences and barriers

c) Working Group 3 — Part 3, dealing with the installation, inspection and repair of safety fences

d) Working Group 3 — Part 4 (in preparation), dealing with the installation, inspection and repair of safety barriers

e) Working Group 4 — Part 5 (future work), dealing with all aspects of bridge parapets

A British Standard does not purport to include all the necessary provisions of a contract. Users of British Standards are responsible for their correct application.

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

Summary of pages

This document comprises a front cover, an inside front cover, pages i to iv, pages 1 to 76, 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.

Section 1. General

1.1 Scope

This Part of BS 7669 provides guidance on the installation and erection procedures for vehicle safety fences. It is also designed as a follow-on to in-service inspection and for use following damage to fences.

NOTE This guide includes supplementary commentaries to assist in its use and understanding.

1.2 References

1.2.1 Normative references

This Part of BS 7669 incorporates, by reference, provisions from specific editions of other publications. These normative references are cited at the appropriate points in the text and the publications are listed on the inside back cover. Subsequent amendments to, or revisions of, any of these publications apply to this Part of BS 7669 only when incorporated in it by updating or revision.

1.2.2 Informative references

This Part of BS 7669 refers to other publications that provide information or guidance. Editions of these publications current at the time of issue of this standard are listed on the inside back cover, but reference should be made to the latest editions.

1.3 Definitions

For the purposes of this Part of BS 7669 the definitions given in the following Parts of BS 6579 apply: BS 6579-1:1988, BS 6579-3:1988, BS 6579-4:1990, BS 6579-5:1986, BS 6579-6:1988, and BS 6579-7:1989.

1.4 Health and safety

1.4.1 The investigation and implementation of safety fence projects, including inspection and repair works, require personnel to work on the highway. All personnel including those dealing with the design and supervision functions should seek to ensure that safe working practices can be achieved and adopted at all times. No operation should cause danger to employer, employee, contractor, subcontractor or any member of the public. Inconvenience should be kept to the minimum by careful preplanning of the works. The contractor should ensure that the Engineer is provided with the name of the contractor's nominated representative who will have site management responsibility for the safety fence work.

1.4.2 Publications available on safety include:

a) Health and Safety at Work etc. Act 1974 [1];

b) *Traffic Signs Manual* Chapter 8, specifically, *Traffic Safety Measures and Signs for Roadworks and Temporary Situations* [2];

c) *Safety at Roadworks, Notes for Guidance* [3];

d) *Planning for Safety — Guidance Notes for the Health and Safety of Workers at In-service Motorway Roadworks Sites* [4];

e) Control of Substances Hazardous to Health Regulations, 1988, as amended by SI 1990 No. 2026, 1990 [5];

f) Construction (Lifting Operations) Regulations 1961 [6];

g) Construction (General Provisions) Regulations 1961 [7].

1.4.3 The Engineer, contractor and employer responsible for the project should ensure compliance with the above guidance/manuals whereby problems can be minimized by consideration of items such as:

a) interference with the public utility apparatus or other underground services — national/local Highway Authority and Utilities Committee (HAUC) arrangements;

b) implementation of health and safety manuals — protective clothing, head, limb, lung and eye protection, safe working practices (including materials);

c) the general needs of the public — clear signing, maintenance of traffic flow, protection of workers and night/weekend working;

d) arrangements made for dealing with emergencies — contact with local emergency services.

1.5 Dealing with services

Before any work is commenced or marking pins are driven through the highway surface, details of all underground services and equipment should be obtained and shown on the working drawings. Where necessary, services may need to be diverted by the appropriate authority to accommodate the agreed safety fence layout.

In all cases, the service authority should mark out the position of their services on the ground using the agreed HAUC colour code system, prior to any safety fence work commencing.

1.6 Setting out

Before safety fence erection work commences, the engineer should agree the setting out for:

a) terminal sections/flares;

b) straight and curved safety fences;

c) the type of safety fence, including post and foundations (and antiglare screen fencing fixings, if specified) in relation to all locations;

d) the location of tensioner assemblies, adjuster assemblies, expansion assemblies and expansion joints;

e) the location of reinforcement (preferably utilizing a cover meter) and waterproofing materials where surface-mounted posts are to be installed;

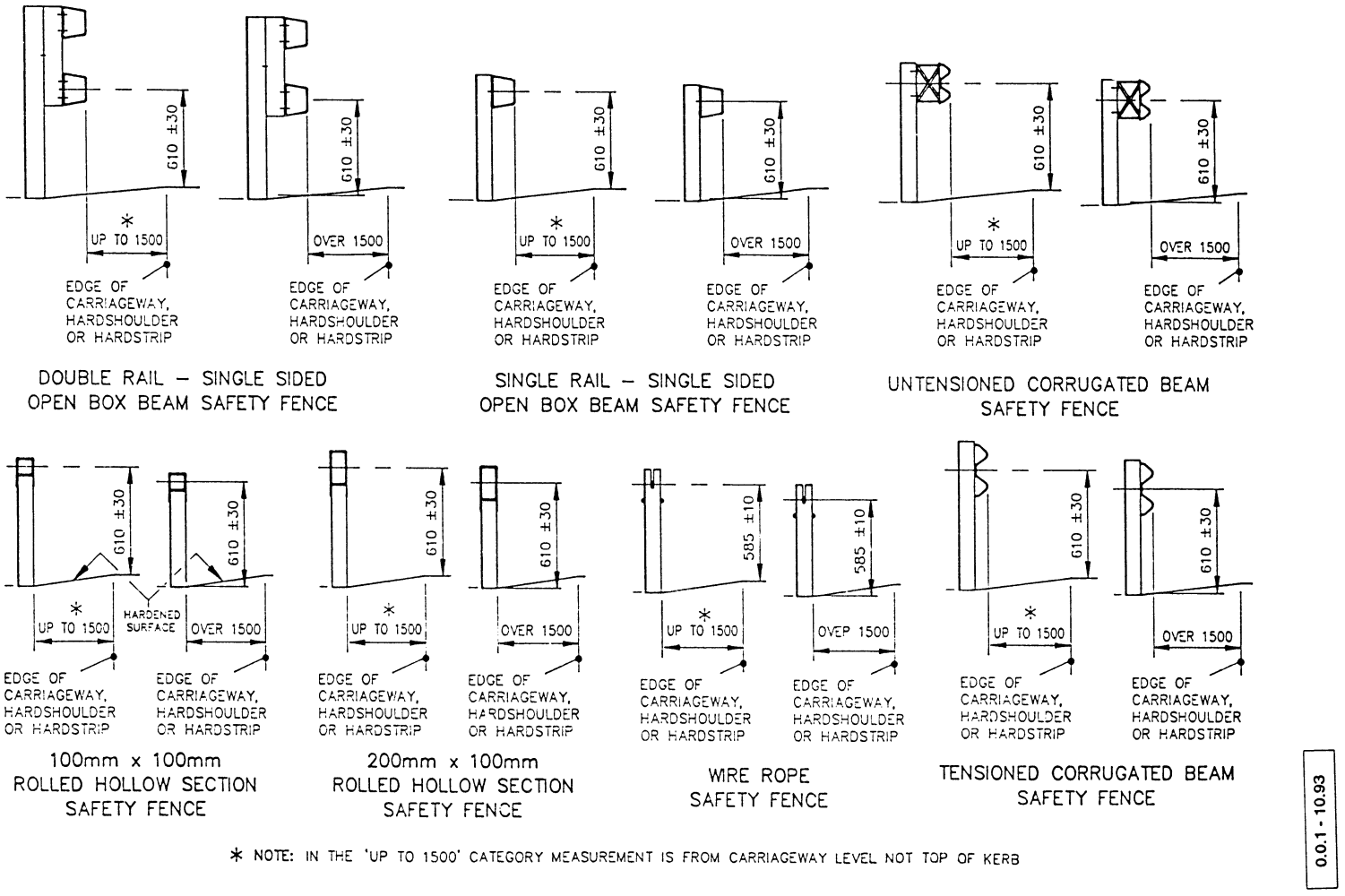
f) the beam/rope height (see Figure 1). The engineer should also ensure that posts do not coincide with underground chambers, services, manhole covers etc., especially where post spacing is at half standard centres.

1.7 Achievement of torque and tension values

Torque should be measured with a calibrated torque wrench in accordance with BS 6703:1988.

Tension in a wire rope should be measured with a calibrated rope tension indicator.

COMMENTARY. *Instruments should be calibrated at least annually*.



* NOTE In the "up to 1 500" category measurement is from carriageway level not top of kerb

Figure 1 — Beam/rope height illustrations for new installations