BRITISH STANDARD

BS 7533-6:1999

Pavements constructed with clay, natural stone or concrete pavers —

Part 6: Code of practice for laying natural stone, precast concrete and clay kerb units

Confirmed November 2008

ICS 93.080.20

Committees responsible for this British Standard

The preparation of this British Standard was entrusted to Technical Committee B/507, Paving units and kerbs, upon which the following bodies were represented:

Brick Development Association
British Cement Association
British Ceramic Research Ltd.
British Precast Concrete Federation Ltd.
Cementitious Slag Makers' Association
County Surveyors' Society
Department of Transport (Highways Agency)
Institution of Civil Engineers
Institution of Highways and Transportation
Interlay, the Association of Block Paving Contractors
Interpave, the Concrete Block Paving Association
Landscape Institute
Society of Chemical Industry
Stone Federation

The following bodies were also represented in the drafting of the standard, through subcommittees and panels:

British Civil Engineering Test Equipment Manufacturers' Association
Institution of Structural Engineers
National Federation of Clay Industries Ltd.
National Paving and Kerb Association

This British Standard, having been prepared under the direction of the Sector Committee for Building and Civil Engineering, was published under the authority of the Standards Committee and comes into effect on 15 December 1999

Amendments issued since publication

Amd. No.	Date	Comments

The following BSI references relate to the work on this standard:
Committee reference B/507
Draft for comment 98/108797 DC

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Foreword

This part of BS 7533 has been prepared by Technical Committee B/507.

BS 7533 will be published in the following parts:

— *Part 1*[1)]*: Guide for the structural design of heavy duty pavements constructed of clay pavers or precast concrete paving blocks;*

— *Part 2*[1)]*: Guide for the structural design of lightly trafficked pavements constructed of clay pavers or precast concrete paving blocks;*

— *Part 3: Code of practice for laying precast concrete paving blocks and clay pavers for flexible pavements;*

— *Part 4: Code of practice for the construction of pavements of precast concrete flags or natural stone slabs;*

— *Part 5*[1)]*: Guide for the design of pavements (other structural aspects);*

— *Part 6*[1)]*: Code of practice for laying natural stone, precast concrete and clay kerb units;*

— *Part 7*[1)]*: Code of practice for the construction of pavements of natural stone setts;*

— *Part 8*[1)]*: Guide for the structural design of lightly trafficked pavements of precast concrete flags and natural stone slabs.*

BS 7533:1992 will be withdrawn on publication of BS 7533-1 and BS 7533-2.

Annex A is informative.

As a code of practice, this British Standard takes the form of guidance and recommendations. It should not be quoted as if it were a specification and particular care should be taken to ensure that claims of compliance are not misleading.

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.

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Summary of pages

This document comprises a front cover, an inside front cover, pages i and ii, pages 1 to 8, an inside back cover and a back cover.

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[1)] In preparation.

1 Scope

This part of BS 7533 gives recommendations for laying natural stone and precast concrete kerbs, channels, edgings and quadrants conforming to BS 435 and BS 7263-1, and clay kerbs conforming to BS 6677-1 intended for use in the construction of carriageways and footways. It also applies to combined drainage and kerb products, and linear drainage units.

2 Normative references

The following normative documents contain provisions which, through reference in this text, constitute provisions of this part of this British Standard. For dated references, subsequent amendments to, or revisions of, any of these publications do not apply. For undated references, the latest edition of the publication referred to applies.

BS 5328-1:1997, *Concrete — Part 1: Guide to specifying concrete.*

BS 6100-2.4.1, *Glossary of building and civil engineering terms — Part 2: Civil engineering — Section 2: Highway, railway and airport engineering — Subsection 4.1: Highway engineering.*

BS 7263-1, *Precast concrete flags, kerbs, channels, edgings and quadrants — Part 1: Specification.*

3 Terms and definitions

For the purposes of this part of BS 7533, the terms and definitions given in BS 7263-1 and BS 6100-2.4.1 and the following apply.

3.1

joint

space between two adjacent units

3.2

roadbase

one or more layers of material placed above the sub-base that constitutes a structural element of a flexible or composite pavement

3.3

sub-base

one or more layers of material placed immediately above the subgrade

3.4

subgrade

part of the soil, natural or constructed, that supports the loads transmitted by the overlying pavement

3.5

unit

product such as a kerb, channel, edging and quadrant, a combined drainage and kerb product, and a linear drainage product

3.6

kerb race

foundation on which the units are laid

3.7

mortar joint

joint between two units filled with a sand/cement mixture

3.8

movement joint

joint constructed to allow units to expand and contract

4 Forms of construction

4.1 Laying units: general

Kerbs, channels, edgings and quadrants, combined drainage and kerb products, and linear drainage units should be laid using any of the following methods:

a) set on a race of fresh concrete (not applicable to clay units);

b) bedded on a mortar race on top of an edge beam of hardened concrete or onto a mortar bedding on a carriageway base;

c) suitably bedded on the surface layer.

Units should then be haunched/backed with ST1 concrete conforming to BS 5328-1:1997 or a race of fresh concrete extended to the required height.

NOTE See annex A for examples of edge details.

Units conforming to BS 7263-1 should not be cut to a length of less than 300 mm. However, small units of clay, stone and concrete should not be cut to less than one-third of their original length and in no case less than 50 mm.

Where kerbs are subjected to regular heavy traffic, e.g. on approaches to traffic calming ramps, kerbs should be cut to a length not exceeding 300 mm.

4.2 Laying units on a kerb race

A foundation of ST1 concrete, in accordance with BS 5328-1:1997, Table 13, should be deposited along the line of units, onto which the units are laid directly on fresh mixed concrete and set to line and level.

In areas subjected to heavy loading, the backing concrete should either be laid monolithic with a race of fresh concrete, or dowel bars should be firmly fixed in the base and extended into the backing haunching.

NOTE Dowel bars may be omitted if the backing is adequately restrained by adjacent material.

4.3 Laying units on an edge beam or existing carriageway base

The concrete edge beam should be a minimum of 150 mm thick and wide enough to accommodate units and backing concrete.

NOTE Where lean concrete is used to form the roadbase, it may be preferable to extend the roadbase concrete to act as an edge beam.

On an edge beam or carriageway base which has previously been laid and allowed to harden, the units should be bedded down on a layer, 12 mm to 40 mm thick, of 1:3 cement:sand mortar (by volume) and backed up with ST1 concrete. Mortar that has begun to harden before a unit is laid should not be used.

When units are laid on a jointed concrete pavement, there should be a clear joint between the units. The joints should continue through the race and the kerb not more than 150 mm from the jointed concrete pavement.

Clay units should be bedded on a modified mortar, e.g. a mortar with the addition of an appropriate styrene butadiene admixture, and finished with a 10 mm tooled finish joint between units.

4.4 Laying units on the surface layer

Units that are laid on the surface layer should be bonded to the wearing surface with a suitable synthetic resin compound or with a modified strengthened mortar, used strictly in accordance with the manufacturer's recommendations for this specific application.

5 Construction details

5.1 Setting to line and level

When laying small straight units to radii the mortar joints may be laid to a taper to accommodate the radius of a curve subject to aesthetic considerations. Otherwise a proprietary tapered unit may be employed.

A string line should be accurately set out along the carriageway channel to the required level of the top of the units.

Units should then be laid on fresh concrete or mortar bed and adjusted to line and level.

Allowances should be made on curves for the string line being in a series of straight lines. The final unit alignment should be checked to ensure that it follows a smooth curve both horizontally and vertically.

When concrete units conforming to BS 7263-1 are used, radius kerbs and channels should be used on curves of 12 m radius or less.

Large units should be aligned so that they are within 10 mm of their design alignment and the differences in level at the top between two adjacent units does not exceed 3 mm.

NOTE Some minor visual adjustment may be necessary when the units are laid, especially on curves and when linking with other edge details.

Kerbs should be laid accurately to line and level and should allow for the water check (upstand), which is usually 25 mm above the finished pavement level. Crossing kerbs at vehicular crossings should be laid 25 mm above the final road surface unless otherwise specified.

At pedestrian crossing points, dropped kerbs should be laid 6 mm above the channel level at the low side to aid surface water drainage and level with the channel at the high side of the road.

To assist wheelchair access the upstand should be between 0 mm and 6 mm. Using existing units, the joints on the dropper unit kerb may have to be adjusted. Consideration should be given to the removal of surface water at the crossing point by the judicious placing of a drainage outlet.

5.2 Jointing

Mortar jointing between units of natural stone and concrete is generally unnecessary; however, the units should not be butt jointed. The minimum gap between them should be 2 mm.

When mortar joints are used, the mortar should completely fill the joint; however, clay units should be laid with a 10 mm joint between adjoining units and the mortar joints finished with a tooled profile to ensure a durable surface.

Movement joints formed of a 10 mm thick, easily compressible material should be provided through units bases. Where kerbs are mortared, the spacing of these joints should be at maximum 15 m centres for natural stone and concrete and 6 m for clay units.

6 Reinstatement

Reinstatement should follow those methods described in clauses **4** and **5** for the appropriate construction.

When resurfacing takes place, the units and backing may require lifting and relaying. If the surface is raised by less than 40 mm, the units may be rebedded with mortar. If the surface is raised by more than 40 mm, the units should be relaid on a fresh mortar bed placed on a regulating layer of hardened modified or unmodified mortar or concrete, as appropriate for the thickness.

Annex A (informative)
Examples of kerb edge details

Figures A.1 to A.11 show examples of kerb edge details.

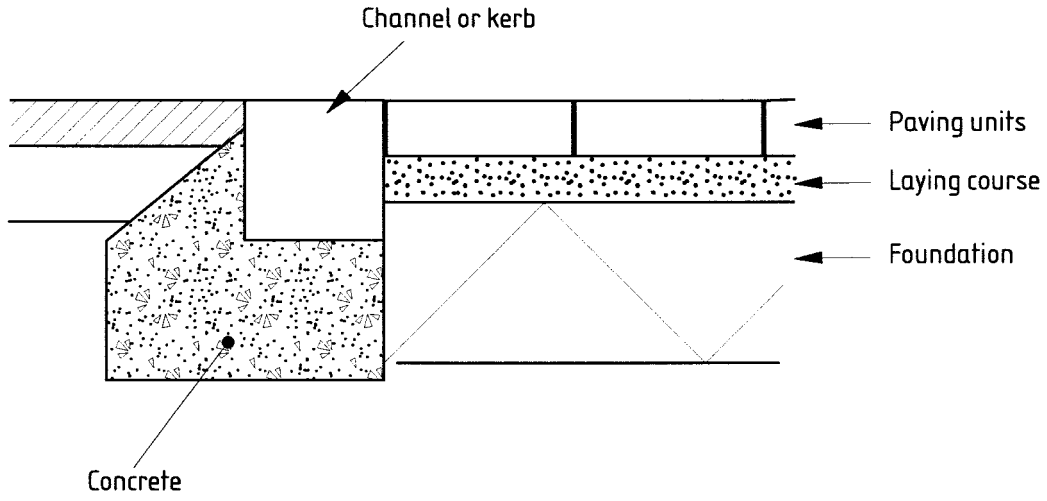

Figure A.1 — Example of kerb or channel

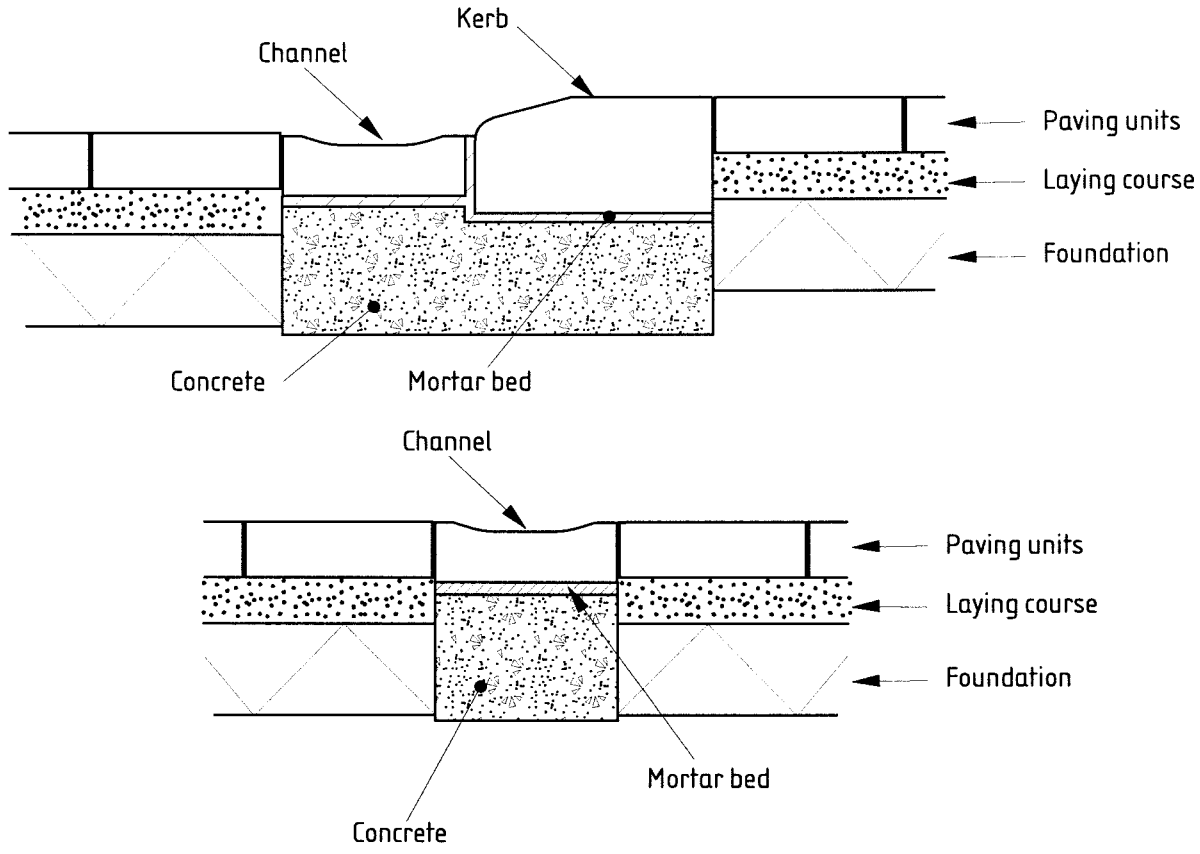

Figure A.2 — Examples of channel units

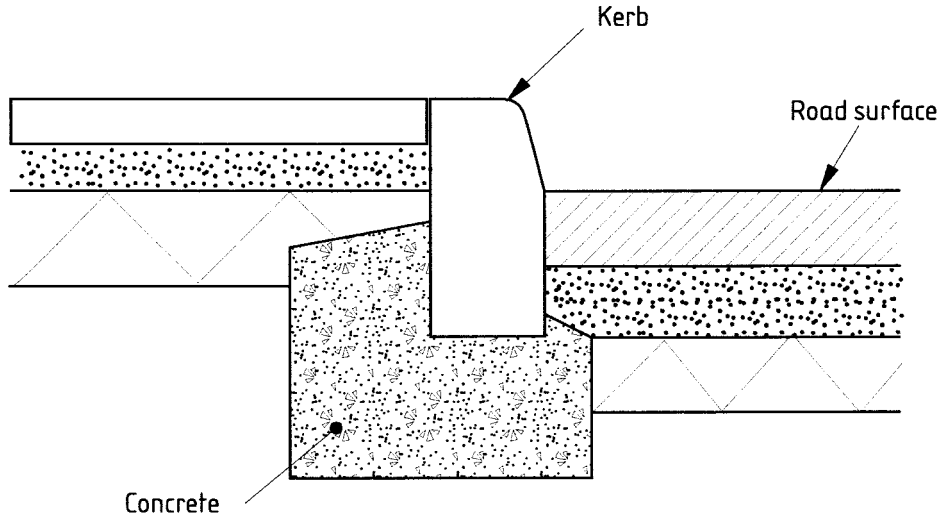

Figure A.3 — Example of concrete kerb

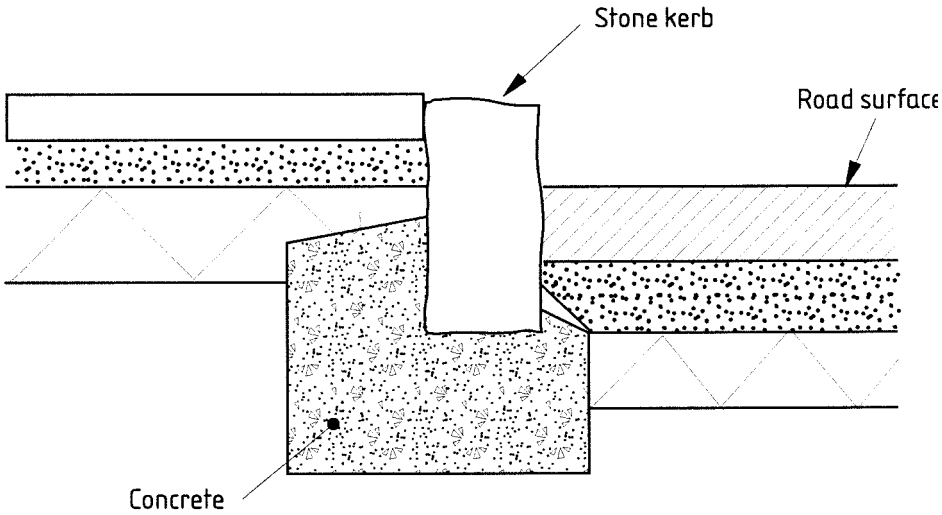

Figure A.4 — Example of natural stone kerb

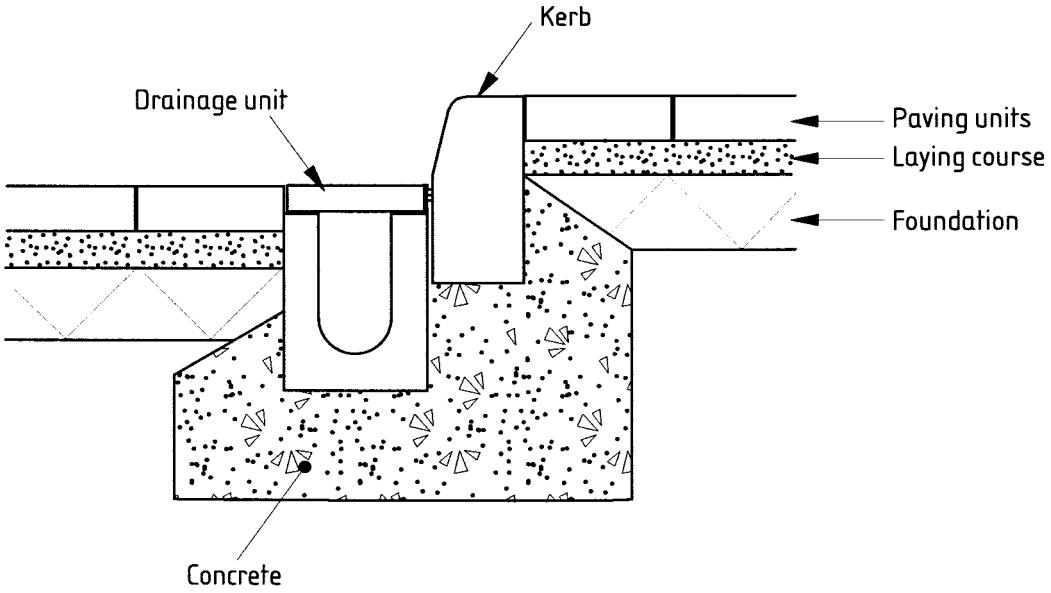

Figure A.5 — Example of kerb and linear drainage

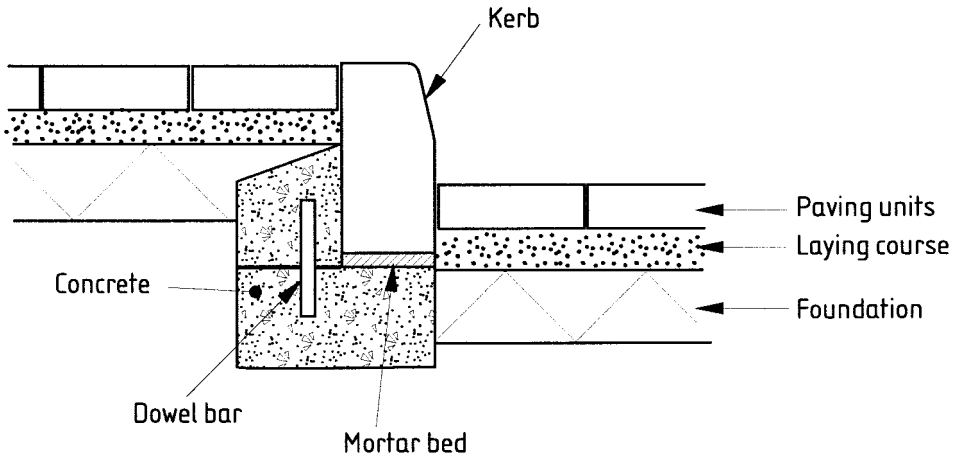

Figure A.6 — Example of reinforced haunching

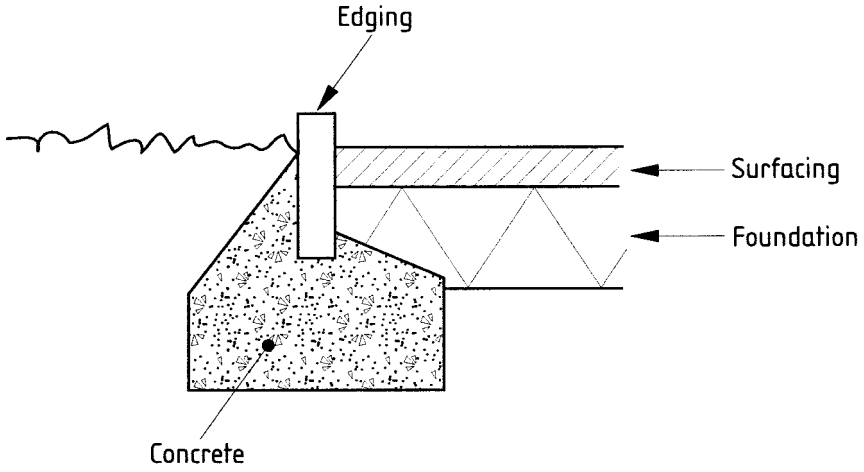

Figure A.7 — Example of edging

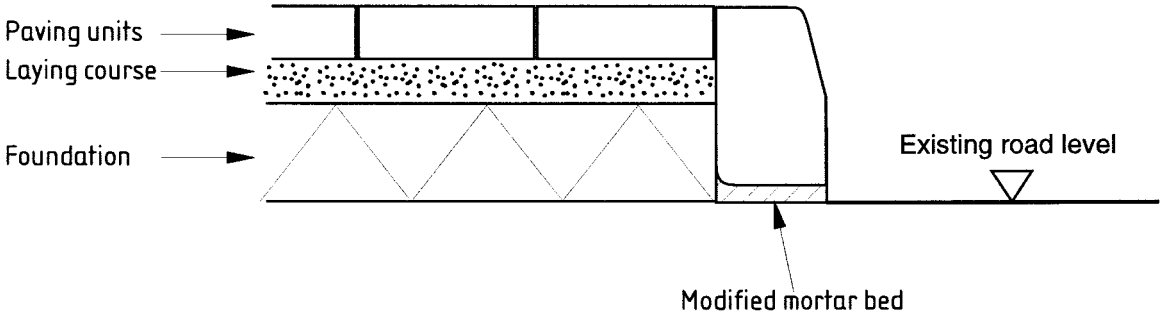

Figure A.8 — Example of bonded kerbs (large units)

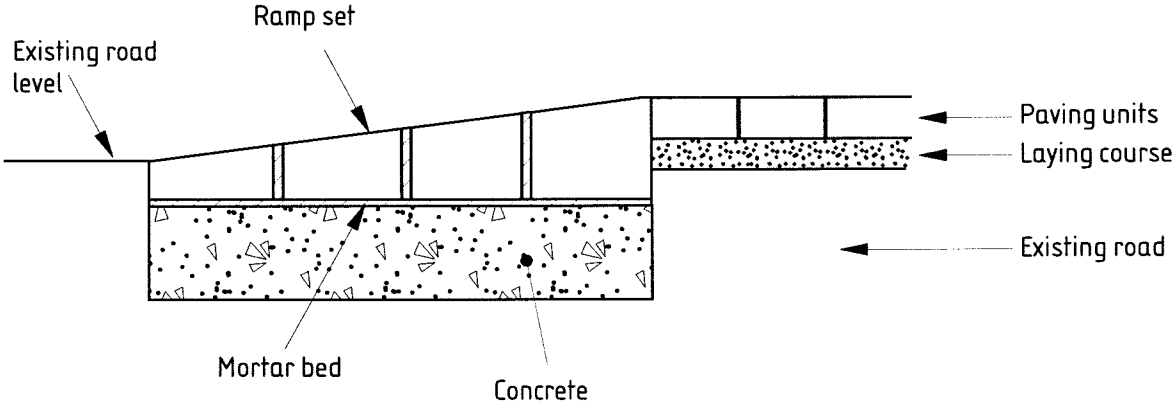

Figure A.9 — Example of multi-unit traffic calming

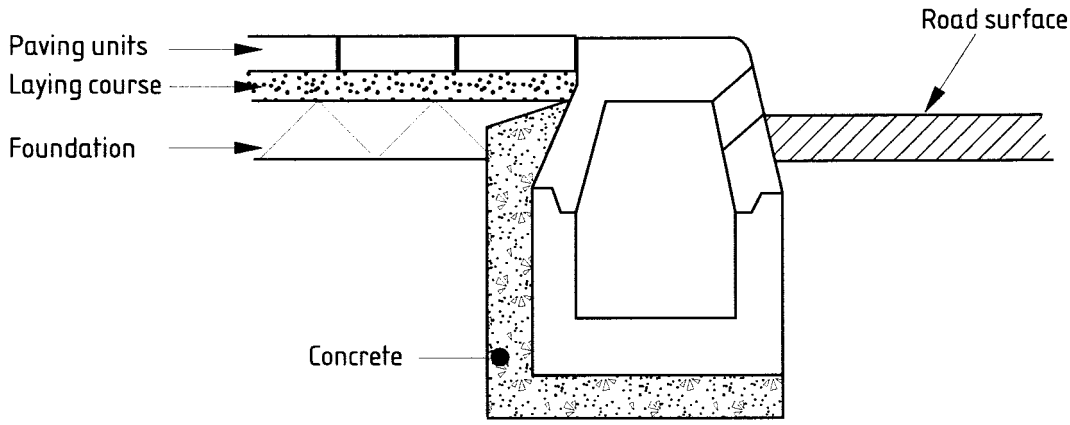

Figure A.10 — Example of combined drainage and kerb

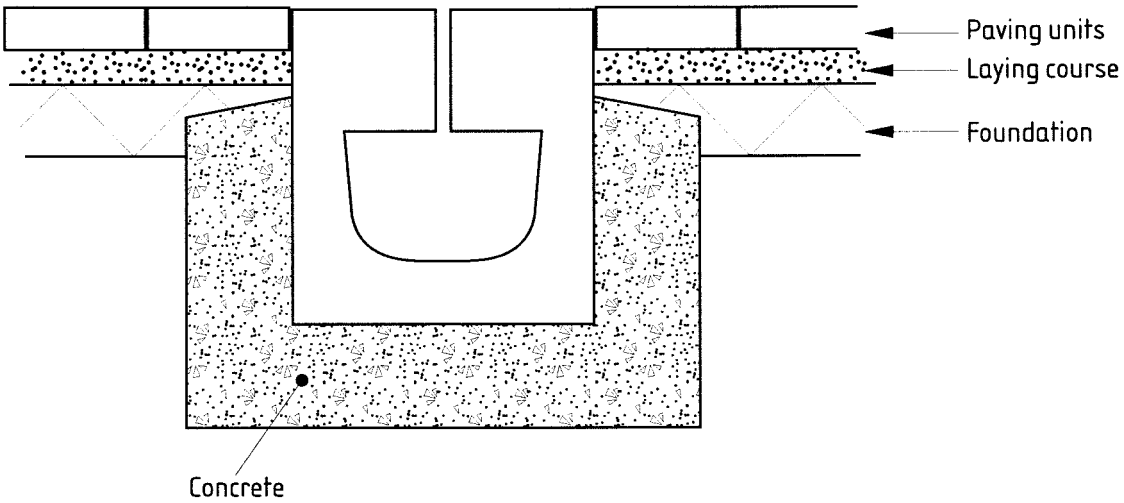

Figure A.11 — Example of linear drainage

Bibliography

BS 435:1975, *Specification for dressed natural stone kerbs, channels, quadrants and sets.*
BS 6677-1:1986, *Clay and calcium silicate pavers for flexible pavements — Part 1: Specification for pavers.*

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