KERBS, FOOTWAYS AND PAVED AREAS

Contents

Kerbs, Footways and Paved Areas

1101 Prefabricated Kerbs, Channels, Edgings and Quadrants

Precast Concrete Kerbs

1 Except where otherwise specified in this Clause, precast concrete kerbs, channels, edgings and quadrants shall conform to IS EN 1340 and their dimensions, type designations and performances and classes shall be as described in this Clause and Appendix 11/1 and may be selected from the standard types for road works shown in the NRA Road Construction Details listed in Appendix 11/3. They shall be laid and bedded in accordance with BS 7533-6 on a mortar bed on a concrete pavement slab, a base or a ST4 in accordance with BS 8500-2 concrete foundation. The mortar bed may be omitted if units are bedded onto a concrete slab or foundation that is still plastic. All precast units laid on a mortar bed or bedded onto a plastic concrete shall be backed with a strength class ST4 concrete in accordance with BS 8500-2.

2 Precast concrete kerbs, which are to be bonded to the pavement surface, shall conform to IS EN 1340. The bonding materials and methods of bonding shall be to the manufacturer's recommendations for this specific application. Bonded kerbs shall not be less than 100mm in width at the base, their height shall not exceed their width and they shall be bonded over their full width. Kerbs shall be precast to the dimensions described in Appendix 11/1 and may be selected from the standard types for road works shown in the NRA Road Construction Details listed in Appendix 11/3. The clear distance between unsupported pavement edge and back of kerb shall be not less than 100mm. The bending strength of units shall be established by testing in accordance with IS EN 1340 and shall not be less than class 2 in Table 3 of IS EN 1340. Units shall be installed in accordance with the manufacturer's instructions. They shall be bonded to the pavement surface with a resilient adhesive compatible with the pavement materials and be capable of withstanding a static push-off load of 10kN/m applied parallel to the pavement surface at right angles to the kerb.

3 Joints shall be provided in kerbs, channels, edgings and backing, which are laid on or adjacent to a concrete pavement to coincide with the pavement transverse contraction, warping and expansion joints. The joints shall be the same width as the joint sealing grooves of the pavement and shall be caulked and sealed as described in the 1000 Series. Concrete foundations to kerbs, channels and edgings laid adjacent to a concrete pavement shall be provided with joint filler board complying with the 1000 Series and placed vertically through the full extent of the concrete foundation at positions coinciding with the pavement joints. At expansion joints in bridge decks, the kerb joints shall be as described in Appendix 11/1. Where the details of bridge expansion joints are proposed by the Contractor, such details shall include the intended treatment at kerbs and footways.

4 For curves of radius 12 m or less, kerbs of appropriate radius shall be used.

5 The surface level of units of kerb, channel, edging and quadrant shall not deviate from the design level ±6 mm, nor shall the longitudinal surface regularity deviate more than 3 mm in 3 m when checked with a 3 m straight edge. Horizontal alignment shall comply with the 700 Series.

Alternative Materials

6 Kerbs using alternative materials may be proposed by the Contractor subject to IAB certification (or equivalent) and demonstration of equivalent performance to the above requirements for precast concrete kerbs, as relevant to the intended use.

1102 In Situ Asphalt Kerbs

1 The materials for, and making and placing of in situ asphalt kerbs shall comply with the recommendations of BS 5931. In addition, a tack coat shall be used and they shall be laid by a machine capable of producing a dense, smooth-surfaced kerb to true line and level.

2 Kerbs shall be constructed to the dimensions described in Appendix 11/1 and may be selected from the standard types for road works shown in the NRA Road Construction Details listed in Appendix 11/3.

3 Vertical expansion and contraction joints shall be formed in kerbs laid on unreinforced concrete slabs and jointed reinforced concrete slabs to coincide with the pavement transverse expansion and contraction joints. All joints shall be sealed in compliance with the 1000 Series.

4 The vertical alignment of the top of the kerb shall not depart from the design level by more

than ±6 mm and at any point the maximum deviation of the top of the kerb under a straight edge shall be not greater than 3 mm in 3 m.

5 The horizontal alignment shall not depart from that described in the Contract by more than ±13 mm nor deviate from the straight by more than 3 mm in 3 m.

1103 In Situ Concrete Kerbs, Channels and Edge Details

1 In situ concrete kerbs, channels and edge details shall comply with the recommendations of BS 5931 and shall be laid by a machine capable of forming dense kerbs or surface water channels or edge details with regular sides, arrises and chamfers, finished to a fine surface free from blow holes and dragging to true line and level and constructed to the dimensions described in Appendix 11/1 and may be selected from the standard types for road works shown in the NRA Road Construction Details listed in Appendix 11/3 .

2 The concrete shall be Grade C32/40 complying with the 1000 Series. Coarse aggregate used in kerbs and channels shall be partially crushed or crushed materials.

3 The concrete shall be cured by one of the methods specified in the 1000 Series unless otherwise described in Appendix 11/1.

4 Kerbs, channels and edge details shall be firmly secured to the surface on which they are laid. Vertical expansion and contraction joints shall be formed in kerbs, channels and edge details laid on or adjacent to unreinforced concrete slabs and jointed reinforced concrete slabs to coincide with the pavement transverse expansion, warping and contraction joints. Vertical expansion joints at 40 m spacings and intermediate contraction joints at 5 m spacings shall be formed in kerbs, channels and edge details laid on or adjacent to other types of concrete and flexible pavement. Expansion joints may be replaced by contraction joints during the summer period in accordance with the appropriate Clauses in the 1000 Series. All joints in kerbs, channels and edge details shall be sealed in compliance with the 1000 Series.

5 The vertical alignment of the finished kerb shall not depart from the design level by more than ±6 mm and, at any point, the maximum deviation of the top of the kerb under a straight edge shall be not greater than 3 mm in 3 m.

6 The horizontal alignment shall not depart from that shown in the Contract by more than ±13 mm, nor deviate from the straight by more than 3 mm in 3m.

1104 Footways and Paved Areas (Precast Concrete Flags and Natural Stone Slabs)

1 Precast concrete flags shall be hydraulically pressed and comply with IS EN 1339. Natural stone slabs shall conform to IS EN 1341. Type designations, thicknesses and performances and classes shall be as described in Appendix 11/1.

2 Precast concrete flags and natural stone slabs shall be laid in accordance with BS 7533-4, to the required cross falls with a bond as described in Appendix 11/1 and with joints at right angles to the kerb. Flags and natural stone slabs shall be bedded on a layer of mortar not less than 10 mm and not more than 40 mm thick. Where permitted in Appendix 11/1 as an alternative, flags and natural stone slabs 450 mm x 450 mm and smaller may be bedded on a layer of clean sharp sand complying with IS EN 12620 designation 0/4 mm, 25 mm ± 5 mm thick. Joints to be filled with sand conforming to BS EN 12620 designation 0/2.

3 On circular work where the radius is 12 m or less all flags and natural stone slabs shall be radially cut on both edges to the required line.

1105 Footways and Paved Areas (Flexible Surfacing)

1 Flexible surfacing for footways and paved areas shall be 10 mm size open graded asphalt concrete surface course made and laid in compliance with the 900 Series, or other material described in Appendix 11/1. The colour of the surfacing shall be as described in Appendix 11/1.

2 Surfacing shall be laid to design levels and crossfalls, and be of 50 mm nominal layer thickness or as otherwise described in Appendix 11/1.

3 Surfacing shall be laid on a sub-base of 150 mm nominal thickness of granular material complying with Clause 804, laid and compacted in accordance with the 800 Series, or as otherwise described in Appendix 11/1.

4 The vertical alignment of the finished surface shall not depart from the design level by more than ± 10 mm and at any point the maximum

deviation of the surface under a straight edge shall not be greater than 5 mm in 3 m.

5 Flexible surfacing for footways and paved areas shall be machine laid unless agreed otherwise by the Employers Representative.

1106 Footways and Paved Areas (In Situ Concrete)

1 In situ concrete for footways and paved areas shall be GradeC25/30 to BS 8500. It shall be made, laid and cured in accordance with the requirements of the 1000 Seriesor as otherwise described in Appendix 11/1. It shall be finished by floating with a wooden trowel and while still "green" lightly brushed with a bass broom to produce a slight roughness, or as otherwise described in Appendix 11/1.

2 In situ concrete shall be laid to design levels and crossfalls, and be of 100 mm nominal thickness or as described in Appendix 11/1.

3 Expansion joints shall be neatly formed in straight lines, at not greater than 3 m centres, and so arranged as to coincide with the joints in the kerb. Joints shall be formed by inserting a double layer of roofing felt or other approved material, which shall extend for the full depth of the slab and be finished off neatly at the surface. The Contractor shall ensure that the double layer of roofing felt in the joints is supported and held in a straight line during the construction process.

4 In situ concrete shall be laid on a sub-base of 100 mm nominal thickness of granular material complying with Clause 803 or 804, laid and compacted in compliance the 800 Series, or as otherwise described in Appendix 11/1.

5 The vertical alignment of the finished surface shall not depart from the design level by more than ±10 mm and at any point the maximum deviation of the surface under a straight edge shall not be greater than 5 mm in 3m.

1107 Footways and Paved Areas (Concrete Block Paving)

1 Precast concrete paving blocks shall be chamfered and shall comply with IS EN 1338 and conform to the shapes, dimensions and colours described in Appendix 11/1.

2 Precast paving blocks shall be laid in accordance with BS 7533- Part 3.

3 The layout of blocks and details at edges, chamber covers, gullies and other openings shall be as described in Appendix 11/1.

4 The vertical alignment of the finished surface shall not depart from the design level by more than ±10 mm and at any point the maximum deviation of the surface under a straight edge shall not be greater than 5 mm in 3 m.

1108 Footways and Paved Areas (Clay Pavers)

1 Clay pavers shall conform to IS EN 1344 with chamfers. The shapes, dimensions, colours and performances and other required classes of clay pavers shall be as described in Appendix 11/1.

2 Clay pavers shall be laid in accordance with BS 7533-3, except that the subbase shall be one of the materials permitted the appropriate Clauses in the 1100 Series.

3 The layout of pavers and details at edges, chamber covers, gullies and other openings shall be as described in Appendix 11/1.

1109 Footways and Paved Areas (Cellular Grass Paving Systems)

1 Cellular grass paving systems shall consist of a reinforced perforated in-situ concrete slab or a prefabricated panel system as specified in Appendix 11/1 and in the locations shown on the drawings in the Contract.

2 Prefabricated proprietary systems shall have an NSAI Agrément (or equivalent) certificate for the intended use.

3 In-situ cellular grass systems shall be cast and cured as described in Appendix 11/1. The strength class of concrete and surface finish shall be as described in Appendix 11/1.

4 Perforations shall be formed in in-situ cellular grass systems as described in Appendix 11/1.

5 Concrete panels shall conform to the shape, dimensions and colour described in Appendix 11/1.

6 Concrete used shall have compressive strength class of 28/35 and panels when tested in accordance with IS EN 1339, the characteristic bending strength shall be class 3 to Table 5 of BS EN 1339. The water absorption when tested in accordance with IS EN 1339 shall be class 2 of Table 4.1.

7 The layout of panels and details at edges, chamber covers, gullies and other openings shall be as described in Appendix 11/1.

8 Cellular grass paving systems shall be laid to true levels and crossfalls, and be of the thickness described in Appendix 11/1.

9 Cellular grass paving systems shall be laid on a bed of Type B sub-base conforming to Clause 804 laid and compacted in accordance with the appropriate Clauses in the 800 Series and to the thickness described in Appendix 11/1. In addition panels shall be bedded on a layer of sand conforming to Appendix 11/1.

10 Perforations shall be filled with friable soil free from deleterious matter or with other material as described in Appendix 11/1, levelled off 30mm below the top surface, sown with grass seed as described in Appendix 11/1, covered with a layer of fine soil and levelled. The seed shall be sown while soil is still loose after filling.

1110 Access Steps

1 Steps provided for access to maintain the road infrastructure shall be constructed to the specification and requirements given in Appendix 11/2.