SERIES NG 1100 KERBS, FOOTWAYS, CYCLEWAYS AND PAVED AREAS

Contents

NATIONAL ALTERATIONS OF THE OVERSEEING ORGANISATIONS OF SCOTLAND, WALES AND NORTHERN IRELAND

Contents

# denotes a Clause or Sample Appendix which has a substitute National Clause or Sample Appendix for one or more of the Overseeing Organisations of Scotland, Wales or Northern Ireland.

KERBS, FOOTWAYS, CYCLEWAYS AND PAVED AREAS

NG 1100 (02/21) Kerbs, Footways, Cycleways and Paved Areas General

1 (02/21) The choice of placing the kerb can be either on the surface of, or adjoining the edge of, pavements particularly when used as a drainage detail for concrete pavements. It should also include the choice of laying in-situ kerbs and edgings either in concrete or asphalt as there are small machines available for this purpose.

2 (02/21) Care should be taken in preparing detailed drawings to ensure good drainage from the carriageway construction either through or under the kerb foundation.

3 (02/21) Even if concrete pavement is not provided with expansion joints, adjacent in situ concrete edge details such as combined marginal strips and drainage channels should be provided with expansion joints, and should coincide with any joints formed in adjacent slabs.

4 (02/21) The construction adopted for footways will depend very much upon the availability of local materials and local conditions. Where appropriate and to allow economy, the use of groups of permitted alternatives should be described in contract specific Appendix 11/1.

5 (02/21) For footways which are known to be subjected to vehicle overrun the use of smaller and thicker paving flags laid on a thin layer of sand may be considered. Other alternatives would be concrete block paving, clay pavers, in-situ concrete, or for flexible footways increased construction thickness and the use of denser surfacing materials.

6 (02/21) Concrete block paving and clay pavers may be considered in certain low speed traffic situations, e.g. service areas, and lay-bys, because of their resistance to oil spillage and to deformation due to wheel loads. The block or paver layout and other details should be described in contract specific Appendix 11/1 wherever possible and incorporate whole units immediately adjacent to the edge of a carriageway or hard strip and avoid trimming of units to less than one third of their surface area.

7 (02/21) The construction adopted for cycle tracks should be one or more of those given for footways and paved areas. Reference should also be made to CD 239 (DMRB) for detailed guidance on the design and construction of footways and cycleways.

8 (02/21) Many of the construction materials (e.g. precast kerbs, concrete block pavers etc) have a separate harmonised European standard, which requires a Declaration of Performance for the different material properties, to be made by the Manufacturer. Minimum classes for each of these properties should be specified by the compiler. Reference documents to assist the compiler are given in the relevant section below. Each relevant European standard specifies the extent of sampling and testing required by the manufacturer, or a third party on the manufacturer's behalf, to demonstrate the performance characteristics of the specific product. These tests are at the initial stage of production (Initial or Further Type Testing) and during the general operation of the plant (Factory Production Control). The compiler should consider the need for contract compliance testing and include within Appendix 1/5.

9 (02/21) BS 7533 provides installation guidance for laying kerbs and different types of block paving and is referenced in the specification.

10 (02/21) The specification provides requirements for laying course, road base and sub-base within modular pavements. However, the compiler should also seek the guidance of the manufacturer when preparing contract specific Appendix 11/1.

(02/21) Foundation CBR

11 (02/21) Consideration should be given to the subgrade California Bearing Ratio (CBR) value with a visual inspection for soft spots as a minimum. Where the footway or paved area is likely to be subject to any vehicle over-run it is recommended that the visual inspection should be supplemented by insitu Mexe penetrometer tests on all soft spots and at 50m intervals.

(02/21) Subbase

12 (02/21) Type 1 was designed to be placed using large plant, in relatively thick layers and rolled using 8-10 tonne dead-weight rollers. The subbase for footways and cycleways is often constructed using small plant and laid in thin layers (100mm) for which the nominal size of Type 1 is too large. Therefore, where the subbase thickness is less than 150mm consideration should be given to the use of locally available materials, which meet the specification requirements; for example:

(i) initial sweepings from 10mm and 14mm surface dressing;

(ii) bituminous planings;

(iii) 20mm and 28mm nominal single sized aggregates;

(iv) spent railway ballast screened to remove the 20mm down material (and thus any contaminants)

(v) china clay sand;

(vi) crushed kerbstones;

(vii) slate waste.

13 (02/21) The single sized nature of some of these sources may make them unlikely to meet the specification requirements and be difficult to compact, so blending of aggregates may be beneficial. Bituminous planings exhibit considerable resistance to compaction due to friction of the bitumen coated aggregate. They should be compacted at optimum moisture content, to a maximum compacted layer thickness of 150mm.

14 (02/21) Where subbase materials are required to be in accordance with Series 800 the unbound mixtures are required to conform to BS EN 13285 with the aggregates conforming to BS EN 13242. These materials are therefore required to be CE marked and the manufacturer is obliged to provide a declaration of performance. This applies to any imported aggregate including secondary or locally sourced materials.

15 (02/21) Where such secondary aggregates are to be used, the requirements for durability set down in the specification for subbases still apply. For example, materials used in the construction of the footway and cycleway shall be resistant to frost heave. Local experience can be a useful guide particularly where materials have a long history of satisfactory performance. Secondary aggregates may be suitable for use after stabilisation, for example by cement, foamed bitumen, or other binders. If it cannot be guaranteed that the subbase will remain well drained throughout its design life then the material should be stabilised.

16 (02/21) A permeable subbase, such as Type 3 to Clause 805, may be useful under modular surfacing, which is, to some extent, porous. It may therefore be better to provide the drainage at a lower level and have a more "free-draining" sub-base. Precautions, such as the inclusion of a membrane separation layer, may be required to prevent loss of laying course sand into the subbase.

(02/21) Compaction

17 (02/21) The choice of compaction plant is limited by the small scale of the works, and obstructions such as street furniture, but the use of appropriate plant is essential, together with an established testing scheme when required. The subgrade should be levelled and compacted adequately if the sub-base, when placed and compacted, is to achieve the required density. The performance of both unbound and bound materials depends substantially on the degree of compaction achieved. Refer to NG 1112 and NG1113 for further guidance on compaction of bituminous materials.

(02/21) Slip/Skid Resistance

18 (02/21) The surface course of a footway/cycleway should not become slippery when wet. It is unlikely that this will be a problem with bituminous or concrete materials, but care should be taken when specifying clay pavers or natural stone. The skidding resistance of concrete products is always adequate for use in footways, as the BS EN 1338 requirement for acid soluble content precludes the use of limestone for both coarse and fine aggregates. However, some clay pavers in areas of heavy pedestrian use can become slippery when wet. Specialist advice should be sought where there is the possibility of horse traffic on modular paving. Further guidance is provided in NG 1107 and NG 1108.

NG 1101 (02/21) Precast Concrete and Natural Stone Kerbs, Channels, Edgings and Quadrants

1 (02/21) Clause 1101 provides the minimum requirements for precast concrete kerbs when tested in accordance with BS EN 1340, based on the recommendations in the National Annex (NA). The NA also gives recommendations for class of Slip/Skid Resistance and Abrasion depending on the location of the kerb (i.e. whether it is to be flush or laid with upstand and/or whether it is to be located in an area subject to vehicular traffic.) The compiler should also consider these other requirements when completing contract specific Appendix 11/1.

NG 1102 (02/21) In-Situ Asphalt Kerbs

1 (02/21) It should be noted that Table NG 1/1 recommends testing of Grading and binder content for in situ asphalt kerbs. BS 5931 provides recommendations for binder content and nominal coarse aggregate content.

2 (02/21) BS 5931 recommends the use of trial lengths to demonstrate that the chosen mix design and plant and equipment will produce an acceptable end product. Consideration should be given to the chosen location for the trial length so that if it is acceptable, it can form part of the permanent works.

NG 1103 (02/21) In-Situ Concrete Kerbs, Channels and Edge Details

1 (02/21) Experience suggests that for the in-situ construction of relatively high drainage channels by slip-forming or extrusion techniques, the use of crushed or partially crushed aggregate will ensure a more consistent and stable profile. Uncrushed aggregate may be used for surface water channels of 400 mm or less in height where past experience in the use of a particular aggregate, or the result of trials, demonstrate that a satisfactory profile can be achieved.

2 (02/21) The precise level of concrete workability will depend on the type of construction plant used, for example:

(i) extrusion auger (small kerbs);

(ii) ram compaction (small kerbs, kerbs, channels);

(iii) slip-form (kerbs, channels).

3 (02/21) The design mix should be tested by the Contractor to establish that it will produce a satisfactory end product equivalent to a precast kerb or edging. The Contractor is also required to provide cube test results for the concrete design mix. The Overseeing Organisation may also choose to check the fixing of the kerb through a static push off test. The compiler should note that it will be necessary to provide details for testing of in-situ concrete, kerbs, channels and edgings within contract specific Appendix 1/5 and to include reference to the design in contract specific Appendix 1/10 as it will constitute a Contractor designed element.

4 (02/21) BS 5931 recommends the use of trial lengths to demonstrate that the chosen mix design and plant and equipment will produce an acceptable end product. Consideration should be given to the chosen location for the trial length so that if it is acceptable, it can form part of the permanent works.

NG 1104 (02/21) Footways, Cycleways and Paved Areas –Precast Concrete Flags and Natural Stone Slabs

1 (02/21) Reference should be made to BS 7533-8 – Guide for the structural design of lightly trafficked pavements of precast concrete flags and natural stone slabs and BS 7533-12 – Guide to the structural design of trafficked pavements constructed on a bound base using concrete paving flags and natural stone slabs. Annex C of BS 7533-12 gives guidance for the recommended physical properties of surface course material (precast concrete flags and natural stone slabs) and this has been used to inform the minimum requirements for precast concrete flags in Clause 1104. However, it should be noted that the British Standards referenced for testing of natural stone are not the same as those within BS EN 1341.

2 (02/21) Large flags/slabs can be difficult to lay, requiring mechanical handling, and will be damaged by any vehicle overrun. Therefore, Clause 1104 requires that flags and slabs, for footways and cycleways have plan dimensions not larger than 450 x 450 mm. If larger sizes are required, and/or any degree of vehicle overrun is expected, it is recommended that the compiler should design in accordance with BS 7533-12 using rigid construction including a concrete "road base".

3 (02/21) BS EN 1341 Annex A provides guidance on the appropriate thickness of natural stone slabs for different classes of use.

NG 1105 (02/21) Footways, Cycleways and Paved Areas – Bituminous Mixtures

1 (02/21) The decision on which bituminous materials to use will depend on appearance, durability, initial cost, maintenance requirements, total thickness, ease of laying and likelihood of disturbance by Statutory Undertakers.

2 (02/21) Three surface course materials that are suitable for footways and cycleways are compared and contrasted in Table NG 11/1, assuming that all materials are fully compacted; the dense materials comply with Clause 1113, and 160/220 or harder paving grade bitumen is used. The good durability of the 15/10 HRA surface course compared to the 6mm medium graded asphalt concrete and its comparatively small extra cost, means that it is probable that the HRA will have the lowest cost over the life of the footway/cycleway. Limestone aggregates should be excluded to ensure materials meet long term skid resistance recommendations.

3 (02/21) The choice of binder course may be limited because of the thickness specified in the design. Pedestrian-only footways and cycle only cycleways require 40mm of binder course, which is below the minimum thickness for binder course complying with BS 594987. The solution is to either use a 14mm close-graded asphalt concrete surface course as a binder course or a 55/14 hot rolled asphalt binder course, the latter being more expensive but more durable.

4 (02/21) The binder penetration should be specified as 100/150 or less where vehicle overrun occurs, otherwise 160/220 can be specified.

Table NG 11/1 (02/21) Comparison of Bituminous Surface Courses

Property	Material		
	6mm medium graded asphalt concrete	6mm dense asphalt concrete	15/10F hot rolled asphalt
Appearance	Open textured	Close textured	Smooth
Durability	Poor to fair	Fairly good	Good
Workability	Good	Fair	Good
Maintenance Needs	Highest	Intermediate	Lowest
Permeability	Permeable	Slightly permeable	Effectively impermeable
Resistance to stiletto heels and horses	Fairly poor	Poor when new, otherwise good	Fairly good

5 (02/21) Surface regularity requirements are to satisfy needs of cyclists and are primarily aimed at schemes where the new footway/cycleway is separate from the road and not overly constrained. They may be difficult to achieve with hand laying. The complier should make a judgement, based on site conditions, whether or not the surface regularity requirements are essential and achievable.

6 (02/21) BS 594987 provides recommendations for the minimum temperature of different types of asphalt at the time of delivery and compaction.

7 (02/21) Where end product compaction of bituminous surfacing is specified, testing of the in-situ air voids content is required. (Refer to Clause 1113 and NG1/1.) For large projects and/or if the materials specified are difficult to compact the compiler should also consider specifying air voids content tests in contract specific Appendix 1/5 even where method specification for compaction is to be used.

NG 1106 (02/21) Footways, Cycleways and Paved Areas – In-situ Concrete

1 (02/21) Designated concrete PAV1 is specified in Clause 1106 as it includes requirements for air entrainment and is recommended for House Drives and Domestic Parking in BS8500-1:2015 Table A.14. Where the paved area is likely to be regularly overridden by commercial vehicles the compiler may wish to consider specifying PAV2 (C32/40) within contract specific Appendix 11/1. Heavy duty insitu concrete pavements should be specified in accordance with Series 1000.

NG 1107 (02/21) Footways, Cycleways and Paved Areas – Concrete Block Paving

1 (02/21) National Annex NA.4 of BS EN 1338 provides guidance on suitable thickness of concrete block paving to be used in different trafficking situations.

2 (02/21) National Annex NA.6 of BS EN 1338 provides guidance on the recommended class for concrete pavers with respect to abrasion resistance depending on the area of use e.g. an area subject to very heavy or light pedestrian and vehicular traffic use.

3 (02/21) BS EN 1338 states that “Concrete paving blocks have satisfactory slip/skid resistance provided that their whole upper surface has not been ground and/or polished to produce a very smooth surface.” In the event that a slip/skid resistance value is provided, BS EN 1338 NA.7 gives guidance on the potential for slip against various pendulum test values.

NG 1108 (02/21) Footways, Cycleways and Paved Areas – Clay Pavers

1 (02/21) BS EN 1344 states that “Clay pavers and accessories have satisfactory slip/skid resistance provided that their whole upper surface has not been ground and/or polished, or manufactured, such that a very smooth surface is produced.” However, a minimum Slip/Skid resistance will be required for footways and other trafficked areas. If the clay paved area is to form part of the carriageway consideration should be given to increasing this value and/or requesting a test for the in-service skid resistance value of the paver.

NG 1109 (02/21) Grass Concrete Paving

1 (02/21) Grass concrete paving may be considered for parking areas, hard standings and accesses.

2 (02/21) In-situ reinforced grass concrete paving may be advantageous where heavy goods vehicles or vehicles with high point loadings are anticipated or where poor ground may result in differential settlement between panels.

3 (02/21) Details of paving systems should be described in contract specific Appendix 11/1.

4 (02/21) Consideration should be given to the use of Type 3 to Clause 805 as sub-base (in place of Type 1 to Clause 803), which is an open graded material that would allow more infiltration of surface water run-off.

#NG 1110 (02/21) Access Steps

1 (02/21) Access steps are normally to be provided to communications cabinets or other roadside equipment where necessary to provide safe access for highway maintenance. The specification in Clause 1110 is for steps for these purposes and not for other uses.

2 (02/21) Details of access steps requirements should be given in contract specific Appendix 11/2. The requirements should be stated in performance terms rather than prescriptive details to allow the Contractor suitable options for the provision of the steps. HCD drawing MCX 0138 should only be specified when considered necessary.

3 (02/21) The steps can be Contractor designed or not. Where the Contractor is undertaking the design of the steps contract specific Appendices 1/10 and 11/2 should be used to give any specific design requirements.

4 (02/21) The design process should include consideration of the following elements.

(i) The location and alignment of the steps.

(ii) The width of the steps, this should be 800mm as a minimum.

(iii) Edge details and level of the steps with respect to surrounding ground level.

(iv) Guardrails – at least one guardrail should be provided, where the width of the steps is greater than 1.2m a second should be provided, the risk assessment should consider what to provide for widths up to 1.2m.

(v) The steps are required to have a rise and going which achieves the safety requirements formulae of BS EN ISO 14122-3, if the ground conditions do not allow this the risk assessment should consider what should be achieved.

(vi) The angle of pitch of the steps should be between 18° and 38°. Should an angle of pitch less than 18° be required, the risk assessment should determine whether steps, ramps or a combination are appropriate. Should an angle of pitch between 38° and 45° be required the risk assessment should determine whether steps are appropriate.

(vii) The number of knee-rails required and the requirement for toe plates on landings.

(viii) The need for a pedestrian guardrail between the steps and the road or other hazard to restrict direct egress from the steps onto the carriageway.

5 (02/21) There should also be consideration of the need to provide a road restraint system between the steps and the road. For road restraint system requirements see Series 400.

6 (02/21) Contract specific Appendix 11/2 should also include details of performance requirements including the required serviceable life of the steps and the loading requirements. The specified serviceable life of the steps should be the same as that identified for the equipment to which the steps are providing access. The loading requirements should be identified for the specific use of the steps and be within the limits stated in BS EN ISO 14122-3 section 4.7.

7 (02/21) Table 11/8 gives some material requirements, these are minimum default values and should be supplemented with site specific requirements in contract specific Appendix 11/2. The compiler should include site specific requirements for each material to be used and reference relevant Clauses, or numbered appendices, that are not already referenced in Table 11/8. For example, for concrete the type of specification should be determined, i.e. designed, prescribed or standardised prescribed, along with the basic and other requirements such as concrete designation, maximum aggregate size, consistence class, compressive strength, and other limiting values for composition. Specific relevant Clauses of Series 1700 should be identified and referenced. Where details may be given in Series 1700 contract specific Appendices these should be cross-referenced in contract specific Appendix 11/2. Where the Contractor is to design the access steps site details should be stated to inform the design and set any other relevant minimum requirements.

NG 1113 (02/21) End Product Specification for Compaction of Bituminous Layers

1 (02/21) The durability of dense bituminous materials of all types is heavily dependent on reducing the permeability of the material to a level which will restrict weather and oxygen attack to the top surface. The level of compaction is best characterised by air voids content which is generally recommended to be in the region of 2-8%. Void contents less than 2% are not recommended for heavy-vehicle footways as deformation may occur under trafficking.

NG 1114 (02/21) Horizontal Alignments and Surface Levels of Pavement Courses and Formation

1 (02/21) The tolerances given in Clause 1114 Table 11/11 are intended to apply generally and also take into account that a footway is usually hand laid. They are more stringent than those in Table 7/1, Clause 702. This is because the tolerances for road pavements would allow too great a reduction in layer thicknesses for thin footway construction layers. If kerbs and edging strips are laid accurately it should be possible to achieve a high degree of compliance with design levels.

2 (02/21) Where segmental paving (e.g. concrete block paving or stone slabs etc) are proposed, the compiler should also refer to the relevant section of BS 7533 for the specific tolerances for the particular surface type.

NG 1115 (02/21) Surface Regularity of Bituminous Surfaced Footways, Cycleways and Paved Areas

1 (02/21) Surface regularity requirements are to satisfy needs of cyclists and are primarily aimed at schemes where the new footway/cycleway is separate from the road and not overly constrained. The compiler should make a judgement, based on site conditions, whether or not the surface regularity requirements are essential and achievable.

2 (02/21) Transverse surface regularity is given in terms of maximum deviation under a 1m straightedge, as the 3m straightedge used in road pavement measurement is too large for footway use.

NG 1116 (02/21) Rectification of Bituminous Surfaces of Footways, Cycleways and Paved Areas

1 (02/21) Alternative methods do exist for the rectification of surface course layers that do not meet surface regularity requirements. If the Contractor proposes an alternative method, the Overseeing Organisation should consider the constraints.

NG 1117 (02/21) Footways, Cycleways and Paved Areas – Permeable Block Paving

1 (02/21) Permeable Block Paving may be considered for parking areas, hard standing and accesses. However, it is not recommended for paved areas that will be subject to heavy vehicle turning movements and the guidance of the permeable paving manufacturer should be sought for suitable uses.

2 (02/21) The compiler should consider the interface between the permeable block paved areas and adjacent areas of impermeable construction.

NG 1118 (02/21) Polymeric Kerbs, Islands and Lane Separators

1 (02/21) There is not currently a specific standard for testing polymeric kerbs. Nonetheless polymeric kerbs may be used where they offer comparable characteristics and in service performance as the other kerbs permissible in this specification.

2 (02/21) Lightweight polymeric materials could be attractive from the view of health and safety at installation. Nonetheless, compilers should prioritise their consideration to use polymeric materials options which offer long-term performance in service.

3 (02/21) A selection of minimum requirements for polymeric kerbs have been based on the testing methods which are contained in BS EN 1340, with the respective performance requirements adjusted in line with the characteristics of polymeric materials. The testing methods contained in BS EN 1340 required have been found to be appropriate to polymeric kerbs. Compilers should consider performance requirements which suit their project needs.

(02/21) NG SAMPLE CONTRACT SPECIFIC APPENDIX 11/1: KERBS, FOOTWAYS, CYCLEWAYS AND PAVED AREAS

1 (02/21) **Precast Concrete Kerbs**

(i) Dimensions and type designations *[see NG1101 and clause 5.3 and the National Annex NA of BS EN 1340]* of precast concrete kerbs, channels, edgings and quadrants *[1101.3]*.

Schedule 1 Dimensions and Type Designations for Precast Concrete Kerbs

Kerb type	Designation

(ii) Details of kerb joints at bridge expansion joints designed by the Overseeing Organisation *[1101.20]*.

(iii) Requirements for bedding *[1101.4]*.

2 (02/21) **In-situ Asphalt Kerbs**

(i) Dimensions of in-situ asphalt kerbs *[see MCHW 3 (HCD) Drawing Nos. B9 and B10] [1102.6]*.

3 (02/21) **In-situ Concrete Kerbs**

(i) Dimensions and type designations *[see NG1103 and clause 5.3 and the National Annex NA of BS EN 1340]* of in-situ concrete kerbs, channels and edge details *[1103.2]*.

Schedule 2 Dimensions and Type Designations for In-situ Concrete Kerbs

Kerb type	Designation

(ii) Details of kerb joints at bridge expansion joints *[1101.14]*.

4 (02/21) **Precast Concrete Flags and Natural Stone Slabs**

(i) Type designation, thickness and performance class of precast concrete flags or natural stone slabs *[1104]*. *[For precast concrete flags see clause 5.3, the National Annex NA of BS EN 1339. For natural stone slabs, see relevant clauses and the National Annex NA of BS EN 1341.]*

Schedule 3 Type Designations and Thickness for Precast Concrete Flags

Plan dimensions	Thickness

[Type designation, thickness and performance class of natural stone slabs are given in Schedule 4. [1104.5]. See relevant clauses of BS EN 1341.]

Schedule 4 Type Designations and Thickness for Natural Stone Slabs

Plan dimensions	Thickness

(ii) Required foundation and base layers for precast concrete flags and natural stone slabs *[1104.8]*.

(iii) Required laying course and jointing material type for precast concrete flags and natural stone slabs *[1104.9]*.

(iv) Required cross falls and bond with joints at right angles to the kerb for precast concrete flags and natural stone slabs *[1104.10]*.

(v) Whether alternative bed for flags or natural stone slabs, less than 450 mm x 450 mm, is permitted *[1104]*.

5 (02/21) **Bituminous Mixtures**

(i) Requirements for material and layer thicknesses for bituminous mixtures used in surface course and binder course *[1105.1]*.

(ii) Required foundation and base layers for bituminous mixtures *[1105.2]*.

6 (02/21) **In-situ Concrete Paving**

(i) Requirements for material and layer thicknesses for in-situ concrete paving *[1106.1]*.

(ii) Required foundation and base layers for in-situ concrete paved areas *[1106.3]*.

(iii) Required surface finish for in-situ concrete paved area *[1106.4]*.

(iv) Required joint details and maximum joint spacing for in-situ concrete paved areas *[1106.5 and 1106.6]*.

7 (02/21) **Concrete Block Paving**

(i) Requirements for shapes, dimensions and colours of precast concrete paving blocks *[1107.3] [see clause 5.3 and the National Annex NA of BS EN 1338]*.

Schedule 5 Type Designations and Thickness for Precast Concrete Paving Blocks

Plan dimensions	Thickness

(ii) Required foundation and base layers for concrete block paving *[1107.6]*.

(iii) Required laying course and jointing material type for precast concrete for concrete block paving *[1107.7]*.

(iv) Required layout of blocks and details at edges, chamber covers, gullies and other openings for concrete block paving *[1107.8]*

8 (02/21) **Clay Pavers**

(i) Requirements for shapes, dimensions and colours of clay pavers *[1108.2] [see clause 4 and the National Annex NA of BS EN 1344]*.

Schedule 6 Type Designations and Thickness for Clay Pavers

Plan dimensions	Thickness

(ii) Required foundation and base layers for clay pavers *[1108.4]*.

(iii) Required laying course and jointing material type for clay pavers *[1108.5]*.

(iv) Required layout of blocks and details at edges, chamber covers, gullies and other openings for clay pavers *[1108.6]*.

9 (02/21) **Grass concrete paving**

(i) Requirements for grass/concrete paving *[1109.1]*.

(ii) Requirements for perforations in in-situ grass/concrete paving *[1109.2 and 1009.10]*.

(iii) Requirements for shapes, dimensions and colours of precast grass/concrete panels *[1109.3]*.

(iv) Minimum compressive strength, minimum characteristic bending strength and water absorption performance requirements detailed in Clause 1109.

(v) Required layout of precast panels and details at edges, chamber covers, gullies and other openings for grass concrete paving *[1109.7]*.

(vi) Required thickness of subbase and sand bed for grass/concrete panels, whether a type of subbase other than Type 1 to Clause 803 shall be used *[1109.8 and 1109.9]*.

(vii) Requirements for grass seed mix to grass/concrete paving *[1109.11]*.

10 (02/21) **Horizontal alignments and surface levels**

(i) Requirements for checking horizontal alignments and surface levels if different from Clause 1114. Grid spacing of points to check surface levels of all courses of footways and paved areas *[1114.1]*.

(ii) Confirmation of surface regularity requirements if different from Clause 1115.

(iii) Intervals for checking surface regularity *[1115.2]*.

11 (02/21) **Permeable block paving**

(i) Requirements for shapes, dimensions and colours *[See clause 5.3 and the National Annex NA of BS EN 1338 for concrete block pavers and clause 4 of BS EN 1344 for clay pavers.]* of permeable block paving *[1117.1]*.

Schedule 7a Type designations and Thickness for Permeable Block Paving – Precast Concrete Blocks

Plan dimensions	Thickness

Schedule 7b Type designations and Thickness for Permeable Block Paving – Clay Pavers

Plan dimensions	Thickness

(ii) Required laying course and foundation layers for permeable block paving *[1117.3]*.

(iii) Required layout of blocks and details at edges, chamber covers, gullies and other openings for permeable block paving *[1117.4]*.

12 (02/21) **Polymeric Kerbs, Islands and Lane Separators**

(i) Requirements for dimensions and type designations *[see NG1101 and clause 5.3 and the National Annex NA of BS EN 1340] [1118.2]*.

13 (02/21) **Natural Stone Setts**

(i) Requirements for Natural Stone Setts *[1119.2]*.

(ii) Required foundation and base layers for natural stone setts *[1119.3]*.

(iii) Required laying course and jointing material type for natural stone setts *[1119.4]*.

(iv) Required layout of blocks and details at edges, chamber covers, gullies and other openings natural stone setts *[1119.6]*.

(02/21) NG SAMPLE CONTRACT SPECIFIC APPENDIX 11/2: ACCESS STEPS

1 (02/21) Requirement for access steps, locations, cross reference to drawings as appropriate, use of HCD drawing MCX 0138 if required.

2 (02/21) Design requirements for Contractor design. *[Details must also be included in contract specific Appendix 1/10. The requirement for drawings to be submitted must be included in contract specific Appendix 1/4.]*.

3 (02/21) Durability requirements *[NG 1110.7 and 1110.8]*.

4 (02/21) Material requirements *[1110.9]*.

5 (02/21) Required serviceable life of access steps *[1110.7]*.

6 (02/21) Environmental requirements. *[1110.17 to 1110.19]*.

NATIONAL ALTERATIONS OF THE OVERSEEING ORGANISATION OF WALES

NG 1110WG (02/21) Access Steps

1 (02/21) Access steps to feeder pillars, communication cabinets, traffic counter cabinets, ice prediction installations and the like should conform to the requirements of the Welsh Assembly Government.