

Module 3

Revision:0

Road Specification

Table 3.1 Standard Residential Road Specifications

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Table 3.2 - Residential Road serving up to 50 dwellings

Layer	Thickness	Material
Surface Course	45 mm	Hot Rolled Asphalt 55/10F surf 100/150 to BS EN 13108-4 (PD 6691) with a min PSV ₅₅ and AAV ₁₀ aggregate. (45/10F for hand laying)
Binder course	60 mm	AC 20 dense bin 100/150 recipe mixture to BS EN 13108-1 (PD 6691).
Base	130 mm	AC 32 dense base 100/150 recipe mixture to BS EN 13108-1 (PD 6691)

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Table 3.3 Residential Road serving up to 100 dwellings

Layer	Thickness	Material
Surface Course	45 mm	Hot Rolled Asphalt 55/10F surf 100/150 to BS EN 13108-4 (PD 6691) with a min PSV ₅₅ and AAV ₁₀ aggregate. (45/10F for hand laying)
Binder course	60 mm	AC 20 dense bin 100/150 recipe mixture to BS EN 13108-1 (PD 6691).
Base	150 mm*	AC 32 dense base 100/150 recipe mixture to BS EN 13108-1 (PD 6691)

*If the developer wishes to lay the base in two layers then AC 20 dense bin 100/150 should be used in lieu of the AC 32 dense base 100/150

Table 3.4 Residential Road serving up to 200 dwellings

Layer	Thickness	Material
Surface Course	45 mm	Hot Rolled Asphalt 55/10F surf 100/150 to BS EN 13108-4 (PD 6691) with a min PSV ₅₅ and AAV ₁₀ aggregate. (45/10F for hand laying)
Binder course	60 mm	AC 20 dense bin 100/150 recipe mixture to BS EN 13108-1 (PD 6691).
Base	200 mm*	AC 32 dense base 100/150 recipe mixture to BS EN 13108-1 (PD 6691)

*The base course layer should be laid in two layers.

1. For roads carrying up to 100cv//d with speed limit of 40mph or less the surfacing material shall be; Hot Rolled Asphalt HRA 55/10F surf 100/150 to BS EN 13108-4 as described in PD 6691. Binder course shall be 60mm AC 20 dense bin 100/150 recipe mixture to BS EN 13108-1 (PD 6691). Base course thickness shall be designed in accordance with the Design Manual of Road and Bridges (DMRB CD224, and CD224), i.e. depending on the number of cv//d.

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2. For roads carrying more than 100cv//d with speed limit of 40mph or more the first choice surfacing material would be SMA 10 (surf) to BS EN 13108-5 and PD 6691. Binder course shall be 60mm AC 20 dense bin 100/150 recipe mixture to BS EN 13108-1 (PD 6691). Base course thickness shall be designed in accordance with the Design Manual of Road and Bridges (DMRB CD224, and CD224), i.e. depending on the number of cv//d.

Table 3.5 Residential Road Block Paving

Block Paving – Carriageway Specification		
Layer	Material	Thickness
Block Paving	<p>Precast Concrete Paving Blocks. The paving shall be laid in accordance with BS 7533. Blocks to be chamfered and to comply with BS EN 1338.</p> <p>Concrete paviour colour to be agreed with Project Manager.</p> <p>Laid herringbone or 90deg to direction of travel, bounded with a single stretcher course.</p> <p>Minimum saw cut block to be no smaller the 1/3 the unit's size. In shared spaces, a 4-block wide drainage channel is required to align with gully positions.</p> <p>All cut edges are to be lightly chamfered to match adjoining edges.</p> <p>All paving to receive sand stabiliser and surface sealant, product and method to be agreed with the Site Inspector</p>	80mm

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Block Paving – Carriageway Specification		
Laying Course	Compacted Sharp Sand. Laying Sand to be in accordance with BS 7533-3 + A1:2009, grading Category III	30mm
Geotextile	Permeable membrane (or similar approved)	-
Base	Dense Macadam Base Course material to BS EN 13108-1:2006 AC32 100/150). The minimum requirement to drain the sand is to drill 25 mm holes through the asphalt layers at 1000 mm centres in each direction. These core holes shall be filled with 2.36/6 mm single size chippings	200mm
Sub-Base	Granular Sub-Base Material. Type 1 Unbound Mixture Clause 803 SHW	300mm
Capping	Capping layer - see Table 3.9.	-

Table 3.6 Residential Road Footway

Layer	Material	Thickness
Surface Course	6mm Dense Macadam Clause 909	25mm
Binder Course	AC 20 dense bin 100/150 recipe mixture to BS EN 13108-1 (PD 6691).	50mm
Foundation	Granular Sub-Base Material. Type 1 Unbound Mixture Clause 803 SHW	100mm

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Table 3.7 Residential Road Footway Light Vehicular Crossings

Layer	Material	Thickness
Surface Course	6mm Dense Macadam Clause 909	25mm
Binder Course	AC 20 dense bin 100/150 recipe mixture to BS EN 13108-1 (PD 6691).	75mm
Base	Granular Sub-Base Material. Type 1 Unbound Mixture Clause 803 SHW	100mm

Table 3.8 Residential Road Footway Heavy Vehicular Crossings

Layer	Material	Thickness
Surface Course	Rolled Asphalt 55% stone content Clause 911	40mm
Base	AC 20 dense bin 100/150 recipe mixture to BS EN 13108-1 (PD 6691).	150mm
Base	Granular Sub-Base Material. Type 1 Unbound Mixture Clause 803 SHW	150mm

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Table 3.9 Carriageway Foundation Design**CBR, capping layer and sub-base thicknesses**

CBR	Type 1, type 2 (see note1) or Type 3 (open graded) unbound mixture. mm (maximum)	Capping Layer mm (minimum)	Total sub-base thickness, mm (nominal)
<2.5 (Lias clay)	Designer to submit reinforcement design for foundation layer.	Designer to submit reinforcement design for foundation layer.	Designer to submit reinforcement design for foundation layer.
2.5-5 (Keuper Marl)	200	450	650
5-10 (non-plastic sands)	200	250	450
10-15 (non-plastic sands)	150	200	350
>15 (non-plastic gravels)	200	0	200

Note 1; only material which comprise at least 80% bituminous planings shall be permitted for use as upper sub-base under Type 2 unbound mixture category.

Note 2; if CBR is less than 2.5%, ground stabilisation is required.

Note3; Where Lias clay is encountered the extra 250 mm of capping should be W75 or equivalent drainage layer below the 6F2

Note 4: A non-woven geotextile must always be placed below the 6F2 to prevent contamination of the material by clay. For the low CBR (Lias clay) design the geotextile should be placed between the drainage layer and the 6F2 to prevent the fines from the 6F2 contaminating and clogging the voids of the drainage layer. This is because the 6F2 is unlikely to be free draining and will over time become saturated even with fully working drainage. The geotextile should be non-woven and with a

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minimum mass of 200 g/m² (an example would be Terram 2000). The grade is set by the maximum aggregate size of the layers being separated.

Note 5; The Polished Stone Value (PSV) and Aggregate Abrasion Value (AAV) must be specified in the design and shall comply with the requirements of the DMRB, Volume 7, Section 5, Part 1 HD36/06.

Note 6; Where a new surface course is being laid on the approaches to roundabout, traffic signals, controlled pedestrian crossing, major and minor junctions, our preference will be for a high PSV surface of 68 rather than the use of high friction surfacing.

Max distance should be less than 50m,

Note 7; Bond coats shall be applied between bound layers of bituminous materials (tack coat is not permitted) by metered mechanical spraying equipment, spray tanker or spraying device integral with the paving machine. Bond coats shall have a BBA certification and comply with Clause 920, Volume 1, MCHW.

Note 8; Joint sealants and seals shall consist of hot poured compounds and shall comply with BS 2499-2:1992.

Note 9; In carriageways, the coarse aggregate shall be crushed rock with a minimum polished stone value of 55, unless otherwise stated in the scheme construction details.

Note 10; In cycleways, the coarse aggregate shall be crushed rock with a minimum polished stone value of 50, unless otherwise stated in the scheme construction details.

Note 11; In footways, the coarse aggregate shall be crushed rock with a minimum polished stone value of 50, unless otherwise stated in the scheme construction details.

Note 12; In footway, the binder shall be 160/220 grade bitumen and the temperature shall not exceed 160°C at any time.

Note 13; CBR tests for ALL new roads must meet the below requirements;

1. CBR test must be carried out on the sub-formation level of the proposed new roads, i.e. on the virgin soil at a depth approximately of 1.0m below the proposed road surface course level.
2. Minimum diameter for the CBR test plate is 450mm,
3. Maximum distance between any two consecutive test points is 40m or as directed by the BCC project manager, (depending on the length of proposed new road).

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Alterations to existing Highways

Where existing highways are altered the minimum requirements apply

1. Over-banding of joints is not to be used unless specifically requested.
2. Patched repairs within s278 works will not be accepted at completion. The finished works (footway and carriageway) are to be completed in one continuous operation.
3. Where alterations are made to an existing footway, the footway will be resurfaced full width and 1m beyond either side of the finished repair. i.e. the minimum repair size in footway is 2m long by full width of footway.
4. Where alterations are made to an existing carriageway, the surface is to be resurfaced full length of the carriageway works out to the centre line of the carriageway - if the development is only on one side of the road. If the development requires work both sides of the road, the carriageway is to be resurfaced full width. All lining to be reinstated as existing, unless agreed with BCC otherwise