

BITUMINOUS SURFACING FOOTPATH AND CYCLEWAY CONSTRUCTION

SURFACE COURSE

25mm of 6mm nominal size Dense 100/150 Surface Course (AC6 close surf) to Clause 9.4 compacted to a void content within the range of 2%-10%. The Surface Course must be bonded to the Binder Course.

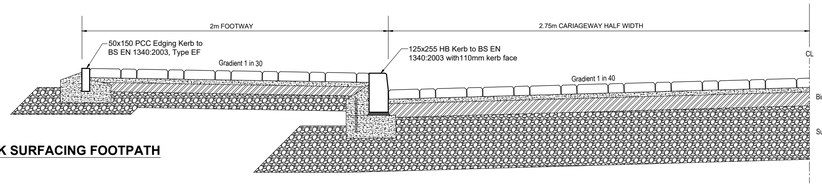
BINDER COURSE

100mm of 20mm nominal size Dence 100/150 Binder Course (AC20 Dense bin rec) to Clause 9.1 conmpacted to a void ratio content within range 2%-10%

SUB BASE

100mm of Type 1 sub-base to Clause 1.2

TYPICAL BITUMINOUS ROAD CROSS SECTION



BLOCKWORK SURFACING FOOTPATH

SURFACE COURSE

60mm thick precast concrete paving blocks to Clause 10.2
Jointing sand shall be to Clause 10.4
Block paved footways are only permitted where the adjacent carriageway is constructed with block pavers

LAYING COURSE

30mm laying course of bedding sand to Clause 10.4

BINDER COURSE

60mm of 20mm nominal size Dence 100/150 Binder Course (AC20 Dense bin rec) to Clause 9.1 conmpacted to a void ratio content within range 2%-10%

SUB BASE

100mm of Type 1 sub-base to Clause 1.2

TYPICAL BLOCKWORK ROAD CROSS SECTION

CONSTRUCTION CHART 3

CARRIAGEWAY CONSTRUCTION - CHART 3 - ROADS UP TO 0.25 MSA								
SUB-GRADE Note 1	SUB-BASE (mm)		SURFACING (mm)			TOTAL THICKNESS (mm)	
Design CBR	Without Geotextile	With Geotextile	Binder Course	Laying Course	Block Paver	Without Geotextile	With Geotextile
			Notes 4&5				
Below 1.5% & soft spots	Not Suitable	710 Notes 2&3	90	30	60	Not Suitable	890 Notes 2,3&4
1.50%	Not Suitable	440	90	30	60	Not Suitable	620
2%	400	340	90	30	60	580	520
3%	310	300	90	30	60	490	480
4% Note 1	270	270 Note 5	90	30	60	450	450 Note 5
5% Note 1	270	270 Note 5	90	30	60	450	450 Note 5
6-15% Note 1	270	270 Note 5	90	30	60	450	450 Note 5
Above 15% Note 1	270	270 Note 5	90	30	60	450	450 Note 5

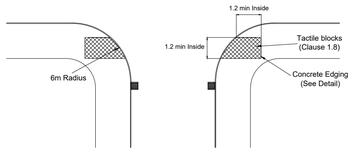
Note 1 See Clauses 1.1.6, 1.1.7 and 1.1.8

Note 2 See Clause 1.1.6 - Assumes no improvement is possible using either sub-soil drainage or soil strengthening technique. 710mm is 410mm of 6F5 Capping Layer Granular Fill to clause 6.8 and 300mm Type 1 sub-base. The thickness of 710mm can be reduced to 630mm if all Type 1 sub-base is used.

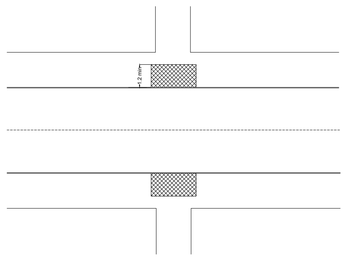
Note 3 For soft spots and sub-grades with a CBR of less than 1.5% the geofabric shall be laid with an approved geogrid or shall be an approved geocomposite. Approved specialist design can be used with the agreement of the Authority.

Note 4 See Clause 1.9

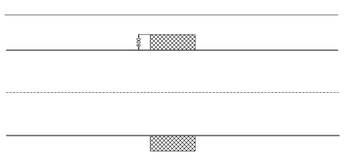
Note 5 The use of a geosynthetic with a sub-grade with the bearing capacity offers no advantage or economy. Ref BS7533 - Guide for structural design of pavements constructed with clay or concrete block pavers



TYPICAL UNCONTROLLED CROSSING POINT AT JUNCTION



CROSSING POINT AT LINK FOOTWAY



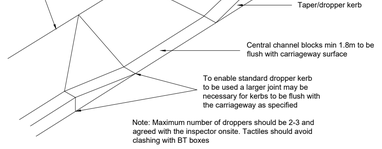
UNCONTROLLED CROSSING AWAY FROM JUNCTION

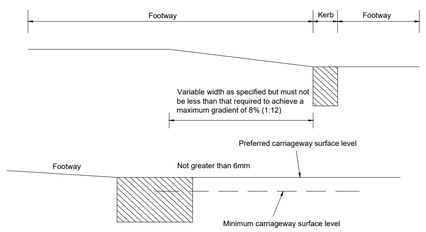
TACTILE PAVING CROSSINGS FOR PEDESTRIANS, TO CLAUSE 1.8

Blister tactile paving crossing points shall be provided at all junctions, crossings at link footways and at kerb to kerb flat top road crossings. Tactile paving shall be 'dimple' high strength concrete blocks, 200mm x 133mm x 60mm paving blocks, with concrete edging around the outside of the blocks. The surface colour shall be buff.

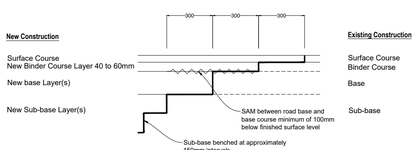
Tactile paving shall be installed in the line of travel, along the full length of a minimum of 1.6m flush dropped channel blocks. Flush kerbs to comprise 125mm x 150mm precast concrete channel blocks. The back edge of the tactile paving surface shall be at right angles to the direction of crossing

Developers shall take care not to locate service boxes (e.g. BT) where tactile paving is required.





DROPPED KERB DETAIL PRIOR TO INSTALLATION OF BLISTER SURFACE



STEPPED CONSTRUCTION DETAIL (DIAGRAMMATIC) NEW CONSTRUCTION ADJACENT TO EXISTING

CONSTRUCTION CHART 1 - ROADS 2-13

CARRIAGEWAY CONSTRUCTION - CHART 4 - ROADS UP TO 0.25 MSA								
SUB-GRADE Note 1	SUB-BASE (mm)		SURFACING (mm)			TOTAL THICKNESS (mm)	
Design CBR	Without Geotextile	With Geotextile	Binder Course	Surface Course		Without Geotextile	With Geotextile
			Notes 4&5				
Below 1.5% & soft spots	Not Suitable	710 Notes 2&3	130	40		Not Suitable	880 Notes 2,3&4
1.50%	Not Suitable	440	130	40		Not Suitable	610 Note 4
2%	400	340	130	40		570 Note 3	510 Note 4
3%	310	300	130	40		480 Note 3	470 Note 4
4% Note 2	300	300 Note 2	130	40		470 Notes 4&5	470 Notes 4&5
5% Note 2	300	300 Note 2	130	40		470 Note 5	470 Notes 4&5
6-15% Note 2	300	300 Note 2	130	40		470 Note 5	470 Notes 4&5
Above 15% Note 2	300	300 Note 2	130	40		470 Note 5	470 Notes 4&5

Note 1 See Clauses 1.1.6, 1.1.7 and 1.1.8

Note 2 See Clause 1.1.6 - Assumes no improvement is possible using either sub-soil drainage or soil strengthening technique. 710mm is 410mm of 6F5 Capping Layer Granular Fill to clause 6.8 and 300mm Type 1 sub-base. The thickness of 710mm can be reduced to 620mm if all Type 1 sub-base is used.

Note 3 For soft spots and sub-grades with a CBR of less than 1.5% the geotextile shall be laid with an approved geogrid or shall be an approved geocomposite. Approved specialist design can be used with the agreement of the Authority.

Note 4 Initial Binder Course layer thickness **70mm** if the **alternative kerbing installation method** (two stage construction - kerbing to be laid at a later stage) is used. **Total Binder Course thickness becomes 130mm** in these circumstances. **See Clause 1.1.17**

Note 5 The use of a geosynthetic with a sub-grade with this bearing capacity offers no advantage or economy.

CONSTRUCTION CHART 4 - ROAD 1

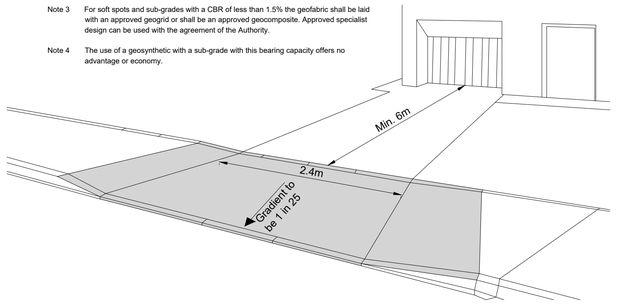
CARRIAGEWAY CONSTRUCTION - CHART 4 - ROADS UP TO 2.0 MSA								
SUB-GRADE Note 1	SUB-BASE (mm)		SURFACING (mm)			TOTAL THICKNESS (mm)	
Design CBR	Without Geotextile	With Geotextile	Binder Course	Surface Course		Without Geotextile	With Geotextile
			Notes 4&5				
Below 1.5% & soft spots	Not Suitable	710 Notes 2&3	180	40		Not Suitable	930 Note 3
1.50%	Not Suitable	440	180	40		Not Suitable	660
2%	400	340	180	40		620	560
3%	310	300	180	40		530	520
4% Note 2	260	260 Note 4	180	40		480	480 Note 4
5% Note 2	230	230 Note 4	180	40		450	450 Note 4
6-15% Note 2	230	230 Note 4	180	40		450	450 Note 4
Above 15% Note 2	230	230 Note 4	180	40		450	450 Note 4

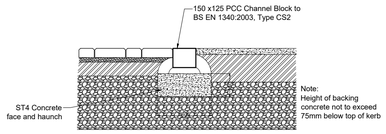
Note 1 See Clauses 1.1.6, 1.1.7 and 1.1.8

Note 2 See Clause 1.1.6 - Assumes no improvement is possible using either sub-soil drainage or soil strengthening technique. 710mm is 410mm of 6F5 Capping Layer Granular Fill to clause 6.8 and 300mm Type 1 sub-base. The thickness of 710mm can be reduced to 630mm if all Type 1 sub-base is used.

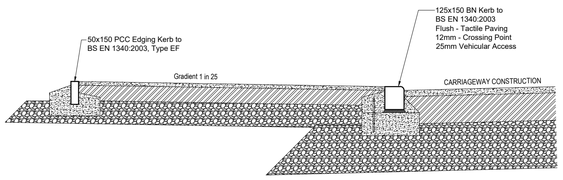
Note 3 For soft spots and sub-grades with a CBR of less than 1.5% the geofabric shall be laid with an approved geogrid or shall be an approved geocomposite. Approved specialist design can be used with the agreement of the Authority.

Note 4 The use of a geosynthetic with a sub-grade with this bearing capacity offers no advantage or economy.

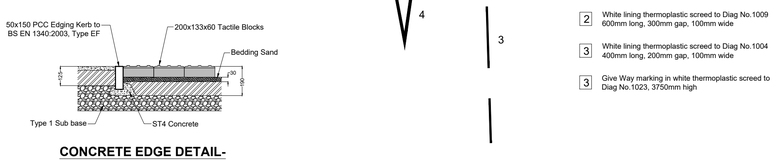




TRANSITION DETAIL BETWEEN STANDARD AND BLOCKWORK CONSTRUCTION



VEHICULAR CROSSING DETAILS



CONCRETE EDGE DETAIL- TACTILE PAVING

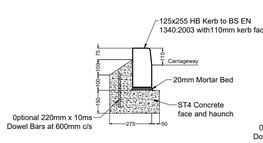
1 White lining thermoplastic screed to Diag No.1003 600mm long, 300mm gap, 200mm wide

2 White lining thermoplastic screed to Diag No.1009 600mm long, 300mm gap, 100mm wide

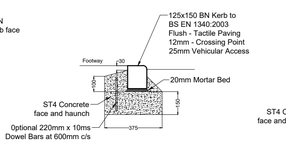
3 White lining thermoplastic screed to Diag No.1004 400mm long, 200mm gap, 100mm wide

3 Give Way marking in white thermoplastic screed to Diag No.1023, 3750mm high

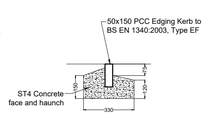
JUNCTION ROAD MARKINGS



KERB TYPE HB



KERB TYPE BN



KERB TYPE EF

TRAFFICKING OF BINDER COURSE

Trafficking of the exposed binder course materials prior to the application of the final surface course should be in accordance with Clause 1.1.14. The Binder Course shall be thoroughly cleaned and a tack coat to Clause 9.2 applied prior to the laying of the Surface Course. It may be necessary to use high pressure washing equipment if heavy contamination has occurred.

Prolonged exposure to trafficking may result in the binder course becoming so adversely affected that its replacement will be necessary prior to laying the Surface Course.

KERBING

Kerbs shall be installed prior to the full depth of the carriageway Binder Course being placed, unless the alternative method of two-stage construction is employed following agreement, in advance, with the Highway Authority. Refer to Clause 1.1.16

BITUMINOUS SURFACING ROAD CONSTRUCTION

SURFACE COURSE FOR CHARTS 1 AND 4

For Chart 1 the Surface Course shall be 40mm of 10mm nominal size Close Graded Surface Course (AC10 close surf 100/150) to Clause 7.3. It mush be compacted in accordance with Clause 7.2 to a void content within the range of 2%-10%. The Surface Course must be bonded to the Binder Course.

For Chart 4 the Surface Course shall be 40mm of Hot Rolled Asphalt (HRA 30/14F surf 40/60 des) to Clause 9.6 to a void content within the range of 2%-6%. The Surface Course must be bonded to the Binder Course.

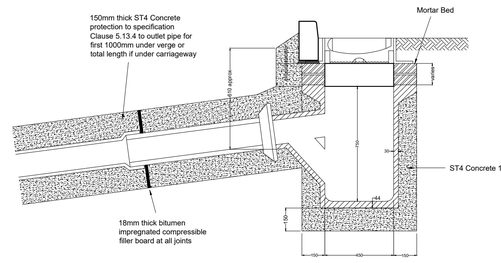
BINDER COURSE

For carriageways, Binder Course materials shall be 20mm nominal size recipe mix Dense Binder Course (AC20 Dense bin 40/60 rec) to Clause 9.1 and shall be laid in a single layer or combination of layers not less than 50mm in thickness ncr greater than 110mm in thickness. Compaction must be in accordance with Clause 7.2 to a void content within the range of 2%-8% and all layers must be bonded together.

SUB BASE

Sub-base shall conform with Clause 8.1 and shall be Type 1. A minimum in-situ CBR value of 20% will be required on all roads except for Development Roads intended to serve heavier traffic categories (i.e loading in excess of 0.25 msa) where the in-situ CBR value should be at least 30%. CBR values shall be determined by Plate Bearing Tests in accordance with Clause 8.2

For carriageways and footways, not more than one in ten field dry density determination, as detailed in BS 1377:Part 9, (Clause 2.2) shall be less than 90% of the maximum dry density for that particular sub-base as determined by the vibrating hammer test in BS EN 13286-3



TYPE G5 TRAPPED ROAD GULLY

VEHICLE ACCESS CROSSINGS

LIGHT DUTY (DOMESTIC) CROSSINGS, TO CLAUSE 1.6:

150mm of Type 1 sub-base to Clause 1.2. (NB where the CBR value of the subgrade is below 1.5% an approved geosynthetic layer to Clause 6.7 will be required to be placed on the sub-grade). On certain sites the depth of topsoil may exceed 275mm. On such sites topsoil containing organic matter, roots, etc. shall be removed and replaced with Type 1 sub-base in accordance with Clause 1.2.

100mm of 20mm size recipe mix Dense Asphaltic Concrete Binder Course to Clause 9.1 compacted to a void content within the range 2%-10%.

25mm of 6mm size Dense Asphaltic Concrete Surface Course to Clause 9.4 compacted to a void content within the range 2%-10%.

The joint between the access crossing and the carriageway shall be formed with 125mm x 150mm precast concrete kerbs on a base of ST4 (15N/mm²) concrete (approx. 1 cement:2 sand:4 aggregate by volume mix). A 125mm x 150mm x 225mm taper kerb will be required on each side of the crossing along the carriageway edge.

The highway boundary shall be delineated across the access crossing with 50mm x 150mm square cut precast concrete edging on a base of ST4 (15N/mm²) concrete, and where there is no footway the edges of the access crossing shall also be delineated with the same edging and base (see Drawing Ref Clause 1.6(A)).

HEAVY DUTY VEHICLE ACCESS CROSSINGS, TO CLAUSE 1.6:

The construction and thickness shall be the same as the adjacent carriageway with the proviso that in all cases the surface course shall be hot rolled asphalt to Clause 1.4. Radii kerbing shall be used each side of the crossing, dropped at the point of intersection with adjacent footways and tactile paving shall be provided each side when required (see Drawing Ref Clause1.6 (a).
Channel blocks, not dropped kerbs shall be used at the front of these crossings if channel blocks are installed along the adjacent carriageway and/or the adjacent carriageway is not surfaced with hot rolled asphalt. Channel blocks shall be installed at the rear of such crossings unless alternative restraint is available.

SMALL BLOCK PAVERS, CLAUSE 1.6:

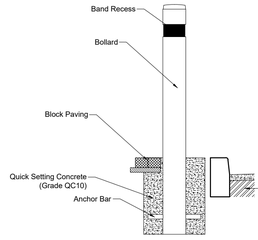
Small unit paver construction will be permitted for access crossings only when the adjoining footway is of that construction type. The materials utilised and thickness employed in the crossings shall be the same as the adjoining carriageway.

Notes:-

1. Cover and frame uncoated iron to Clause 5.11.1
2. Mortar bed and benching to Clause 5.11.8
3. Standard precast seating rings to comply to BS 5911-4:2010
4. All in situ concrete to be ST4 with sulphate resisting cement unless agreed otherwise
5. Position of outlet pipe varies in plan
6. In situ ST4 concrete 150mm thick surround to outlet pipe for first one metre under verge or total length in under carriageway
7. Where grating is to be trafficked or laid against within 24 hours of frame being placed in position, then a suitable Ultra rapid hardening mortar and concrete (Monoset 241 or similar) shall be used to bed cover and frame

PLAN VIEW





FRONT VIEW

ENVIROPOL® FLAT TOP RECYCLED BOLLARD - EXTENDED BASE

ENVIROPOL FLAT TOP BOLLARD INSTALLATION GUIDE

- Ensure reflective banding is in the correct orientation - red towards oncoming traffic (yellow on central reservation)
- Recommended hole size Ø400mm x 500mm deep
- Avoid contact with hot tarmacadan as this will seriously impair the performance of the bollard
- Install with quick setting concrete (eg. grade QC10) but exact installation requirements should be assessed from site survey.

OPTIONAL PARTS

- Aluminum backed retroreflective banding (to BS EN 12899-1:2007, fixed vertical road traffic signs) or decorative banding may be fitted
- Standard banding sets: 1 x 80mm band
- All retroreflective materials supplied by Glasdon are recommended in table NA1 of the national annex of BS EN 12899-1 2007 fixed vertical road signs.

Rev	Description	Date	Drawn	Checked

Drawing Approval Status:-

N/A Section 104 N/A Section 38 N/A Section 278

FOR INFORMATION

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Web: www.wormburp.com
Email: engineer@wormburp.com

Project:

Damgate, Holbeach

Drawing Description:

Highway Construction Details - Sheet 1 of 2

Client:

Ashwood Homes
1 Goodison Road
Gateway Business Park
Spalding
Lincs PE12 6FY

Drawing Number: E3991/780

Client Reference:

Scale: NTS @ A1 NTS @ A3

Designed By:	Drawn By:	Checked By:
Date:	JMW Date: 01.11.19	Date:

afaq ISO 9001 Quality — UKAS MANAGEMENT SYSTEMS 022

Certified by Afnor UK

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