

# CAVANNA HOMES & PARKBAY DEVELOPMENT

**BRIXHAM ROAD**

**PAIGNTON**

**SPECIFICATION  
FOR  
S38/S278 HIGHWAY SURFACING**

**SPECIFICATION NO: P9464 – H119(F)**

**CONSTRUCTION ISSUE**

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## SPECIFICATION CONTROL SHEET

**Client:** CAVANNA HOMES & PARKBAY DEVELOPMENTS

**Project:** BRIXHAM ROAD, PAIGNTON

**Job No:** P9464

**Title:** SPECIFICATION FOR S38/S278 SURFACING

**Specification No:** H119

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A	30/9/11	Preliminary	TA	CJW	CJW
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**ALL EXTERNAL WORKS TO BE IN ACCORDANCE WITH THE  
HIGHWAYS AGENCY SPECIFICATION FOR HIGHWAY WORKS (SHW)**

**THIS SPECIFICATION SHALL BE READ INCONJUNCTION WITH THE  
P9646 SERIES OF CONSTRUCTION DRAWINGS**

**SPECIFICATION 1:1            NEW CARRIAGEWAY CONSTRUCTION –  
BRIXHAM ROAD (EAST SIDE OF EXISTING  
CARRIAGEWAY AND ALONG PARKBAY  
DEVELOPMENT FRONTAGE)**

**WEARING COURSE:**

Bardon Supreme 10 CW PSV 65.  
Course depth 45mm.

**BINDER COURSE:**

Bardon Supreme 14 NS.  
Course depth 75mm.

**ROAD BASE:**

AC 32 base 40/60 HDM.  
150mm base to BS EN 13108:Part 1:2006.  
0/40mm dense base course.  
Bitumen binder to be 40/60 pen.

**SUB-BASE + CAPPING LAYER**

150mm minimum thick granular material Type 1 to SHW Clause 803.  
Granular material laid in accordance with SHW Clause 802.

**Plus**

450mm thick granular material Type 6F3 to SHW.  
Granular material laid in accordance with SHW Clause 613 compacted in  
accordance with SHW Clause 612.  
The material source and all testing to be as agreed by contractor with Torbay  
Borough Council or otherwise in accordance with Appendix 7/1 and Table 1/5  
to this specification.

**OR**

**SUB-BASE**

450mm minimum thick granular material Type 1 to SHW Clause 803.  
Granular material laid in accordance with SHW Clause 802.

GEOTEXTILE:

Geotextile "LOTRAK 25R", or similar, over formation to be laid in accordance with the manufacturers recommendations.

SUBGRADE:

Upon achieving satisfactory levels at formation the area shall be proof rolled with 8 passes of a vibratory roller having a mass per metre width of roll between 2900 and 3600 kg.

NOTES:

1. Any soft spots encountered are to be removed and backfilled in compacted layers with Type 6F2 material.
2. Above construction based on lowest CBR of **2%** and lowest plasticity index equating to this CBR value.

**Further CBR tests required at formation level at 20 metre intervals in order to confirm construction.**

3. Bardon supreme wearing course and Bardon supreme binder course material is supplied solely by Bardon Aggregates and can only be laid by Bardon Aggregates or a Contractor approved by Bardon Aggregates.

**SPECIFICATION 1:2      NEW CARRIAGEWAY CONSTRUCTION –  
BRIXHAM ROAD (CAVANNA/JUNCTION  
FRONTAGE) AND ACCESS ROAD TO  
ROUNDBOUT**

WEARING COURSE:

Bardon Supreme 10 CW PSV 65.  
Course depth 45mm.

BINDER COURSE:

Bardon Supreme 14 NS.  
Course depth 75mm.

ROAD BASE:

AC 32 base 40/60 HDM.  
150mm base to BS EN 13108:Part 1:2006.  
0/40mm dense base course.  
Bitumen binder to be 40/60 pen.

### SUB-BASE + CAPPING LAYER

150mm minimum thick granular material Type 1 to SHW Clause 803.  
Granular material laid in accordance with SHW Clause 802.

### Plus

375mm thick granular material Type 6F3 to SHW.  
Granular material laid in accordance with SHW Clause 613 compacted in accordance with SHW Clause 612.  
The material source and all testing to be as agreed by contractor with Torbay Borough Council or otherwise in accordance with Appendix 7/1 and Table 1/5 to this specification.

### OR

### SUB-BASE

450mm minimum thick granular material Type 1 to SHW Clause 803.  
Granular material laid in accordance with SHW Clause 802.

### GEOTEXTILE:

Geotextile "LOTRAK 25R", or similar, over formation to be laid in accordance with the manufacturers recommendations.

### SUBGRADE:

Upon achieving satisfactory levels at formation the area shall be proof rolled with 8 passes of a vibratory roller having a mass per metre width of roll between 2900 and 3600 kg.

### NOTES:

1. Any soft spots encountered are to be removed and backfilled in compacted layers with Type 6F3 material.
2. Above construction based on lowest CBR of **2.3%** and lowest plasticity index equating to this CBR value.
3. Bardon supreme wearing course and Bardon supreme binder course material is supplied solely by Bardon Aggregates and can only be laid by Bardon Aggregates or a Contractor approved by Bardon Aggregates.

**SPECIFICATION 1:3**      **NEW CARRIAGEWAY CONSTRUCTION –  
ROUNDBOUT AND 0M-15M PARKBAY  
ACCESS ROAD**

**WEARING COURSE:**

Bardon Supreme 10 CW PSV 65.  
Course depth 45mm.

**BINDER COURSE:**

Bardon Supreme 14 NS.  
Course depth 75mm.

**ROAD BASE:**

AC 32 base 40/60 HDM.  
150mm base to BS EN 13108:Part 1:2006.  
0/40mm dense base course.  
Bitumen binder to be 40/60 pen.

**SUB-BASE + CAPPING LAYER**

150mm minimum thick granular material Type 1 to SHW Clause 803.  
Granular material laid in accordance with SHW Clause 802.

**Plus**

250mm thick granular material Type 6F3 to SHW.  
Granular material laid in accordance with SHW Clause 613 compacted in  
accordance with SHW Clause 612.  
The material source and all testing to be as agreed by contractor with Torbay  
Borough Council or otherwise in accordance with Appendix 7/1 and Table 1/5  
to this specification.

**OR**

**SUB-BASE**

240mm minimum thick granular material Type 1 to SHW Clause 803.  
Granular material laid in accordance with SHW Clause 802.

**GEOTEXTILE:**

Geotextile "LOTRAK 25R", or similar, over formation to be laid in accordance  
with the manufacturers recommendations.



SUBGRADE:

Upon achieving satisfactory levels at formation the area shall be proof rolled with 8 passes of a vibratory roller having a mass per metre width of roll between 2900 and 3600 kg.

NOTES:

1. Any soft spots encountered are to be removed and backfilled in compacted layers with Type 6F3 material.
2. Above construction based on lowest CBR of **5%** and lowest plasticity index equating to this CBR value.
3. Bardon supreme wearing course and Bardon supreme binder course material is supplied solely by Bardon Aggregates and can only be laid by Bardon Aggregates or a contractor approved by Bardon Aggregates.

**SPECIFICATION 1A:      **NEW CARRIAGEWAY CONSTRUCTION –  
PARKBAY ACCESS ROAD (15M FROM  
ROUNDBOUT) TO END****

WEARING COURSE:

SMA 10 surf 40/60  
35mm SMA wearing course to BS EN 13108:Part 5:2006  
10mm nominal size aggregate  
Bitumen binder to be 40/60 pen.  
Aggregate types – Coarse Gritstone, Fine Gritstone, Filler  
Coarse aggregate: PSV 60  
Fine aggregate: PSV 60  
Maximum AAV: 14  
Fibres: Cellulose (from an approved source) 0.5%  
Average Void Content: 2.5% - 3.5%  
Maximum Void Content: 6%  
Binder Drainage at 175°C: 0.2% maximum

BINDER COURSE:

AC 20 bin 40/60  
50mm dense binder course bitumen macadam to BS EN 13108:Part 1:2006  
0/20mm dense binder course  
Bitumen binder to be 40/60 pen

ROAD BASE:

AC 32 base 40/60

150mm dense road base bitumen macadam to BS EN 13108:Part 1:2006

0/40mm dense base course

Bitumen binder to be 40/60 pen

SUB-BASE + CAPPING LAYER

150mm minimum thick granular material Type 1 to SHW Clause 803.

Granular material laid in accordance with SHW Clause 802.

**Plus**

250mm thick granular material Type 6F3 to SHW.

Granular material laid in accordance with SHW clause 613 compacted in accordance with SHW Clause 612.

The material source and all testing to be as agreed by contractor with Torbay Borough Council or otherwise in accordance with Appendix 7/1 and Table 1/5 to this specification.

**OR**

SUB-BASE

240mm minimum thick granular material Type 1 to SHW Clause 803.

Granular material laid in accordance with SHW Clause 802.

GEOTEXTILE:

Geotextile "LOTRAK 25R", or similar, over formation to be laid in accordance with the manufacturers recommendations.

SUBGRADE:

Upon achieving satisfactory levels at formation the area shall be proof rolled with 8 passes of a vibratory roller having a mass per metre width of roll between 2900 and 3600 kg.

NOTES:

1. Any soft spots encountered are to be removed and backfilled in compacted layers with Type 6F3 material.
2. Above construction based on lowest CBR of **5%** and lowest plasticity index equating to this CBR value.

**SPECIFICATION 2: REGULATING MATERIAL - 0-42mm**

1. The existing road surface is to be scarified to a depth of 45mm to accommodate the new wearing course.
2. Resurface with Bardon Supreme 10 CW PSV 65.  
Depth of wearing course to be 45mm.

**SPECIFICATION 3A: REGULATING MATERIAL - 0-42mm**

1. Where proposed wearing course is less than depth of surfacing required then regulating will be carried out to allow wearing course to be laid to correct depth. Regulating 0-42mm will be to wearing course specification. See Specification 1.
2. Prior laying surface material on existing pavement the surface shall be brushed clean and a tack coat applied to the requirements of clause 920 of the dot specification.
3. All vertical joints to be coated with asphalt cement (not bitumen) prior to the laying of the new wearing course.

**SPECIFICATION 3B: REGULATING MATERIAL - 42mm-195mm**

1. Where depth of surfacing required is more than 40mm but less than 195mm then regulating will be carried out with binder course material. Specification to be as for binder course in Specification 1.
2. Prior laying surface material on existing pavement the surface shall be brushed clean and a tack coat applied to the requirements of clause 920 of the SHW.
3. All vertical joints to be coated with asphalt cement (not bitumen) prior to the laying of the new wearing course.

**SPECIFICATION 3C: REGULATING MATERIAL - GREATER THAN 195mm**

1. Where depth of surfacing required is more than 195mm then regulating will be carried out with 75mm binder course on minimum 120mm depth of road base. Specification for binder course and road base to be as Specification 1.

#### **SPECIFICATION 4:        HIGH FRICTION SURFACING**

##### **SURFACING**

As specification 1, 2, 3 plus Buff colour high friction surfacing to be HAPAS (Highways Authorities Product Approval Scheme) certificated Type 1 methylmethacrylate (MMA) resin system applied by HAPAS certificated contractor. Also to be applied on existing surface of Roselands Drive.

##### **NOTE:**

1. High friction surfacing to extend back 50m from stop line.

#### **SPECIFICATION 5:        SURFACING TIE IN 1000MM OR LESS**

##### **SURFACING OVERLAP:**

For longitudinal joints step widths 300mm (min) for transverse joints at tie-ins, steps to be 1500mm long.

Method of construction shall be as follows:

1. The existing road of the tie-in is to be broken out down to the surface of the road course at or below the depth necessary to accommodate the new wearing and base courses. Where existing surfacing courses are deeper than those proposed, regulating will be carried out prior to laying to permit new base and wearing courses to be laid to the specified depths.
2. Prior to laying the new base course or wearing course on the existing pavement the surface shall be brushed clean and a tack coat applied to the requirements of Clause 920 of SHW.
3. All vertical joints to be coated with asphalt cement (hot bitumen) prior to the laying of the new wearing and base courses.

**SPECIFICATION 6:            BITMAC FOOTWAYS**

**WEARING COURSE:**

SMA 6 surf 100/150  
20mm SMA wearing course to BS EN 13108:Part 5:2006  
0/6mm nominal size aggregate  
Bitumen binder to be 100/150 pen.  
Aggregate types – Coarse Gritstone, Fine Gritstone, Filler  
Coarse aggregate: PSV 60  
Fine aggregate: PSV 60  
Maximum AAV: 14  
Fibres: Cellulose (from an approved source) 0.5%  
Average Void Content: 2.5% - 3.5%  
Maximum Void Content: 6%  
Binder Drainage at 175°C: 0.2% maximum

**BINDER COURSE:**

AC 20 bin 100/150  
50mm dense binder course bitumen macadam to BS EN 13108:Part 1:2006  
0/20mm dense binder course  
Bitumen binder to be 100/150 pen.

**SUB-BASE:**

150mm minimum thick granular material Type 1 to SHW Clause 803.  
Granular material laid in accordance with SHW Clause 802.

**GEOTEXTILE:**

Terram 1000 or similar approved separation membrane

**SUBGRADE:**

Upon achieving satisfactory levels at formation the area shall be proof rolled with 8 passes of a vibratory roller having a mass per metre width of roll between 2900 and 3600 kg.

**NOTES:**

1. Any soft spots encountered are to be removed and backfilled in compacted layers with Type 6F2 material.

## **SPECIFICATION 7:           CENTRAL ISLANDS**

### **WEARING COURSE:**

SMA 6 surf 100/150  
20mm SMA wearing course to BS EN 13108:Part 5:2006  
0/6mm nominal size aggregate  
Bitumen binder to be 100/150 pen.  
Aggregate types – Coarse Gritstone, Fine Gritstone, Filler  
Coarse aggregate: PSV 60  
Fine aggregate: PSV 60  
Maximum AAV: 14  
Fibres: Cellulose (from an approved source) 0.5%  
Average Void Content: 2.5% - 3.5%  
Maximum Void Content: 6%  
Binder Drainage at 175°C: 0.2% maximum

### **BINDER COURSE:**

AC 20 bin 100/150  
50mm dense binder course bitumen macadam to BS EN 13108:Part 1:2006  
0/20mm dense binder course  
Bitumen binder to be 100/150 pen.

### **SUB-BASE:**

150mm minimum thick granular material Type 1 to SHW Clause 803.  
Granular material laid in accordance with SHW Clause 802.

### **GEOTEXTILE:**

Terram 1000 or similar approved separation membrane

### **SUBGRADE:**

Upon achieving satisfactory levels at formation the area shall be proof rolled with 8 passes of a vibratory roller having a mass per metre width of roll between 2900 and 3600 kg.

### **NOTES:**

1. Any soft spots encountered are to be removed and backfilled in compacted layers with Type 6F2 material.

**SPECIFICATION 8: GRASS VERGES**

**TOPSOIL:**

100mm approved topsoil lightly compacted and top 25mm worked to a fine tilth.

Immediately prior to seeding, fertiliser shall be applied to the prepared grassed area at a rate of not less than 75g per square metre. The fertiliser shall consist of a compound containing not less than 10% nitrogen, 15% phosphoric acid and 10% potash.

**GRASS SEED:**

Grass seed as specified below shall be a tested mixture from an approved source, and evenly sown at a rate of not less than 1kg to 30 square metres and lightly raked into the soil.

Chewing Fescue ( <i>Festuca Rubra Commutata</i> )	24%
Smooth Stalked Meadow Grass ( <i>Pod Pratensis</i> )	24%
Hard Fescue ( <i>Festuca Rubra</i> )	24%
Brown Top ( <i>Argrostis Tenuis</i> )	8%
Perennial Ryegrass ( <i>Lolium Perenne</i> ) "Ranger"	20%

**SUB-GRADE:**

Area to be thoroughly dug over or ploughed one spit deep, levelled and thoroughly cleared of existing turf, weeds, rubbish large stones etc ready to receive top spoil.

**SPECIFICATION 9: GRASSCRETE**

Heavy duty Grasscrete GC2 with A252 reinforcement on minimum 250mm of sub-base of Type 1 granular material to SHW Clause 803 or similar approved.

**SPECIFICATION 10: TACTILE PAVING AT PEDESTRIAN CROSSING**

400mm x 400mm x 65mm thick blister paving supplied by Marshalls or similar approved. Tactile paving to be buff in colour and approved by the local highways authority.

Tactiles to be laid on 30mm sand bed (when compacted). Bedding sand to comply with the following grading:

Grading of Bedding Sand for paviers –

Sieve (mm and $\mu\text{m}$ )	Percentage passing
6.3	100
5	90-100
2.36	75-100
1.18	55-90
600	35-70
300	8-35
150	0-10
75	0-0.5

The bedding sand shall be naturally occurring silica sand, free of deleterious salts and contaminants, with particles of a rounded or sub-rounded shape.

**SUB-BASE:**

150mm minimum thick granular material Type 1 to SHW Clause 803.  
Granular material laid in accordance with SHW Clause 802.

**GEOTEXTILE:**

Terram 1000 or similar approved separation membrane

**SUBGRADE:**

Upon achieving satisfactory levels at formation the area shall be proof rolled with 8 passes of a vibratory roller having a mass per metre width of roll between 2900 and 3600 kg.



**SPECIFICATION 11:      **KERBING****

Full kerbs to be HB2 255 x 125 with 125mm upstand.

Flush kerbs to be 150 x 125 with no upstand.

Drop kerbs, to be square crossing unit 150 x 125mm BN with 20mm upstand at vehicular crossing.

Dropper units, Types DL1 and DR1 to be used where necessary square edge.

Quadrants to be 305 x 255mm solid quadrant square edge.

**SPECIFICATION 12:      **EDGINGS - PEDESTRIAN AREAS ONLY****

All edgings to be precast concrete to BS EN 1340 laid on GEN1 concrete bed and haunching.

Edgings to be 150 x 50mm PCC Type EF square finish or as specified by the Architect.

## APPENDIX A

**(To be read in conjunction with the Specification for Earthworks and Construction Fills)**

### GRANULAR SUB-BASES TO ROADS/PAVINGS

- 120 CHECKING CBR OF SUBGRADE: The specified thicknesses of sub-bases are based on a subgrade of silty clay with an assumed CBR of 2%. If the subgrade material appears to be different from this, or if there are extensive soft spots, test CBR of subgrade, report results to the Engineer or overseeing organisation, and if different from the assumed CBR obtain instructions before proceeding with laying sub-base.
- 130 HERBICIDE: Apply an approved type of herbicide in accordance with manufacturer's recommendations to subgrade of paved footpaths.
- 140 COMPACTION OF SUBGRADE:
- Defer final excavation to formation level until immediately before compaction of subgrade.
  - Soft spots must be brought to the attention of the Engineer or overseeing organisation.  
Obtain instructions before proceeding.
  - Subgrade must be relatively dry at time of compaction.
  - Where use of a roller is impracticable use a suitable mechanical rammer.
  - Where local excavation and backfilling has taken place make additional passes of the roller.
- 151 SUBGRADE FOR VEHICULAR AREAS: Immediately before placing sub-base compact subgrade with not less than four passes of a roller weighing 8-10 tonnes or by equivalent other means.
- 160 SUBGRADE FOR PEDESTRIAN AREAS: Immediately before placing sub-base thoroughly compact subgrade with a roller weighing not less than 2.5 tonnes or equivalent other plant.
- 170 GEOTEXTILE FILTER:
- Lay an approved type in accordance with manufacturer's recommendations to compacted subgrade of Main Access Road and Car park areas.
  - Do not allow construction or other vehicles over the geotextile until it is fully covered by the granular sub-base.
- 210 GRANULAR MATERIAL: To SHW, clause 803 (Type 1) or approved equivalent. Test materials as clause 803.5 if required by Engineer or overseeing organisation.

- 211 GRANULAR MATERIAL: Free from harmful matter and excessive dust, well graded, passing a 75 mm BS sieve and in any one layer only one of the following:
- Crushed hard rock or quarry waste (other than chalk), with not more binding material than is required to help hold the stone together
  - Crushed concrete, crushed brick or tile, free from plaster, timber or metal
  - Gravel or hoggin with not more clay content than is required to bind the material together, and with no large lumps of clay
  - Sound blast furnace slag (other than from steelmaking foundries)
  - Unburnt colliery spoil (minestone).
- 220 FROST SUSCEPTIBLE GRANULAR MATERIAL, as defined by SHW clause 705.5 must not be used within 450mm of the final surface of the paving. Test materials used if required by Engineer or overseeing organisation and supply certificate(s).
- 225 SULPHATE CONTENT: Slag and other granular materials when placed within 500mm of cement-bound material, concrete pavements, structure or products, must comply with SHW for highway works clause 801.2.
- 230 PLACING GRANULAR MATERIAL GENERALLY:
- Ensure that subgrade is free from loose soil, rubbish and standing water.
  - Take all necessary precautions to ensure stability of adjacent structures. Place and compact material against or over structures, membranes or buried services in a sequence and manner which will ensure stability and avoid damage.
- 240 LAYING GRANULAR SUB-BASE FOR VEHICULAR AREAS:
- Spread and level in layers and as soon as possible thereafter compact each layer.
  - Lay and compact to the SHW clauses 705.1, 705.2, 705.3, 801.3, 802.
  - Take particular care to compact fully around drainage fittings, inspection cover bases and at perimeters.
- 250 LAYING GRANULAR SUB-BASES FOR PEDESTRIAN AREAS: spread and level and, as soon as possible thereafter, compact with a roller weighting not less than 2.5 tonnes or other equivalent plant.
- 320 BLINDING: Surfaces to receive interlocking brick or block paving to have sufficient sand, fine gravel, PFA or other approved fine material applied and surface vibrated to provide a close and smooth surface.
- 330 COLD WEATHER WORKING:
- Do not use frozen materials containing ice.
  - Do not lay materials on frozen surfaces.

340 PROTECTION:

- Cover sub-bases as soon as practicable with subsequent layers, specified elsewhere.
- Prevent damage to subgrades and sub-bases from construction traffic, construction operations and inclement weather.

## APPENDIX 7/1 – Pavement Options and Testing

1. Requirements for payments are shown on:

Drg Nos: P9464/ H110/H  
 H107/G  
 H108/G  
 H109/G

There are no alternative options given.

2. Checking of levels and finish tollerances:

Schedule 2/1: General Requirements		
Grid for checking surface levels of payment courses (SHW Clause 702.4)	Longitudinal Dimension:	10.0m
	Transverse Dimension:	2.0m
Surface regularity (SHW Clause 702.5, Table 7/2)	Category of Road	N/A
Interval for measurement of longitudinal regularity (SHW Clause 702.7)		75m
Interval for measurement of transverse regularity (SHW Clause 702.7)		5m
Whether surface texture is required (SHW Clause 921.2)		No

Horizontal alignment shall be set out by reference to the coordinates shown on Drgs: P9464/H111/B, H112/C and H113/C.

3. Requirements for Testing :

[see following pages – Table 1/5]

4. General Requirements for Construction Materials

Clause	Requirement
802.4	Unbound materials (sub-base) to be spread in layers not greater than 150mm thick and compacted.
801.7	No material within 400mm of the finished road level shall be frost susceptible.
901.2	Gravel aggregates are not permitted.
901.15	Determination of compaction for base and binder course materials to be as agreed with the Engineer or Overseeing Organisation.

Table 1/5

Testing Requirements (Based on SHW Notes for Guidance Table NG1/1  
 Appendix 1/5 typical testing details)

SHW Clause No	Work, Goods or Material	Test	Frequency of Testing	Test Certificate	Comments
<b>Series 700</b>					
710	Constituent materials in recycled aggregate and recycled concrete aggregate (6F3)	Quality Control	As required by the 'Quality Protocol for aggregates from inert waste'	Required	
711	Overbonding and inlaid crack sealing systems			Required	BBA certification (or equivalent applies)
<b>Series 800</b>					
801, 803, 804, 805, 806	General Requirements for unbound mixtures for adjacent to cement bound materials, concrete pavements, structures or products	Water soluble sulphate (WS) Content (N)	1 per 400 tonnes or per location if less than 400 tonnes	Required	
		Oxidisable sulphides (OS) Content and total potential sulphate (TPS) Content (N)	1 per 400 tonnes or per location if less than 400 tonnes		
	Unbound mixtures beneath surface or a road or paved central reserve	Frost heave (N)	1 per source		
		Grading and fines content	1 per week		
					Plastic index (N)
		Resistance to fragmentation (N)	1 per week		
		Resistance to wear – micro-Deval test			
		Resistance to freezing and thawing (magnesium sulphate soundness) (N)	1 per source		
Water absorption (N)	[As required]				

SHW Clause No	Work, Goods or Material	Test	Frequency of Testing	Test Certificate	Comments		
		Volume stability of blast furnace	1 per week	Required			
		Volume stability of steel (BOF and EAF) slags	1 per week				
		CBR (N)	1 per source				
		Omc/mc (N)	[As required]				
		Density (N)	[As required]				
		Water absorption	[As required]				
821, 822, 823, 830, 831, 832, 834, 835, 840	Cement and other Hydraulically Bound Mixtures (HBM)	Tests for control and checking of HBM	Tests specified in Table 8/14 and Table 8/15	Required			
		Coefficient of linear expansion	[As required]				
		Tests for laboratory mixture design	Tests specified in Clause 880				
Series 900							
900, 925, 937, 938, 943	Aggregate for Bituminous materials			Required	National quality management sector schemes apply		
		Resistance to fragmentation (hardness)	Resistance to fragmentation (N)			Weekly	
		Resistance to freezing and thawing (durability)	Soundness (N)			1 per source	
			Water Absorption			[As required]	
		Cleanness	Sieve test (mass passing 0.063mm sieve) (N)			Weekly	Washing and sieving method to be used
		Shape	Flakiness index (N)			Weekly	
		Blast furnace slag	Bulk density (N)			1 per 500 tonnes	
			Soundness (N)			1 per source	
			Dicalcium silicate disintegration (N)			1 per 500 tonnes	1 per source
			Iron disintegration (N)				

SHW Clause No	Work, Goods or Material	Test	Frequency of Testing	Test Certificate	Comments
	Steel Slag	Bulk density	1 per 500 tonnes		
		Volume stability (N)	1 per 500 tonnes		
	Coarse aggregate for surface courses	Resistance to polishing PSV (N)	1 per source		
		Resistance to surface abrasion AAV (N)	1 per source		
	Binders for bituminous materials	Penetration	1 per 750 tonnes	Required	National quality management Sector scheme applies. Modified binders should have a BBA HAPAS Roads and Bridges Certificate. In the event that no such Certificates have been issued, then in the interim only modified binders undergoing BBA assessment should be considered for approval by the Overseeing Organisation.
		Softening point (N)	1 per 750 tonnes		
903 to 907, 909 to 912, 914, 916, 925, 926,	Bituminous mixtures	Grading (N)	For Audit Test purpose only		National highway sector scheme applies



<b>SHW Clause No</b>	<b>Work, Goods or Material</b>	<b>Test</b>	<b>Frequency of Testing</b>	<b>Test Certificate</b>	<b>Comments</b>
929, 937, 938, 942, 943, 946 to 948		Binder content (N)			
929	Base and Binder Course Asphalt Concrete (design mixtures)	Permanent works – In situ air void content (N)	[As required]	Required	Change to 1 per 200 tonnes if quality is well within specified tolerances
		Permanent works – Refusal air void content (N) (PRD Test)			
		Permanent works – deformation resistance			
		Deformation resistance (design)	[As required]		Test certificate is the CE mark for the mixture
		Stiffness (design)			
911	Hot Rolled Asphalt surface course (Design Mixtures)	Design Binder Content	1 per source	Required	The test certificate is the CE Mark for the mixture
921	Surface macrotexture	Volumetric Patch (N)		Required	
924	High friction surfaces	Quality control checks	As required in sub-clause 924.5	Required	BBA HAPAS Roads and Bridges Certification (or equivalent) applies
		System coverage	As required in sub-clause 924.6		
		Aggregate	Resistance to polishing PSV (N)	1 per source and as required for coated chippings in sub-clause 915.2	Required

SHW Clause No	Work, Goods or Material	Test	Frequency of Testing	Test Certificate	Comments
942	Thin surface course systems	General Properties		Required	The test certificate is in the form of a BBA HAPAS certificate
943	Hot Rolled Asphalt surface course and binder course (performance-related design Mixtures)	Permanent works – In situ air void content (N)		Required	
		Permanent works – deformation resistance			
		Deformation resistance (design)		Required	This test certificate is the CE Mark for the mixture
920	Bond coats, tack coats and other bituminous sprays				
	Binder	Product identification	1 per product	Required	Tests are expected to be repeated every two years
		Vialit cohesion	1 per product per source	Required	Tests are expected to be repeated every two years
		Accuracy of spread	1 for each binder and sprayer	Required	Not more than 6 weeks prior to start of work and one per month
		Rate of spread	1 per week		
		Penetration at 25°C and 5°C (N)	Every manufactured batch		Manufacturer's QA test results may be submitted
950	Depressions				BBA HAPAS Roads and Bridges Certification (or equivalent) applies

SHW Clause No	Work, Goods or Material	Test	Frequency of Testing	Test Certificate	Comments
<b>Series 1100</b>					
1101	Precast concrete kerbs, channels, edgings and quadrants	Bending strength	Minimum of 8 per 1000 units of each product (BS EN 1340)	Required	
1104	Precast concrete flags	Bending strength	Minimum of 8 per 1000 units of each product (BS EN 1340)	Required	
	Bedding	Granular Material			
	Mortar				
<b>Series 1200</b>					
1202	Permanent traffic signs			Required	Quality management scheme applies. Certification that the traffic sign is capable of passing the tests in BS 873: Part 1 is required
1207	Anchorage in drilled holes to supports of traffic signs	Loading test on site			
1210	Holding down bolts and anchorages to bases of permanent bollards			Required	Quality management scheme applies. Certification that the traffic sign is capable of passing the tests in BS 873: Part 3 is required

SHW Clause No	Work, Goods or Material	Test	Frequency of Testing	Test Certificate	Comments
1212	Road Markings	Tests specified in BS EN 1824		Required	National quality management sector scheme applies. Procedures are given in BS EN 1824
	Glass Beads	Arsenic trioxide content, Lead content and Anitomy content (N)	1 per contract and/or per specific source of supply	Required	

**Table 1/5 Notes**

1. Unless otherwise stated, all sampling and testing in this Appendix shall be carried out by Contractor.
2. Tests comparable to those specified in this Appendix will be necessary for any equivalent work, goods or materials proposed by the Contractor (See sub-clause 105.4)
3. (N) indicates that a UKAS (formerly NAMAS) test report or certificate is required.
4. Unless otherwise shown in this Appendix tests for work, goods or materials as scheduled under any one Clause are required for all such work, goods or materials in the Works.
5. Unless otherwise shown in this Appendix test certificates for work, goods or materials as scheduled under any one Clause are required for all such work, goods or materials in the Works.
6. Where test certificates are identified these shall be produced prior to the incorporation of that item into the Works.
7. Cube strength tests are not required for concrete complying with Clause 2602.