

Material/Layer		Test	Specification limits	Desired limits	Frequency of tests	Specification Clause No.
<b>Unsuitable</b>		Material from swamps, marshes and bogs				6122
	OR	Peat, logs, stumps, roots and other perishable or combustible material				6122
	OR	Top soil and highly organic clay and silt				6122
	OR	Clay having a liquid limit exceeding 80% or plasticity index exceeding 55				6122
	OR	Highly micaceous materials				6122
<b>Fill</b>	1	<b>Plasticity Tests</b>	$\leq 80\%$	$\leq 50\%$	1 per 1000m	6181
	a	Liquid Limit	$\leq 55$	$\leq 30$		6122
	b	Plasticity index				6122
	2	<b>Grading tests</b>			1 per 1000m	6181
	a	Sieve Analysis	$\leq 35\%$ passing 200			6102
	3	<b>Density/Moisture content</b>			1 per 500 m	6181
	a	Compaction Test	B.S. Compaction			6180
	4	<b>C.B.R. Test</b>		$> 3\%$ after 48 hours soaking	1 per 1000 m	6181
	5	<b>In-situ Dry Density Test</b>			1 per 100 m	6181
	Top 600 mm	$\geq 100\%$ of the MDD in BS Compaction		6125		
	After 600 mm	$\geq 95\%$ of the MDD in BS Compaction		6125		
	Next to	$\geq 100\%$ of the MDD in BS Compacion			6125	
6	Thickness; each layer	$\leq 150$ mm Compacted thickness				
<b>Sub-base Type-1</b>	1	<b>Plasticity Tests</b>			1 per 1000m	6216
	a	Liquid Limit	$\leq 35\%$			6201
	b	Plasticity Index	$\leq 12$			6201
	c	Linear		0-8%		
	2	Grading Tests	$\leq 35\%$ passing 200		1 per 1000 m	6201 & 6216
	3	<b>Density/Moisture content</b>			1 per 500 m	6216
a	Compaction Test	W.A.S.C.		6201		
4	<b>C.B.R. Test</b>	$\geq 30\%$ CBR after 24 hours soaking		1 per 500 m	6201 & 6216	
5	<b>Insitu dry density test</b>	100% of the Max. Dry Density obtained in the West African Standard compaction method		1 per 100 m	6216 & 6206	

Material/Layer		Tests	Specified Limits	Desired Limits	Frequency of Tests	Specification Clause No.
Base (Laterite)	<b>1</b>	<b>Plasticity Tests</b>			1 per 1000 m	6216 6201 6201
	a	Liquid Limit	≤ 35%	0-6%		
	b	Plasticity Index	≤ 12			
	c	Linear Shrinkage				
	<b>2</b>	<b>Grading Tests</b>	≤ 35% passing 200		1 per 1000 m	6201 & 6216
	<b>3</b>	<b>Density/Moisture Content</b>			1 per 500 m	6216 6201
a	WASC or Modified AASHO					
<b>4</b>	<b>C.B.R. Test</b>	≥ 80% CBR at OMC and MDD			1 per 500 m	6201 & 6216
<b>5</b>	<b>In-situ Density Test</b>	100% of the MDD obtained in the Modified AASHO Compaction Test			1 per 100 m	6216 & 6206
Base (Stone)	<b>1</b>	<b>Coarse Aggregate</b>				
	a	Source	Granite Quarry			6251
	b	Size	5 to 50 mm			6251
	c	Aggregate Crushing Value (A.C.V.)	≤ 35%			6251
	d	Flakiness Index	≤ 30%			2005
	<b>2</b>	<b>Fine Aggregate</b>				6251
	a	Source	Quarry Dust/River Sand			
	b	Size	≤ 5mm			
	c	Aggregate Crushing Value (A.C.V.)	≤ 30% (fines passing 75µm sieve)		1 per 1000 m	6216
	d	Flakiness Index	≤ 6 (fines passing 75 µm sieve)		1 per 1000 m	6216
<b>3</b>	<b>Grading for Mix Control</b>				1 per 1000 m	6216 6252 6252
a	Envelope	Type A to E under Table VI-7				
b	Other	% passing 200 ≤ (1/3) % passing 40				
<b>4</b>	<b>Density/Moisture Content for Mix Control</b>				1 per 500 m	6216 6251 6251
a	Compaction Test	Modified AASHO				
b	Moisture Content	5% OF dry weight				
<b>5</b>	<b>C.B.R. Test on Mix</b>	> 100% CBR at Dry Density			1 per 500 m	6251 & 6216
<b>6</b>	<b>In-situ Density Test</b>	100% of the Dry Density obtained in the Modified AASHO Compaction Test			1 per 100 m	6251 & 6216

Material/Layer		Tests	Specified Limits	Desired Limits	Frequency of Tests	Specification Clause No.
Prime Coat	<b>1</b>	<b>MC-0 Cutback</b>				
	a	Furol Viscosity	75/150 secs at 25 <sup>0</sup> C		Tray Test	6301
	b	Application Temperature	38 – 66 <sup>0</sup> C			6312
	c	Rate of Spray	0.8 – 1.2 L/m <sup>2</sup>			6312
<b>or</b>	<b>MC-1 Cutback</b>					
	a	Furol Viscosity	75/100 secs at 50 <sup>0</sup> C		Tray Test	6301
	b	Application Temperature	54 – 79 <sup>0</sup> C			6312
	c	Rate of Spray	0.8 - 1.2 L/m <sup>2</sup>			6312
	<b>2</b>	<b>Sharp Sand/Stone Dust for Blinding</b>				
	a	Size	Maximum 6 mm < 20% passing 0.6 mm			6301
	b	Time of Application	After three hours of spraying MC-0 or MC-1			6311
Surfacing	<b>1</b>	<b>S-125 Cutback</b>				
	a	Standard Tar Viscosity	100/150 secs at 40 <sup>0</sup> C		Tray Test	6313
	b	Application Temperature	132 – 160 <sup>0</sup> C			6313
	c	Rate of Spray	0.6 – 0.9 L/m <sup>2</sup> for 10 mm chippings 0.75 – 1.2 L/m <sup>2</sup> for 12 mm chippings 1.2 – 1.5 L/m <sup>2</sup> for 18 mm chippings			6313
<b>2</b>	<b>Single Size crushed Granite Chipping</b>					
	a	Sieve Analysis	Specified Size Over Size Under Size	≥ 70% Maximum 15% Maximum 15%		6301 B.S. 63 Or B.S. 1984
	b	Flakiness Index		≤ 35%		B.S. 63
	c	A.C.V.		≤ 30%		6301
	d	Abrasion		≤ 25%		6301
Tack Coat	<b>1</b>	<b>Colas Emulsion</b>				
	a	Rate of Spray	0.25 – 0.70 L/m <sup>2</sup>			6370
	b	Where to Apply	Time between completion of one surface courses and laying of subsequent surface course exceeds 72 hours			6377
	c	Claim	Where 'b' above is impracticable or due to no fault of Contractor			6377
	d	Where to Apply	24 hours advance			6377

Material/Layer		Test	Specified Limits	Desired Limits	Frequency of Tests	Specification Clause No.
Asphalt Concrete	<b>1</b>	<b>Straight Run Bitumen 60/70</b>				6371
	a	Penetration	6 – 7 mm @ 25°C			
	b	Specific Gravity	1.01 – 1.06 @ 25°C			
	c	Softening Point	48 – 56°C			
	d	Flash Point	250°C			
	<b>2</b>	<b>Coarse Granite Aggregate (5 mm and above sizes)</b>				6371
	a	Flakiness Index	≤ 35%	Aggregate Crushing Value		
	b	A.C.V.	≤ 30%			
	c	Absorption Fac.	≤ 0.5			
	<b>3</b>	<b>Fine Aggregates (Quarry Dust from Igneous Rocks)</b>				6371
	a	Maximum Size	5 mm			
	<b>4</b>	<b>Mineral Filler (Hydrated lime/Portland Cement/Non-plastic)</b>				6371
	a	Maximum Size	0.3 mm			
<b>5</b>	<b>Composition Mix</b>				6374	
		<u>Sieve Sizes</u>	<u>% Passing for Binder</u>	<u>% Passing for Wearing</u>		
		31.8 mm	100	100		
		25.0 mm	90 – 100	100		
		19.0 mm	70 – 90	100		
		12.5 mm	55 – 80	100		
		9.5 mm	47 – 70	100		
		6.4 mm	40 – 60	85 – 100		
		2.8 mm/No. 7	27 – 45	75 – 92		
		1.25 mm/ No. 14	20 – 34	65 – 85		
		600 µm/ No. 25	14 – 27	50 – 65		
		300 µm/ No. 52	8 – 20	36 – 51		
		150 µm/ No. 100	5 – 15	26 – 40		
		75 µm/ No. 200	2 – 7	18 – 30		
		Bitumen Content	4.5 – 6.5%	13 – 24 7 – 14 5.0 – 8.0%	By weight of aggregate	
	<b>6</b>	<b>Extraction Test</b>	Grading curve to be within the above sieve line. The Bitumen content to be within 0.3% of the job mix design		At least twice per day	6373; 6374 & 6385 (3)
	<b>7</b>	<b>Temperature of Mix</b>	135 – 163°C			6375 (2)
	<b>8</b>	<b>Laying Temperature</b>	121 – 163°C		Hourly	6378

	<b>9</b>	<b>Rolling Temperature</b> Breakdown Rolling Intermediate Rolling Final Rolling	> 99°C 70 – 85°C Materials to be warm enough to remove Roller marks			6379
	<b>10</b> a b c d	<b>Marshall Test</b> Stability Flow Voids in Total Mixture Voids Filled with Bitumen	<b>Binder</b> > 3.5 kN (357 kg) 2 – 6 mm 3 - 8% 65 – 72%	<b>Wearing</b> > 3.5 kN (357 kg) 2 - 4 mm 3 – 5% 75 – 82%	At least twice per day	6374 & 6385 (3)
	<b>11</b>	<b>Field Compaction</b>	≥ 100% of control density		Every 2 hours	6381 (e)
	<b>12</b> a b	<b>Finished Levels</b> Levels Smoothness	Deviation < 5mm from designed levels. Gap anywhere < 3 mm with 3 m straight edge.			6382

Material/Layer		Test	Specified Limits	Desired Limits	Frequency of Tests	Specification Clause No.
Concrete Works	<b>1</b>	<b>Cement</b>	Manufacturer Test Cert.			2001
	a	Initial Setting Time	≥ 45 Minutes			B.S. 12
	b	Final Setting Time	≤ 10 Hours			B.S. 12
	c	Compressive Strength of Mortar Cube	> 23 N/mm <sup>2</sup> – 3 days age > 41 N/mm <sup>2</sup> – 28 days age			B.S. 12
	<b>2</b>	<b>Water</b>	< 0.02% solids in water			2002
	a	Organic Impurity	< 0.30% solids in water			B.S. 3148
	b	Inorganic Impurity	< 0.05% solids in water			B.S. 3148
	c	Sulphates	< 0.10% solids in water			B.S. 3148
	d	Alkali Chlorides				B.S. 3148
	<b>3</b>	<b>Fine Aggregate (5 mm and below sizes)</b>				2004 & 3002
	a	Source	Natural Quartz/River Sand or Granite Quarry Dust			
	b	Grading	As per Table II-2 (Zone 1 or 2)			
	c	Passing 75 µm mesh	≤ 8%			
	d	Clay + Silt Content	≤ 4% (By Field Setting Time)			
	e	Organic Impurity	Colour not darker than Standard (NaOH Test)			
	<b>4</b>	<b>Coarse Aggregate (5 mm and above sizes)</b>				2005 & 3002
	a	Source	Natural Gravel or Crushed Granite			
	b	Grading	As per Table III-1			
	c	Flakiness Index	≤ 30%			
	d	A.C.V.	≤ 45%			
	<b>5</b>	<b>Minimum Cement/Cu. M. of Concrete &amp; Compressive Strength (Refer Table II-3 for other Grades)</b>				
	<b>Grade</b>		<b>Cement Content</b>	<b>7 Days</b>	<b>28 Days</b>	2009
a	Grade – 10 (Blinding)		150 kg	7 N/mm <sup>2</sup>	10 N/mm <sup>2</sup>	
b	Grade – 15 (R.C.C.)		205 kg	10 N/mm <sup>2</sup>	15 N/mm <sup>2</sup>	
c	Grade – 20 (R.C.C.)		235 kg	12 N/mm <sup>2</sup>	20 N/mm <sup>2</sup>	
d	Grade – 25 (R.C.C.)		295 kg	15 N/mm <sup>2</sup>	25 N/mm <sup>2</sup>	
<b>6</b>	<b>Workability</b> Slump Test				Every Half Hour	2010 (C) & 2013 (2)
<b>7</b>	<b>Compressive Strength on 150 x 150 x 150 mm Test Cubes</b> 3 nos for 7 days Compressive Strength 3 nos for 28 days Compressive Strength				One Sample Each Day for Each Grade	2013 (6)