

**- : SCHEDULE FOR TESTING OF MATERIALS :-**

For ensuring quality control and workmanship Various tests prescribed below for materials shall be taken at periodical intervals as stipulated below. The materials shall be got tested at Government recognized Laboratory (R&B) or field Laboratory of GERI (R&B) for which 1% of the estimated amount put to tender shall be recovered from the contractor from the RA bills and final bills and the testing charges shall be paid to the GERI by the Government . However if the charges increase over 1% no excess recovery shall be made from the contractor as per resolution of B & C department dated 10th May 1985 vide TNC/ 1085/ (4)/ S

It. No. as per schedule "B"	Brief description of materials to be tested	Qty of material	Prescription of test which shall be carried out	Frequency at which test shall be carried out	Total No of test to be taken.
1]	Coarse Aggregate		- Gradation test - Impact value - Flakiness and elongation	1 to 100 cm      1 test 100 to 500 cm      3 test 500 to 1500 cm      5 test 1500 to 5000 cm      7 test Minimum 1 test/work	
2]	Grit		- Stripping value	As above	
3]	Granular materials		- Gradation - Atterbeg limits	As above	
4]	Murum		- P I Value	One test per 50 cum.	
5]	Sand/ quarry spall		- Silt content - Gradation - CBR test	One test per work/ season One test per 200 cmt. One test per work	
6]	Asphalt		1 Penetration test as per IS 1203 2 Ductility test as per IS 1208 3 Specific gravity test as per IS 1202 4 Softening point test as per IS 1204 5 Viscosity test as per IS 1206	1 to 10 tanker      1 test 11 to 20 tanker      2 test 21 to 50 "      3 test 51 to 100 "      4 test Remaining every 50"      1 test	

7]	Cement		<ul style="list-style-type: none"> <li>- Consistency</li> <li>- Setting time</li> <li>- Compressive strength</li> <li>- Fineness</li> <li>- Chemical analysis</li> <li>- Soundness</li> </ul>	Up to 50 MT      1 test 100 MT          2 test 200 MT          3 test 300 MT          4 test 500 MT          5 test 800 MT          6 test 1300 MT        7 test and 8 test for larger consignment	
8]	CC Cubes		<ul style="list-style-type: none"> <li>- Compressive Strength (I.S. 519 – 1959)</li> </ul>	1 to 5 cms      1 No 6 to 15 cms    2 No 16 to 20 cms   3 No 21 to 50 cms   4 No 51 and above   4 + 1 (For each additional 50 m <sup>3</sup> or part thereof)	
9]	Water		<ul style="list-style-type: none"> <li>- Chemical test</li> </ul>	Once for approval of source of supply	
10]	Steel		<ul style="list-style-type: none"> <li>- Tensile Strength</li> <li>- Yield Stress</li> <li>- Elongation</li> <li>- Size</li> </ul>	1 test/ 40 tonnes/ per category	
11]	Bricks		<ul style="list-style-type: none"> <li>- Water absorption</li> <li>- Efflorence</li> <li>- Size</li> <li>- Compressive Strength</li> </ul>	1 test per 50,000 bricks	
12]	Prime coat/ Tack coat		<ul style="list-style-type: none"> <li>- Quality of binder</li> <li>- Binder temperature for application</li> <li>- Rate of spread of binder</li> </ul>	Number of samples per lot and test as per IS:73 At regular close intervals  Two test per 500 m <sup>2</sup> and not less than two test per day	

13]	Carpet and Seal coat mix/ B.M/ M.S.S.		<ul style="list-style-type: none"> <li>- Quality of binder</li> <li>- Grading</li> <li>- Temperature of binder</li> <li>- Binder content vide 45 IMD 2172</li> <li>- Rate of spread of mix materials</li> </ul>	<p>Number of samples per lot and test as per IS:73</p> <p>1 test on individual contents and mix aggregate from the dryer for each 100 tonnes of mix subject to minimum of two test per plant per day</p> <p>At regular close intervals</p> <p>One test for each 100 tonnes of mix subject to mini. of Two per day</p> <p>Regular control through checks on layer thickness</p>	
14]	Granular Sub-base	''''''	<ul style="list-style-type: none"> <li>- Gradation</li> <li>- Atterberg limits</li> <li>- Moisture content prior to compaction</li> <li>- Density of compacted layer</li> <li>- Deleterious constituents</li> <li>- C.B.R.</li> </ul>	<p>As mentioned under serial number 3</p> <p>As mentioned under serial number 3</p> <p>As mentioned under serial number 3</p> <p>One test per 500 m<sup>2</sup></p> <p>As required</p> <p>As required</p>	
15]	Wet Mix Macadam		<ul style="list-style-type: none"> <li>- Aggregate Impact Value</li> <li>- Grading</li> <li>- Flakiness and Elongation Index</li> <li>- Atterberg limits of portion of aggregate passing 425 micron sieve</li> <li>- Density of compacted layer</li> </ul>	<p>As mentioned under serial number 1</p> <p>As mentioned under serial number 1</p> <p>As mentioned under serial number 1</p> <p>As mentioned under serial number 3</p> <p>One test per 500 m<sup>2</sup></p>	

16]	Water Bound Macadam		<ul style="list-style-type: none"> <li>- Aggregate Impact Value</li> <li>- Grading</li> <li>- Flakiness Index and Elongation index</li> <li>- Atterberg limits of binding material</li> <li>- Atterberg limits of portion of aggregate passing 425 micron sieve</li> </ul>	<p>As mentioned under serial number 1</p> <p>As mentioned under serial No.1</p> <p>As mentioned under serial number 1</p> <p>As mentioned under serial number 1</p> <p>As mentioned under serial number 1</p>	
17]	Earthwork		<ul style="list-style-type: none"> <li>- Sand Content [IS: 2720 (Part-4)]</li> <li>- Plasticity Test[IS:2720 (Part-5)]</li> <li>- Density Test [IS:2720 (Part-8)]</li> <li>- Moisture Content Test [IS :2720 (Part-2) ]</li> <li>- CBR Test</li> </ul>	<p>2 tests per 3000 cubic metres of soil</p> <p>2 tests per 3000 cub. metres of soil.</p> <p>2 tests per 3000 cubic metres of soil.</p> <p>One test for every 250 cubic metres of soil.</p> <p>One CBR test for every 3000 cum. at least or closer as and when required by the Engineer.</p>	

#### Frequency of Quality Control Tests for Pavement Concrete

1)	i) Levels, alignment and texture	Clause 902.3
	i) Width of pavement and position of paving edges	Clause 902.2
	iii) Pavement thickness	Clause 902.3and Clause 903.5.2.4
	iv) Alignment of joints, widths, depth of dowel grooves	To be checked @ one joint per 400 m length or a day's work
	v) Surface regularity both transversely and	Once a day or one day's work

	longitudinally		without disturbing the curing
	vi) Alignment of dowel bars and their accuracy/tie bars		To be checked in trial length as per Clause 602.6.5.2 and once on every 2 km.
	vii) Texture depth		Clause 602.12
2)	Quality of materials and concrete shall be as under :		
	1) Cement Physical and Chemical Tests	IS:269 IS:455 IS:1489 IS:8112 IS:12269	Once for each source of supply and occasionally when called for in case of long/ improper storage. Besides, the Contractor also will submit daily test data on cement released by the manufacturer
2) Coarse and Fine Aggregate	i) Gradation	IS:2386	One test for every day's work of each fraction of coarse aggregate and fine aggregate, initially; (may be relaxed later at the discretion of the Engineer)
	ii) Deleterious constituents	IS:2386 (Pt.2)	--do--
	iii) Water absorption	IS:2386 (Pt.3)	Regularly as required subject to a minimum of one test a day for coarse aggregate and two tests a day for fine aggregate. This data shall be used for correcting the water demand of the mix on a daily basis.
3) Coarse Aggregate	i) Los Angeles Abrasion value or Aggregate Impact test	IS:2386 (Pt.4)	Once for each source of supply and subsequently on monthly basis
	ii) Soundness	IS:2386 (Pt.5)	Before approving the aggregates and every month subsequently.
	iii) Alkali aggregate	IS:2386 (Pt.7)	--do--

		reactivity	IS:456	
	4) Water	Chemical Tests	IS:2386	Once for approval of source of supply. subsequently only in case of doubt
	5) Concrete	i) Strength of Concrete	IS:516	2 cubes and 2 beams per 150 cu.m or part thereof (one for 7 day and other for 28 day strength) or minimum 6 cubes and 6 beams per day's work whichever is more
		ii) Core strength on hardened concrete	IS:516	As per the requirement of the Engineer, only in case of doubt.
		iii) Workability of fresh concrete-Slump Test	IS:1199	One test per each dumper load at both Batching plant site and paving site initially when work starts. Subsequently sampling may be done from alternate dumper.
		iv) Thickness determination		From the level data of concrete pavement surface and sub-base at grid points of 5/6.25 m x 3.5 m
		v) Thickness measurement for trial length		3 cores per trial length
		vi) Verification of level of string line in the case of slip form paving and steel forms in the case of fixed form paving		String line or steel forms shall be checked for level at an interval of 5.0 m or 6.25 m. The level tolerance allowed shall be 1 2 mm. These shall be got approved 1-2 hours before the commencement of the concreting activity.

The Number of tests will be as per Manual of quality control or latest Govt. G.R./Circular and it will be considered final

The contractor shall have to pay 1% of the estimated cost put to tender towards all testing of materials and the same shall be deducted from their bills for the works.

Testing charges of GERI shall be borne by Govt. No refund be made nor extra charges over 1% shall be recoverable from the contractor.

If directed by the Engineer in charge, the materials intended to be used for the work but not included in the above schedule shall also be got tested at Government recognized Laboratory or field Laboratory.

**Signature of Contractor**

**Executive Engineer  
Panchayat (R&B) Division  
Bhuj-Kachhh**