SECTION J

PAVEMENT CONSTRUCTION

INDEX TO CLAUSES

SECTION J

PAVEMENT CONSTRUCTION

J.1 DESCRIPTION

This section covers the delivery, spreading and compaction of crushed rock and plant mixed wet-mix crushed rock for the construction of pavement courses including shoulders.

J.2 CONFORMITY WITH DRAWINGS

All pavement courses, consisting of one or more layers of the same material shall be finished to reasonably smooth and uniform surfaces and shall conform to the lines, grades, thicknesses and cross-sections shown on the drawings within the following limits:

(a) **Level**

The top of each pavement course shall not vary from the specified level by more than 12mm. Where pavements are constructed against a kerb and channel, the edge of the pavement shall be constructed flush with the edge of the channel unless otherwise specified or shown on the drawings.

(b) **Thickness**

The thickness of the top course of the pavement shall not be less than that specified or shown on the drawings. The total thickness of the pavement shall not be less than the specified thickness by more than 15mm.

(c) **Shape**

No point in the finished surface shall vary more than 10mm either from a three metre straightedge laid parallel to the centreline of the pavement or from a template place at right angles to the centreline.

J.3 PREPARATION OF PAVEMENT BED

The pavement bed shall be taken out or boxed in to the full required depth below the finished surface levels for a width equal to width between back of kerbs plus 1000mm.

In all cases, the Contractor shall not disturb the soil closer than 25m to the finished level of the subgrade. The bed shall then be trimmed to the correct grade and cross-section, and for boxed-in-pavement, shall then be parallel to the finished surface. The pavement bed shall be thoroughly rolled and consolidated with an approved roller weighing at least twelve (12) tonnes or the equivalent thereof. All soft places and depressions revealed during the rolling shall be made good with approved stable material as the rolling proceeds (refer Clause C.4).

J.3 PREPARATION OF PAVEMENT BED (cont'd)

The finished bed shall be kept about 150 metres in advance of placing the crushed rock pavement.

Any damage to the roadbed resulting from traffic or any other cause shall be made good by the Contractor. No additional payment will be made for this work.

The Superintendent may direct test rolling of the subgrade as specified in Clause C.11 of Section C of this specification where considered necessary. No additional payment will be made for such test rolling.

J.4 MATERIALS

J.4.1 Description

This section covers the requirements of crushed rock and plant mixed wet-mix crushed rock for Classes 1 and 2 base of 20mm and 40mm nominal size produced from igneous or metamorphic source rock, Class 3 sub-base of 20mm and 40mm nominal size and for Class 4 crushed rock sub-base.

The requirements relate to quality of source rock and properties of the product.

The classes and nominal sizes shall be as specified in the special clauses and/or the drawings and/or the schedule.

J.4.2 Definitions

Crushed Rock

Crushed Rock is composed of crushed rock fragments with or without sands and with or without filler, produced in a controlled manner to close tolerances of grading.

Plant Mixed Wet-Mix Crushed Rock (PMWMCR)

Plant mixed wet-mix crushed rock is a mixture of crushed rock and water, produced at a controlled mixing plant to close tolerances of grading and moisture content based on the modified optimum moisture content of the material.

J.4 MATERIALS (cont'd)

Unsound Rock

Unsound rock is that material, whether in the source or as spalls or as crushed particles, which:

(a) is soft, friable, or composed of clay or weathered rock, or which contains matter which breaks up when alternately wetted and dried;

(b) in the case of igneous and metamorphic source rock, as a Degradation Factor - Source Rock less than the minimum value for marginal rock specified in Clause J.4.3; or

(c) in addition in the case of basic igneous rock, has a Secondary Mineral Content greater than the maximum value for marginal rock specified in Clause J.4.3; or

(d) in the case of sedimentary rock, has a Texas Ball Mill value greater than the maximum value for marginal rock specified in Clause J.4.3.

Assigned Los Angeles Abrasion Loss

The assigned Los Angeles Abrasion Loss in a hardness rating derived from Los Angeles Abrasion Loss test results and is assigned to each source by VIC ROADS on the basis of past test data.

J.4.3 Source Rock

Prior to the commencement of work, the Contractor shall confirm the quarry from which the material will be obtained.

Sedimentary source rock shall not be used for the production of crushed rock base.

Source rock shall be considered sound or marginal in accordance with the provision of Table J.4.3.1.

J.4 MATERIALS (cont'd)

Table J.4.3.1

Rock Type	Test Value					
	Sound Rock			Marginal Rock		
	Degradation Factor Source Rock (min)	Secondary Mineral Content % (max)	Texas Ball Mill Value (max)	Degradation Factor Source Rock (range)	Secondary Mineral Content % (range)	Texas Ball Mill Value (range)
ACID IGNEOUS						
Granitic Rocks (Includes Granite, Adamellite, Granodiorite)	50	-	-	35-49	-	-
Granophure	45	-	-	35-44	-	-
Rhyolite	45	-	-	35-44	-	-
Rhyodacite	45			35-44		
INTERMEDIATE IGNEOUS						
Diorite	45	-	-	35-44	-	-
Porphyry	45	-	-	35-44	-	-
Trachyte	50	-	-	30-49	-	-
BASIC IGNEOUS						
Basaltic Rocks (includes Basalt, Dolerite, Limburgite)	50	25	-	30-49	26-30	-
METAMORPHIC						
Hornfels	40	-	-	20-39	-	-
Quartzite	45	-	-	30-44	-	-
Schist	45	-	-	30-44	-	-
Phyllite	45	-	-	30-44	-	-
Gneiss	45	-	-	30-44	-	-
Greenstone	45	-	-	30-44	-	-

J.4 MATERIALS (cont'd)

Table J.4.3.1

Rock Type	Test Value					
	Sound Rock			Marginal Rock		
	Degradation Factor Source Rock (min)	Secondary Mineral Content % (max)	Texas Ball Mill Value (max)	Degradation Factor Source Rock (range)	Secondary Mineral Content % (range)	Texas Ball Mill Value (range)
Argillaceous (includes Medstone, Calcareous Mudstone, Shale, Siltstone, Claystone, Tillite)	-	-	30	-	-	31-35
Arenaceous (includes Sandstone, Arkose, Greywacke, Quartzite, Calcarenite)	-	-	45	-	-	46-55

The hardness of the source rock shall be measured by a Los Angeles Abrasion Loss test on the produce and shall comply with the test values shown in Table J.4.3.2.

J.4 MATERIALS (cont'd)

Rock Type	Los Angeles Abrasion Loss (max)			
	Base		Sub-Base	
	Class 1	Class 2	Class 3	Class 4
ACID IGNEOUS				
Granite Rocks (includes Granite, Adamellite,Granodiorite)	40	40	45	-
Granophyre	25	25	30	-
Rhyolite	25	25	30	-
Rhyodacite	25	25	30	-
INTERMEDIATE IGNEOUS				
Diorite	25	25	30	-
Porphyry	25	25	30	-
Trachyte	30	30	35	-
BASIC IGNEOUS				
Basaltic Rocks (Basalt, Dolerite, Limburgite)	30	30	35	-
METAMORPHIC				
Hornfels	25	25	25	-
Quartzite	30	30	35	-
Schist	30	30	35	-
Phyllite	30	30	35	-
Gneiss	30	30	35	-
Greenstone	30	30	35	-
SEDIMENTARY				
Argillaceous (includes Medstone, Calcareous Mudstone, Shale, Siltstone, Claystone, Tillite)	-	-	25	-
Arenaceous (includes Sandstone, Arkose, Greywacke, Quartzite, Calcarenite	-	-	45	-

If at any time the Contractor proposes to obtain material from a quarry other than the confirmed quarry, the Superintendent shall be notified in sufficient time to allow such investigation as may be required.

J.4 MATERIALS (cont'd)

The Superintendent's approval shall be obtained prior to changing the quarry.

If the Contractor proposes to use a source rock type other than those listed in Tables J.4.3.1. and J.4.3.2, the Superintendent will determine whether the rock type is acceptable and will set appropriate test values.

Source rock which does not comply with specified requirements but from which crushed rock of proven satisfactory performance has been produced may be accepted for use subject to the written approval of the Superintendent.

J.4.4 Components

(a) Crushed rock fragments shall consist of clean, hard, durable, angular fragments of rock.

The use of crusher fines produced from a quarry, or a location within a quarry, different from that used for production of that fraction of the crushed rock retained on a 4.7mm AS sieve shall be subject to approval in writing by the Superintendent to the proposed source and nature of these materials and the proposed amounts to be added.

(b) Crusher fines produced from any igneous or metamorphic rock shall have a Degradation Factor - Crusher Fines not less than 60.

The use of sands and/or filler shall be subject to approval in writing by the Superintendent to the proposed source and nature of such materials, the proposed amounts to be added and the proposed method of incorporation such materials in the product.

J.4 MATERIALS (cont'd)

J.4.5 Product

(a) The crushed rock shall be free from vegetable matter and lumps or balls of clay and shall comply with the relevant requirements of Table J.4.5.1

Table J.4.5.1

Test	Test Value			
	Base		Sub-Base	
	Class 1	Class 2	Class 3	Class 4
Liquid Limit % (max)	25	30	35	40
Plasticity Index (max)	3	6	10	20
California Bearing Ratio (%) (min) *	-	-	-	15
PI x % passing 0.425 AS Sieve (max)	-	-	-	600
Sand Equivalent ** (min)	55	50	-	-

* Value applicable to material 19.0 mm sieve: initially at Modified optimum moisture content and dry density equal to 95% of maximum dry density obtained in using Modified compactive effort, but then soaked for 4 days prior to the CBR test.

** The Superintendent may specify other values of sand equivalent on the basis of tests carried out on crushed rock which complies with the specified requirements for grading and plasticity.

(b) Unsound and marginal rock in that fraction of the produce retained on a 4.75 mm AS sieve shall not exceed the percentages specified in Table J.4.5.2. Where two or more aggregates are combined to produce the crushed rock and no facilities exist in the mixing plant to sample the mixture, unsound and marginal rock in that fraction of each aggregate retained on a 4.75 mm AS sieve shall not exceed the percentages specified in Table J.4.5.2

Table J.4.5.2

Class	Total of Marginal and Unsound Rock % (max)	Unsound Rock % (max)
1	10	5
2	10	5
3	20	10
4	-	-

J.4 MATERIALS (cont'd)

(c) For PMWMCR, the aggregates and water shall be mixed at a mixing plant by continuous or batch mixing.

J.4.6 Water

Where it is specified that water shall be added to the crushed rock prior to delivery, such water shall be clear and substantially free from detrimental impurities such as oils, salts, acids, alkalis and vegetable substances.

J.4.7 Grading of Uncompacted Crushed Rock and PMWMCR Base

After completion of production, but before compaction, crushed rock and PMWMCR base shall comply with the relevant grading requirements of Tables J.4.7.1. to J.4.7.6 corresponding to the assigned Los Angeles Abrasion Loss and the nominal size of the material.

The Contractor shall aim to produce the crushed rock and PMWMCR in such a way that the grading coincides with the relevant target grading specified in Tables J.4.7.1. to J.4.7.6. The permitted ranges of grading in these tables provide for random fluctuations in the production process.

J.4 MATERIALS (cont'd)

Grading Requirements for 20mm Base (by Mass)

Table J.4.7.1

Assigned Los Angeles Abrasion Loss: 25 or less. Igneous (other than granitic) and metamorphic source rock.

Sieve Size AS (mm)	Target Grading (% Passing)	Test Value before Compaction	
		Limits of Grading (% Passing)	% Retained between Sieves
26.5	100	100	
19.0	100	95 - 100	0- 5
13.2	85	78 - 92	7 - 18
9.5	73	63 - 83	10 - 16
4.75	54	44 - 64	14 - 24
2.36	39	30 - 48	10 - 20
0.425	18	14 - 22	14 - 28
0.075	8	6 - 10	6 - 13

J.4 MATERIALS (cont'd)

Table J.4.7.2

Assigned Los Angeles Abrasion Loss: 26 or greater. Igneous (other than granitic) and metamorphic source rock.

Sieve Size AS (mm)	Target Grading (% Passing)	Test Value before Compaction	
		Limits of Grading (% Passing)	% Retained between Sieves
26.5	100	100	
19.0	100	95 - 100	0- 5
13.2	85	78 - 92	7 - 18
9.5	73	63 - 83	10 - 16
4.75	54	44 - 64	14 - 24
2.36	38	29 - 47	10 - 21
0.425	16	12 - 20	15 - 29
0.075	4	2 - 6	9 - 15

Table J.4.7.3

Granitic Source Rock

Sieve Size AS (mm)	Target Grading (% Passing)	Test Value before Compaction	
		Limits of Grading (% Passing)	% Retained between Sieves
26.5	100	100	
19.0	100	95 - 100	0- 5
13.2	85	78 - 92	7 - 18
9.5	73	63 - 83	10 - 16
4.75	54	44 - 64	14 - 24
2.36	39	30 - 48	10 - 20
0.425	17	13 - 21	15 - 29
0.075	7	5 - 9	7 - 14

J.4 MATERIALS (cont'd)

Grading Requirements for 40 mm Base (by mass)

Table J.4.7.4

Assigned Los Angeles Abrasion Loss: 25 or less. Igneous (other than granitic) and metamorphic source rock.

Sieve Size AS (mm)	Target Grading (% Passing)	Test Value before Compaction	
		Limits of Grading (% Passing)	% Retained between Sieves
53.0	100	100	
37.5	100	95 - 100	0 - 5
26.5	85	80 - 90	9 - 15
19.0	74	66 - 82	7 - 15
9.5	54	44 - 64	17 - 23
4.75	39	29 - 49	10 - 20
2.36	29	21 - 37	4 - 16
0.425	13	10 - 17	10 - 22
0.075	6	5 - 8	3 - 10

J.4 MATERIALS (cont'd)

Table J.4.7.5

Assigned Los Angeles Abrasion Loss: 26 or greater. Igneous (other than granitic) and metamorphic source rock.

Sieve Size AS (mm)	Target Grading (% Passing)	Test Value before Compaction	
		Limits of Grading (% Passing)	% Retained between Sieves
53.0	100	100	
37.5	100	95 - 100	0 - 5
26.5	85	80 - 90	9 - 16
19.0	74	66 - 82	7 - 15
9.5	54	44 - 64	17 - 23
4.75	39	29 - 49	10 - 20
2.36	29	22 - 35	5 - 17
0.425	11	8 - 13	13 - 22
0.075	3	2 - 5	5 - 10

J.4 MATERIALS (cont'd)

Table J.4.7.6

Granitic Source Rock

Sieve Size AS (mm)	Target Grading (% Passing)	Test Value before Compaction	
		Limits of Grading (% Passing)	% Retained between Sieves
53.0	100	100	
37.5	100	95 -100	0 - 5
26.5	85	80 - 90	9 - 15
19.0	74	66 - 82	7 - 15
9.5	54	44- 64	17 - 23
4.75	39	29 - 49	10 - 20
2.36	29	21 - 37	4 - 16
0.425	11	9 - 15	11 -22
0.075	3	4 - 7	4- 10

The Superintendent may change the target grading requirements pertaining to the 2.36 mm, 0.425 mm and 0.075 mm sieves specified in Tables J.4.7.1 to J.4.7.6. Notwithstanding any change made to the target grading, the magnitude of the range of the limits of grading will remain unchanged and the range will remain centred on the target grading. No additional payment will be made unless the change from the specified requirements exceeds two percentage units for the 236 mm and 0.425 mm sieves or one percentage unit for the 0.075 mm sieve.

J.4.8 Grading of Uncompacted Crushed Rock and PMWMCR Subbase

(a) **Class 3 Subbase**

After completion of production, but before compaction, Class 3 crushed rock and PMWMCR subbase shall comply with the relevant grading requirements of Table J.4.8.1 to J.4.8.4 corresponding to the assigned Los Angeles Abrasion Loss and the nominal size of the material.

J.4 MATERIALS (cont'd)

The Contractor shall aim to produce the crushed rock in such a way that the grading coincides with the relevant target grading specified in Tables J.4.8.1. to J.4.8.4. The permitted ranges of grading in these tables provide for random fluctuations in the production process.

The crushed rock shall not be graded from near the coarse limit on one sieve to near the fine limit on the following sieve or vice versa.

Grading Requirements for Class 3, 20 mm Subbase (by mass)

Table J.4.8.1

Assigned Los Angeles Abrasion Loss 25 or less, igneous (other than granite) and metamorphic source rock.

Sieve Size AS (mm)	Target Grading (% Passing)	Test Value before Compaction - Limits of Grading (% Passing)
26.5	100	100
19.0	100-	95 -100
13.2	85	75 - 95
9.5	75	60 - 90
4.75	59	42 - 76
2.36	44	28 - 60
0.425	21	14 - 28
0.075	10	6 - 13

J.4 MATERIALS (cont'd)

Table J.4.8.2

Assigned Los Angeles Loss 26 or greater, igneous and metamorphic source rock and all sedimentary and granitic source rock.

Sieve Size AS (mm)	Target Grading (% Passing)	Test Value before Compaction - Limits of Grading (% Passing)
26.5	100	100
19.0	100-	95 -100
13.2	85	75 - 95
9.5	75	60 - 90
4.75	59	42 - 76
2.36	44	28 - 60
0.425	21	10 - 28
0.075	10	2 - 10

Table J.4.8.3

Assigned Los Angeles Abrasion Loss 25 or less, igneous (other than granite) and metamorphic source rock.

Sieve Size AS (mm)	Target Grading (% Passing)	Test Value before Compaction - Limits of Grading (% Passing)
53.0	100	100
37.5	100	95 - 100
26.5	85	75 - 95
19.0	77	64 - 90
9.5	60	42 - 78
4.75	46	27 - 64
2.36	35	20 - 50
0.425	17	10 - 23
0.075	9	6 - 12

J.4 MATERIALS (cont'd)

Table J.4.8.4

Assigned Los Angeles Abrasion Loss 26 or greater, igneous and metamorphic source rock and all sedimentary and granitic source rock.

Sieve Size AS (mm)	Target Grading (% Passing)	Test Value before Compaction - Limits of Grading (% Passing)
53.0	100	100
37.5	100	95 - 100
26.5	85	75 - 95
19.0	77	64 - 90
9.5	60	42 - 78
4.75	46	28 - 64
2.36	35	20 - 50
0.425	15	7 - 23
0.075	6	2 - 9

The Superintendent may change the target grading requirements pertaining to the 2.36 mm, 0.425 mm and 0.075 mm sieves specified in Tables J.4.8.1 to J.4.8.4. Notwithstanding any change made to the target grading, the magnitude of the range of the limits of grading will remain unchanged and the range will remain centred on the target grading, No additional payment will be made unless the change from the specified requirements exceeds two percentage units for the 2.36 mm and 0.425 mm sieves or one percentage unit for the 0.075 mm sieve.

J.4 MATERIALS (cont'd)

(b) Class 4 Subbase

After completion of production, but before compaction, Class 4 crushed rock subbase shall comply with the relevant grading requirements of Table J.4.8.5. The crushed rock shall not be graded from near the coarse limit on one sieve to near the fine limit on the following sieve or vice versa.

Class 4 crushed rock of nominal size differing from that specified may be accepted by the Superintendent provided it meets the grading requirements of Table J.4.8.5 corresponding to a nominal size adjacent to that specified.

Grading Requirements for Class 4 Crushed Rock Subbase (by mass).

Table J.4.8.5

Sieve Size AS (mm)	Test Value before Compaction - Limits of Grading (% Passing)							
	Nominal Size (mm)							
	50	40	30	25	20	14	10	5
75.0	100							
53.0		100						
37.5			100	100				
26.5					100			
19.0	54-75	64.90				100	100	
9.5			48-70	54-75				100
4.75					42-76	54-75	64-84	
2.36								65-84
0.425	7-21	7-23	9-24	10-26	10-28	15-32	18-35	26-45
0.075	2-10	2-12	2-12	2-13	2-14	6-17	7-18	10-23

J.4 MATERIALS (cont'd)

J.4.9 Moisture Content

(a) **Crushed Rock**

Where payment is to be made on a mass basis, the average moisture content of crushed rock at the plant shall not exceed 3.5% by mass unless otherwise specified or unless the Contractor has, at the time of tendering, nominated an upper limit of average moisture content greater than 3.5%. In the latter case the difference between the nominated value and the specified value will be taken into account when tenders are being considered. The average moisture content of crushed rock supplied on any one day will be determined from three samples taken at random from that day's supply. If the average moisture content is greater than that specified or nominated, the material may be rejected. If at the discretion of the Superintendent the material is accepted, payment will be made for the mass determined by deducting the calculated mass of excess moisture from the net mass shown on the delivery dockets.

(b) **PMWMCR**

Where the work of the Contract includes supply and delivery only, the moisture content of the mixture at the point of delivery, expressed as a percentage by mass, shall be within plus 0.5 to minus 1.0 of the target nominated from time to time by the Superintendent.

J.4.10 Stockpiling Prior to Delivery

Material may be stockpiled prior to delivery provided the following requirements are fulfilled:-

(a) the product, after recovery from the stockpile, complies with this specification;
(b) the stockpile site is clean, adequately paved, and well drained;
(c) if a stockpile is constructed in more than one layer, each layer is fully contained within the area occupied by the upper surface of the preceding layer;
(d) no cementitious filler is used.

J.4.11 Handling of Materials

Handling of materials, including the loading of trucks and stockpiling, shall be effected in such a manner as to minimise segregation.

J.4 MATERIALS (cont'd)

J.4.12 Minimum Testing Requirements

The Contractor shall test the crushed rock and PMWMCR at a frequency which is sufficient to ensure that each class and nominal size of material supplied under the contract complies with the specified requirements. The frequency shall not be less than that shown in Table J.4.12.1, except that the Superintendent may agree to a lower frequency where the Contractor has implemented a system of statistical process control and can demonstrate that such lower frequency is adequate to assure the quality of the product.

Table J.4.12.1 - Minimum Frequency of Testing

Test	Minimum Frequency of Testing
Sand Equivalent [+]	On each day - one per 300 tonnes or part thereof
Grading	On each day - one per 300 tonnes or part thereof
Unsound Rock [++]	On each day - one per 300 tonnes or part thereof
Moisture Content [+++] - Crushed Rock - PMWMCR	 On each day - 3 No. On each day - one per 200 tonnes or part thereof
Plasticity Index	Classes 1, 2 and 3 In each month - one per 20,000 tonnes or part thereof Class 4 One per 1,000 tonne or part thereof
California Bearing Ratio [#]	Prior to the commencement of work and when in the opinion of the Superintendent the nature of the material has changed significantly.
Degradation Factor - Crusher Fines (imported)	One per day

[+] Not applicable to Class 3 and Class 4 subbase.
[++] No applicable to Class 4 subbase.
[+++] Applicable only when payment is to be made on a mass basis.
[#] Applicable to Class 4 subbase.

SECTION J

PAVEMENT CONSTRUCTION

J.5 SPREADING OF FINE CRUSHED ROCK

The road pavement material shall be spread in even and equal layers; each layer to be of maximum loose thickness of 150 mm.

The bottom course shall be spread and compacted before the top course is spread, and the Contractor shall keep the bottom course graded and maintained during the spreading of the top course, as hereinafter specified.

Where the excavation is below the design level of the underside of any proposed kerb and channel the base course shall be spread and thoroughly compacted to a level to provide bedding for the kerb and channel as specified in Section F.

Spreading shall commence at a point on the road nearest the source of supply, and shall continue from the point, so that the spread pavement material will receive traffic and compaction by the vehicles used for cartage.

The pavement material shall be spread direct from tipping trucks in an even continuous layer. The Contractor shall be responsible for spreading the material uniformly, but will be permitted to move the material by graders to obtain this

uniformity, provided that there is no segregation of fine and course material, and that complete compaction is subsequently obtained.

All material shall be spread accurately to level pegs and control of longitudinal shape and cross-sections shall be maintained by means of boning rods and/or string-lines used continuously during the spreading of material.

J.6 COMPACTION

As before specified in Clause C.14 the whole of the roadbed shall be compacted and approved before any pavement material is spread. Compaction of the pavement shall be effected with an approved machine loaded to twelve (12) tonnes or a vibrating roller of this effective weight and by continuous grading to maintain the correct shape. Construction and ordinary traffic shall be directed to assist uniform compaction of the pavement.

The crushed rock shall be compacted at a moisture content of not less than 85% or more than 115% of optimum moisture content to a dry density of not less than 95% of the maximum value obtained in the Modified Compaction Test A.S.1289-5.2.1-1993 except that material within 100 mm of the finished surface levels shall be compacted to a dry density of not less than 98% of this value.

Unless otherwise directed by the Superintendent in place density and moisture content shall be measured by means of a nuclear gauge calibrated in accordance with AS. 1289-E8.4.

J.6 COMPACTION (cont'd)

The Contractor shall carry out testing at a frequency which is sufficient to ensure that the work performed under the contract complies with the specified requirements.

J.7 REQUIREMENTS FOR TESTING AND ACCEPTANCE OF COMPACTION

J.7.1

The Contractor shall submit to the Superintendent for review a program for compaction testing. The program shall indicate the number, spacing and location of tests.

(a) **Material of nominal size 40 mm or less**

Material which will have a nominal size after compaction of 40 mm or less shall be compacted to comply with the following requirements.

The calculation of density ratio shall be based on tests performed using Modified compactive effort. The work shall be assessed for compliance with Table J.7.1.1 requirements for testing and acceptance of compaction as specified in Clause J.7.4

A lot shall consist of a single layer of work and its size shall not exceed that given in Table J.7.2.1

All pavement layers shall be compacted to withstand test rolling and shall be test rolled in accordance with Section C.11, prior to acceptance of the layer.

On completion of compaction any segregated areas shall be rectified. The method of rectification shall be reviewed by the Superintendent.

Table J.7.1.1

Characteristic Value of Density Ratio %		Assessment
Base	**Subbase**	
Not less than 98.0	Not less than 95.0	Accept lot
97.0 to 97.9	94.0 to 94.9	Re-roll as agreed with the Superintendent
Less than 97.0	Less than 94.0	Reject lot.

The extent of re-rolling proposed by the Contractor to be undertaken as referred to in Table J.7.1.1 shall be reviewed by the Superintendent.

Where agreement cannot be reached, the re-rolling shall be carried out as proposed by the contractor. However, the Superintendent may direct the contractor to carry out compaction testing to confirm acceptance of the lot. No additional payment will be made for any requirement to carry out confirmation compaction testing so directed.

(b) Material of nominal size greater than 40 mm.

On completion of compaction, any segregated areas shall be rectified. The method of rectification shall be reviewed by the Superintendent.

Unless otherwise specified, material, which will have a nominal size after compaction greater than 40 mm shall be compacted using a grading, mixing, watering and rolling routine proposed by the Contractor and reviewed by the Superintendent.

The Superintendent may require that trial sections be constructed to verify that the proposed compaction routine is acceptable. No additional payment will be made for any such request.

Acceptance of work as far as compaction is concerned will be based on compliance with the accepted compaction routine and test rolling carried out in accordance with Section C.11.

Any unstable areas detected by test rolling shall be rectified by the Contractor.

J.7 REQUIREMENTS FOR TESTING AND ACCEPTANCE OF COMPACTION (cont'd)

If required by the Superintendent, further test rolling shall be carried out by the Contractor on the pavement layer prior to being covered by a successive layer. No additional payment will be made for any requirement to carry out such further test rolling.

J.7.2 Minimum Testing Requirements

The Contractor shall carry out testing at a frequency which is sufficient to ensure that work performed under the Contract complies with the specified requirements but which is not less than six tests per lot size shown in Table J.7.2.1.

Table J.7.2.1 - Acceptable Lot size.

Material	Acceptable Lot Size * in a Single Layer of Work
Base	2400m^2 or one day's production
Subbase	5000m^2 or one day's production

* Where alternative acceptable lot sizes have been specified, the smaller lot size shall apply.

J.7.3 Protection of Compacted Layers

The surface of any compacted layer shall be kept moist, in good order and condition and free from contamination until any subsequent pavement work under the Contract is commenced or the Superintendent accepts and takes responsibility for that part of the Works.

J.7.4 Grading of Pavement Material After Compaction

Material shall comply with the relevant grading requirements of Tables J.7.4.1 and J.7.4.2 following completion of compaction.

J.7 REQUIREMENTS FOR TESTING AND ACCEPTANCE OF COMPACTION (cont'd)

Table J.7.4.1 - Grading Requirements for Base Crushed Rock After Compaction

Sieve Size	Permitting Grading After Compaction (% Passing)	
	Nominal Size (mm)	
	20	40
53.0		100
37.5		95-100
26.5	100	80- 90
19.0	95 - 100	66- 82
13.2	78 - 92	
9.5	63 - 83	44- 64
4.75	44 - 64	29- 49
2.36	30 - 49	21 - 38
0.425	14 - 23	10 - 18
0.075	6 - 11	5- 9

Table J.7.4.2 - Grading Requirements for Class 3 Crushed Subbase After Compaction

Sieve Size (mm)	Permitting Grading After Compaction (% Passing)	
	Nominal Size (mm)	
	20	40
53.0		100
37.5		95-100
26.5	100	75- 95
19.0	95 - 100	64- 90
13.2	75 - 95	
9.5	60 - 90	42- 78
4.75	42 -76	27- 64
2.36	28 - 61	20 - 51
0.425	14 - 29	10 - 24
0.075	6 - 14	6-13

SECTION J

PAVEMENT CONSTRUCTION

J.8 PREPARATION FOR SEALING

The pavement shall be scarified to a depth of 100 mm and the whole of the loose material thoroughly mixed by blading with a power grader. Water shall be added by a water distributor to obtain optimum water content prior to setting down the surface.

The surface shall be graded and rolled using a 12 tonne self propelled pneumatic multi-tyred roller, tyre pressure of 600 KPa and 12 tonne steel drum roller to obtain a true cross-section and a thoroughly compacted pavement with a tightly bonded surface. Water shall be added as required to obtain the required compaction and surface condition.

On completion of compaction any segregated areas shall be rectified. The method of rectification shall be reviewed by the Superintendent.

In place density tests on the final prepared pavement shall be carried out by the Contractor at the frequency as in Clause J.7.2 and at locations agreed to in the "program for compaction" as referred to under Clause J.7.1.

HP An inspection of the shape and surface conditions shall take place prior to acceptance of the prepared pavement for sealing.

NO PAVEMENT WILL BE CONSIDERED SUITABLE FOR SEALING UNLESS ALL OTHER WORKS WITHIN THE ADJACENT ROAD RESERVE HAVE BEEN COMPLETED.

The Contractor shall maintain the pavement in the accepted condition until surfacing works are commenced. Should the pavement condition deteriorate before surfacing works are commenced, the Contractor shall re-prepare the pavement and re-present the pavement for acceptance.

J.9 MAINTENANCE DURING CONSTRUCTION

The Contractor shall cart the pavement material over the pavement as it is spread with vehicles using no definite line of traffic, but moving in various lines so that the whole pavement width will be trafficked by the vehicles. No ruts or waves or isolated hard spots shall be allowed to form and the Contractor shall keep the pavement formed to the required template by the constant use of a power grader.

SECTION J

PAVEMENT CONSTRUCTION

J.10 MEASUREMENT

(a) **Measurement by Loose Volume**

Where material is to be measured by loose volume, the volume of material shall be measured at the point of delivery in the vehicles used for cartage. Each load shall completely fill the body, and shall be levelled off before being measured.

Loads of a quantity less than the full capacity of the body of the vehicle will either be rejected or the quantity may be assessed by the Superintendent and a receipt issued for such quantity as he may assess. Receipts will be issued by the tally clerk for all material accepted at the tip head, and payment will be made only for approved material for which receipts have been issued.

(b) **Measurement by Area**

Work to be measured by area shall be measured in square metres. No deductions in area measurement will be made for individual fixtures having an area of one square metre or less.

(c) **Measurement by Weight**

Where material is to be measured by weight it will be measured in tonnes. The weight of the material shall be measured by weighing the vehicles used for cartage, at the Contractor's expense, on a weighbridge verified by the Weights and Measures Department.

The loaded weight of each vehicle shall be measured separately for each load and the unloaded weight of the vehicle shall be measured by weighing the vehicle with its fuel tank not less than half full each day before commencing delivery and at such additional times as the Superintendent may direct.

At the discretion of the Superintendent, the Superintendent's representative may be present to witness the weighings and to check the record of weights, and when required by the Superintendent material shall be levelled off in the truck to enable the volume of material to be checked at the point of delivery. When required by the Superintendent measurements shall be checked by weighing the vehicles on such other scales as he may designate.

J.10 MEASUREMENT (cont'd)

With each load of material the delivery of the cartage vehicle shall deliver to the Superintendent at the point of delivery, a weighbridge docket showing the date, the name of the supplier, the registered number of the vehicle, the empty and loaded weights of the vehicle and the nature and source of that material.

Where the moisture content of the material exceeds the maximum amount specified the material may be rejected. Alternatively, at the discretion of the Superintendent, the material may be accepted and the weight of excess water deduced from the weight of material for which payment is to be made.

Receipts will be issued by the tally clerk for all material accepted at the tip head and payment will be made only for approved material for which receipts have been issued.