SOUTH AFRICAN BUREAU OF STANDARDS

STANDARDIZED SPECIFICATION

for

CIVIL ENGINEERING CONSTRUCTION

MF : BASE

Approved by the COUNCIL OF THE SOUTH AFRICAN BUREAU OF STANDARDS on 20 May 1981

Obtainable from the S A BUREAU OF STANDARDS Private Bag X191 Pretoria 0001 Republic of South Africa

Telegrams : Comparator, Pretoria

Published and printed in the Republic of South Africa by the South African Bureau of Standards

ISBN 0-626-05953-4 Gr 6
SCOPES

1.1 This specification covers the requirements for base for roads, shoulders, footways, and paved areas. It covers the procuring, furnishing, classification, placing, compaction, and finishing of approved natural gravel, stabilised gravel, or crushed stone, and waterbound macadam.

NOTE: The publications referred to in the specification are listed in Appendix A.

2. INTERPRETATIONS

2.1 SUPPORTING SPECIFICATIONS. Where this specification is required for a project, the following specifications shall, inter alia, form part of the contract document:

a) Project specification;
b) SABS 1200 A or SABS 1200 AA, as applicable;
c) SABS 1200 C;
d) SABS 1200 D;
e) SABS 1200 E;
f) SABS 1200 H;
g) SABS 1200 NE.

2.2 APPLICATION. This specification contains clauses that are generally applicable to civil engineering construction. Interpretations of and variations to this specification are set out in Portion 2 of the project specification which precedes this specification in a contract document.

2.3 DEFINITIONS AND ABBREVIATIONS. For the purposes of this specification the definitions and abbreviations given in the applicable of the specifications listed in 2.1(b)-(g) and the following definitions shall apply:

Graded crushed stone and soil base. A base constructed of a graded material that is generally derived from the crushing of unweathered or clean rock, clean boulders, or coarse gravel, and that may include natural fines not derived from the crushing of the parent rock.

Graded crushed stone base. A base constructed of a graded material that is generally derived from the crushing of unweathered quarried rock, clean rock from mine rock dumps, or clean boulders.

Natural gravel base. A base constructed of material obtained by crushing naturally occurring gravel or a mixture of naturally occurring gravel and boulders. (A natural gravel base differs from the graded crushed stone and soil base in that modification by the addition of small quantities of lime or mechanical stabilization by the addition of sand is required to adjust the Atterberg limits of a natural gravel base.)

Single size crushed stone base (waterbound macadam base). A base constructed of material that is generally derived from the crushing of unweathered quarried rock, clean rock from mine rock dumps, or clean boulders, and that has a grading that is nominally of single size.

3. MATERIALS

3.1 CRUSHED AGGREGATE FOR EXCAVATION PURPOSES

3.1.1 Method of Classifying. The provisions of Subclause 3.1.1 of SABS 1200 D shall apply to the method of classifying material excavated from cuts and borrow pits for use in the base.

3.1.2 Classes of Excavation. The provisions of Subclause 3.1.2(a)(1), (b)(1), (c)(1), (d) and (e) of SABS 1200 D shall apply to the classification of material excavated from cuts and borrow pits for use in the base. Material supplied from commercial sources for use in the base will not be classified.

3.2 CRUSHED STONE CLASSIFICATION

3.2.1 Coarse Aggregate. Coarse aggregate shall consist of hard, durable, and sound crushed stone that has the properties set out in 3.3.2 or 3.3.4, as applicable. It shall be free from shale, mica, coal, weathered and decomposed rock, clay, and other deleterious material.

3.2.2 Fine Aggregate. Fine aggregate shall be a product of the crushing process and shall be material passing a sieve of nominal aperture size 2.36 mm. The crusher installation shall be capable of producing graded crushed stone material complying with 3.3.2 except that, where the nature of the rock is such that the material is deficient in fine aggregate, the Engineer may allow the admixture of approved soil fines, crusher fines, or sand, in limited quantities. The total amount of such admixed fines and sand shall in no case exceed 15% by mass of the aggregate.

3.2.3 Combined Aggregate. Combined coarse and fine aggregate shall comply with the requirements set out in 3.3.3.
3.3 PHYSICAL AND CHEMICAL PROPERTIES (See also Subclause 1.2.3 of Section MP of Part 3 of SABS 0120.)

3.3.1 Natural Gravel (Stabilized or Unstabilized). Natural gravel placed in the base shall, after compaction, comply with the applicable requirements other than for grading of SABS 1083 and with the following requirements:

a) The maximum dimension of the gravel shall not exceed two-thirds of the thickness of the compacted layer.
b) The grading limits of the gravel shall conform to the values given in Column 2 or 3 of Table 1, as relevant.

<table>
<thead>
<tr>
<th>Nominal aperture size of sieve, mm</th>
<th>Percentage passing, by mass</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Stabilized</td>
</tr>
<tr>
<td>37,5</td>
<td>85 - 100</td>
</tr>
<tr>
<td>19,0</td>
<td>60 - 100</td>
</tr>
<tr>
<td>4,75</td>
<td>30 - 80</td>
</tr>
<tr>
<td>1,18</td>
<td>16 - 57</td>
</tr>
<tr>
<td>0,30</td>
<td>9 - 36</td>
</tr>
<tr>
<td>0,075</td>
<td>5 - 20</td>
</tr>
</tbody>
</table>

c) The maximum plasticity index (PI) shall be
   1) in the case of stabilized gravel...................... 4; and
   2) in the case of unstabilized gravel.................... 6.

NOTE: Materials derived from weathered basic igneous rock shall not be more than slightly plastic (SP) after stabilization.
d) The minimum CRk at the applicable density specified in 5.4.4 shall be
   1) in the case of unstabilized gravel, 80 %; and
   2) in the case of lime-stabilized gravel, 90 % before stabilization and 120 % after stabilization.
e) The UCS at 7 d for in-place density of cement, lime, or cement/slag stabilized materials shall be
   not less than 1,2 MPa and not more than 5 MPa.

3.3.2 Graded Crushed Stone. The crushed stone placed in the base shall comply with the applicable requirements of SABS 1083 and with the following requirements:

a) The maximum dimension of crushed stone shall not exceed two-thirds of the thickness of the compacted layer.
b) The PI of the crushed stone, determined in accordance with Test Method A20 of TM1 1 shall, in the case of untreated crushed stone and, when relevant, before cement is added, be at least 6.
c) The portion of crushed stone passing a sieve of nominal aperture size 4,75 mm shall conform to the following requirements:
   1) The percentage by mass of soluble salts shall not exceed 0,2 %;
   2) The percentage by mass of magnesium sulphate (as MgSO₄) plus sodium sulphate (as Na₂SO₄) shall not exceed 0,05 %.

3.3.3 Graded Crushed Stone and Soil Fines. Graded crushed stone that is admixed with soil fines shall comply with 3.3.2 and the soil fines shall comply with the following requirements:

a) The liquid limit shall not exceed 25;
b) the PI shall not exceed 6; and
c) the linear shrinkage shall not exceed 3.

3.3.4 Coarse Aggregate for Waterbound Macadam. Coarse aggregate for waterbound macadam shall have been produced from solid hard unweathered rock by crushing and shall

a) have an aggregate crushing value not exceeding 30 % when measured on material crushed to the required size;
b) have a flakiness index not exceeding 35 when measured on the fraction retained on a sieve of nominal aperture size 26,5 mm; and
c) conform to the following proportions:

<table>
<thead>
<tr>
<th>Nominal aperture size of screen (square mesh), mm</th>
<th>Percentage passing (by mass)</th>
</tr>
</thead>
<tbody>
<tr>
<td>75,0</td>
<td>100</td>
</tr>
<tr>
<td>53,0</td>
<td>85 - 100</td>
</tr>
<tr>
<td>37,5</td>
<td>0 - 50</td>
</tr>
<tr>
<td>26,5</td>
<td>0 - 10</td>
</tr>
</tbody>
</table>

3.3.5 Filler for Waterbound Macadam. Fine aggregate used as filler in a waterbound macadam base shall consist of sandy soil, dune sand, or other material approved by the Engineer, which can be vibrated in a dry condition and slushed to fill the voids of the compacted coarse aggregate. It shall have

a) a liquid limit not exceeding 25 %;
b) a linear shrinkage not exceeding 3 %;
c) a PI not exceeding 6; and
d) a maximum size of 4,75 mm, and the percentage of the material passing a sieve of nominal aperture size 0,075 mm shall not exceed 30 %.

3.4 STABILIZING AGENT(S). The requirements of Subclause 3.3 of SABS 1200 ME shall apply.

3.5 WATER. The requirements of Subclause 3.4 of SABS 1200 ME shall apply.

3.6 SELECTION. The requirements of Subclause 3.5 of SABS 1200 ME shall apply.
PLANT
GENERAL. The requirements of Subclause 4.1 of SABS 1200 D shall apply.

COMPACTION PLANT. The requirements of Subclause 4.2 of SABS 1200 D shall apply.

TRANSPORT. The requirements of Subclause 4.3 of SABS 1200 D shall apply.

CONSTRUCTION
PRECAUTIONS. The requirements of Subclause 5.1 of SABS 1200 D shall apply.

EXCAVATION
Cuts. Where base material is obtained from a designated excavation on Site, the appropriate provisions of Subclause 5.2.2 of SABS 1200 D shall apply.

Borrow Pits. Where base material is excavated from borrow pits by the Contractor, the appropriate provisions of Subclause 5.2.2 of SABS 1200 D shall apply.

Overburden. The requirements of Subclause 5.2.3 of SABS 1200 D shall apply.

PROCESSING. The relevant requirements of Subclause 5.3 of SABS 1200 D shall apply.

PLACING AND COMPACTION OF A BASE OTHER THAN A WATERBOUND MACADAM BASE
Placing. Before construction of the base is commenced the Contractor shall ensure that the underlying layer on which the base is to be constructed complies with the requirements of the specification covering that layer.

Gravel
a) Where the base is to be constructed of gravel, the gravel shall be dumped on the road and then spread over the full width of the layer shown on the drawings and to such depth that after compaction the thickness of the layer complies with the specified requirements and the surface of the layer is true to elevation, grade, and cross-section.
b) Oversize material in gravel shall be
   1) broken down on the road; or
   2) bladed off the road during placing and disposed of; or
   3) if so directed, so crushed and screened that, when finally placed, it complies with the applicable grading requirements of 3.3.1.

Graded Crushed Stone and Graded Crushed Stone with Fines
a) Where the base is to be constructed of graded crushed stone or graded crushed stone with fines, the material shall be spread out to a flat-surfaced layer over the full width shown on the drawings and to such a depth that after compaction the thickness of the layer complies with the specified requirements.

Graded Crushed Stone and Graded Crushed Stone with Fines

Compaition
Compaction shall be done at the optimum moisture content for the type of compaction equipment used and as specified in Subclause 5.4.4.1 of SABS 1200 D.

The base shall be compacted throughout to at least the following density:

Surface Preparation
After compaction of a base that has not been stabilized, the surface shall be brushed by spraying it with water and rolling till all excess fines have been brought to the surface and a firm, well knit surface has been obtained. Any areas deficient in fines shall be corrected by brooming in approved fines. All excess fines shall be swept off the surface and the base allowed to dry out.

After compaction of stabilized base, areas deficient in fines shall be corrected by brooming in an approved mixture of fines and stabilizing agent. The layer shall be kept wet as specified in Subclause 5.5.6 of SABS 1200 D for 4 days and primed after the applicable of the following periods:

STABILIZATION. When required in terms of the drawings or the project specification or when ordered, the base shall be stabilized as specified in Subclause 5.5 of SABS 1200 D. The stabilized base shall be compacted throughout to the density specified in 5.4.4.2.
5.6 PLACING AND COMPACTION OF A WATERBOUND MACADAM BASE

5.6.1 General. Before construction of the base is commenced the Contractor shall ensure that the underlying layer on which the base is to be constructed complies with the requirements of the specification covering that layer. The material for the base shall be placed in an area confined on either side to contain the material during the compaction process. The confinement may be achieved with kerbing, edging, concrete structures, or preconstructed shoulders.

5.6.2 Coarse Aggregate. When a nominal thickness not exceeding 150 mm has been specified, the waterbound macadam may be constructed in one layer. When a nominal thickness exceeding 150 mm has been specified, the waterbound macadam shall be constructed in approximately equal layers of thickness not exceeding 150 mm each. The coarse aggregate shall be dumped on the road and spread evenly to such a depth that after compaction the layer will have the specified thickness and shape.

5.6.3 Filler. After the shaped and compacted coarse aggregate layer has been approved, a layer of air-dry filler material of thickness about 20 mm shall be spread evenly over the surface of the coarse aggregate. The layer shall then be rolled with a vibrating roller to work the filler material into the voids of the coarse aggregate. The process of spreading and working in further layers of filler material shall be repeated until no more filler can be worked into the voids in the coarse aggregate.

5.6.4 Slushing and Preparation of Surface. When no more filler can be worked in dry, the layer shall be well watered. Watering, rolling, and sweeping with suitable brooms shall be carried out and extra filler added as necessary, until the voids in the coarse aggregate have been completely filled with filler and a firm base with a closely knit surface is obtained. Free from areas of segregated materials, loose aggregate, and other irregularities. All excess fines shall be swept off, and the base allowed to dry out to present an exposed mosaic of regular stone faces free of fine aggregate and foreign material.

5.6.5 Finish Required. The finished base, ready for the application of the bituminous surface, shall be true to level and cross-section, uniform and smooth, free from corrugations, humps, and depressions, and shaped to within the tolerances specified in 6.1.

5.7 JUNCTIONS WITH EXISTING WORK. At junctions with existing work, the existing work in the vicinity of the joint shall be so cut back as to ensure an overall compacted thickness of new base at the joint of at least 100 mm. (The new base shall not be feathered off to obtain continuity of grade.)

5.8 PROTECTION AND MAINTENANCE. The Contractor shall protect and maintain the completed base. He shall without delay and in such a manner as to ensure an even and uniform surface, repair any damage or defects that may occur. Unless otherwise authorized, no unnecessary construction traffic and no public traffic shall be allowed on any unprinedsed base.

5.9 TRANSPORT

5.9.1 Freehaul. The provisions of Subclause 5.2.5.1 of SABS 1200 D shall apply.

5.9.2 Overhaul. The provisions for truck haul of Subclause 5.2.5.2 of SABS 1200 D shall apply.

6. TOLERANCES

6.1 DIMENSIONS, LEVELS, ETC.

6.1.1 General. Subject to the requirements of Subclauses 6.2 and 6.3 of SABS 1200 M, the dimensions, levels, and smoothness of the base shall conform to the applicable values given in 6.1.2-6.1.6.

6.1.2 Grade. Except where the base is placed against kerbs or channels, the finished surface of the base shall be not more than 10 mm above or 40 mm below the designated grade. Where the base is placed against kerbs or channels it shall be so shaped that a) the height of the edge of completed surfacing above the level of the channel or kerb, as applicable, or, where the water flow is from a dummy channel to the surfacing, below the level of the dummy channel, is 1) 10 mm or less for a base other than a waterbound macadam base; and 2) 15 mm or less for a waterbound macadam base;

b) the tolerances specified for the wearing course can be achieved; and

c) the deviation from the specified grade does not exceed the applicable value given in Table 2.

<table>
<thead>
<tr>
<th>Length of grade measured (m)</th>
<th>Maximum deviation from specified grade, %</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>0.34</td>
</tr>
<tr>
<td>3</td>
<td>0.27</td>
</tr>
<tr>
<td>4</td>
<td>0.21</td>
</tr>
<tr>
<td>10</td>
<td>0.13</td>
</tr>
<tr>
<td>20</td>
<td>0.08</td>
</tr>
</tbody>
</table>

6.1.3 Width. The width of the base shall be not less than the width specified in the project specification or given in the drawings.

6.1.4 Thickness. The average thickness of the base in any length of road, determined from levels taken before and after construction of the base or from test holes, shall be at least the specified thickness, and in no place shall the actual thickness of the base be more than 10 mm less than the specified thickness.
6.1.5 Cross-Section. At any cross-section the actual difference in level between any two points shall not differ by more than 25 mm from the difference in level computed for those points from the cross-sections shown on the drawings.

6.1.6 Smoothness. When a straight-edge of length 3 m is laid on the finished surface parallel with the centre line of the road, the distance between the surface and the straight-edge shall be nowhere greater than 6 mm for a base other than a waterbound macadam base and 10 mm for a waterbound macadam base. Where the base is constructed in two or more layers the distance at any point between the surface of the lower layer and the straight-edge may be up to 20 mm.

6.2 BASE CONSTRUCTED IN LAYERS. Where the base is constructed in two or more layers the requirements for thickness and width specified in 6.1 shall apply to the combined layers as a whole.

6.3 MOISTURE CONTENT AND DENSITY. The provisions of Subclause 6.2 of SABS 1200 D shall apply.

7. TESTING

7.1 GENERAL. The relevant requirements of Clause 7 of SABS 1200 M shall apply.

7.2 PROCESS CONTROL. The testing frequency shall not be less than the applicable frequency set out in Column 2 or Column 3 of Table 3, whichever is the greater.

TABLE 3 - TESTING FREQUENCY

<table>
<thead>
<tr>
<th>Test</th>
<th>Area or volume to which one test is applied, max.</th>
<th>Number of tests per lot, min.</th>
</tr>
</thead>
<tbody>
<tr>
<td>a) Natural gravel, processed gravel, and crushed stone: Density *</td>
<td>1 500 m²</td>
<td>4</td>
</tr>
<tr>
<td>Indicator tests</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1) in road</td>
<td>1 500 m²</td>
<td>2</td>
</tr>
<tr>
<td>2) in stockpile</td>
<td>1 500 m³</td>
<td></td>
</tr>
<tr>
<td>b) Natural gravel and processed gravel: California Bearing Ratio (CBR)</td>
<td>5 000 m²</td>
<td></td>
</tr>
<tr>
<td>Unconfined Compressive Strength (UCS) (cement-stabilized gravels)</td>
<td>5 000 m²</td>
<td></td>
</tr>
<tr>
<td>c) Crushed stone: Aggregate Crushing Value (ACV)</td>
<td>3 000 m³</td>
<td></td>
</tr>
<tr>
<td>Flakiness</td>
<td>3 000 m³</td>
<td></td>
</tr>
</tbody>
</table>

* Although the determination of density implies that one modified AASHTO maximum density determination is carried out for each field density determination, this ratio may, subject to the approval of the Engineer, be decreased to one modified AASHTO maximum density determination for up to four field density determinations when the material is homogeneous.

7.3 ROUTINE INSPECTION AND TESTING

7.3.1 The Contractor shall use the appropriate of the methods given in TMH 1 to check that the materials comply with the applicable of the requirements given in 3.2.1-3.3.5 (inclusive).

7.3.2 Should the average and minimum densities of a lot equal or exceed the applicable values given in Table 4, the lot shall be deemed to comply with the requirements for density.

TABLE 4 - DENSITY OF BASE

<table>
<thead>
<tr>
<th>Specified density (% of modified AASHTO maximum density)</th>
<th>Number of tests per lot</th>
<th>Minimum average density, %</th>
<th>Minimum density for any single test, %</th>
</tr>
</thead>
<tbody>
<tr>
<td>98 (unstabilized)</td>
<td></td>
<td>98,3</td>
<td>95,3</td>
</tr>
<tr>
<td></td>
<td></td>
<td>98,3</td>
<td>95,3</td>
</tr>
<tr>
<td></td>
<td></td>
<td>98,8</td>
<td>94,9</td>
</tr>
<tr>
<td>97 (stabilized)</td>
<td></td>
<td>97,5</td>
<td>93,3</td>
</tr>
<tr>
<td></td>
<td></td>
<td>97,7</td>
<td>93,4</td>
</tr>
<tr>
<td></td>
<td></td>
<td>97,8</td>
<td>93,3</td>
</tr>
</tbody>
</table>

7.4 STABILIZATION. The relevant requirements of Subclause 7.3 of SABS 1200 MK shall apply.
8. MEASUREMENT AND PAYMENT
8.1 BASIC PRINCIPLES. The basic principles given in Subclause 8.1 of SABS 1200 ME shall apply to the base.

8.2 COMPUTATION OF QUANTITIES
8.2.1 The provisions of Subclause 8.2 of SABS 1200 ME shall apply to the base, subject, in the case of waterbound macadam, to the relevant requirements of 8.2.2.

8.2.2 Waterbound Macadam
8.2.2.1 The volume of the waterbound macadam and filler will be computed from the width shown on the drawings or ordered, the length and, subject to the provisions of 8.2.2.2 and 8.2.2.3, the actual compacted depth.

8.2.2.2 The Engineer may accept any thickness of waterbound macadam in excess of the specified total thickness but no measurement or payment will be made for any material placed that is more than 15 mm in excess of the specified total thickness (i.e. not more than 165 mm or 215 mm for specified thicknesses of 150 or 200 mm respectively).

8.2.2.3 Material added to filler will be measured at the point of delivery on the road by mass (in tons) in the case of cement and slaked lime and by volume (in cubic metres) in the case of other fine material, and only that amount actually added and accepted will be measured for payment. No account will be taken of any material added in excess of that ordered or approved.

8.3 SCHEDULED ITEMS
8.3.1 Construct base with gravel material from borrow pits ........................................... Unit: m³
Separate items will be scheduled for designated borrow pits and borrow pits to be located by the Contractor. (See 8.3.10 for opening up and rehabilitation.) The provisions of Subclauses 8.3.1 and 8.3.2 of SABS 1200 ME shall apply to the base, subject, in the case of waterbound macadam, to the relevant requirements of 8.2.2.

8.3.2 Construct base with material from designated excavations
a) Excavate from designated excavations, select, and stockpile for base ....................... Unit: m³
b) Construct the base with material from the stockpile and compact to modified AASHO maximum density as specified in 5.4.4.
1) Gravel material ........................................... Unit: m³
2) Graded crushed stone .................................... Unit: m³
3) Graded crushed stone and soil fines ................................ Unit: m³
The relevant provisions of Subclauses 8.3.2 and 8.3.3 of SABS 1200 D shall apply to the rate for (a) above.
The rate for (b) shall cover the cost of basic selection, loading from stockpiles, transporting, watering, compacting, final grading, complying with the tolerances, and testing, all in accordance with the requirements of the specification.

8.3.3 Construct base with material from commercial sources or designated borrow areas
Compact material to modified AASHO maximum density as specified in 5.4.4.
a) Gravel material ........................................... Unit: m³
b) Graded crushed stone .................................... Unit: m³
c) Graded crushed stone and soil fines ................................ Unit: m³
The rate shall cover the cost of locating the source, complying with all the relevant precautions required in terms of 5.1, procuring the material, basic selection, transporting from source to point of deposition on the road, spreading, watering, compacting, final grading, complying with the tolerances, and testing.

8.3.4 Extra over 8.3.1 and 8.3.2, as applicable, for class of excavation
a) Intermediate excavation .................................. Unit: m³
b) Hard rock excavation ..................................... Unit: m³
c) Boulder excavation Class A .............................. Unit: m³
d) Boulder excavation Class B .............................. Unit: m³
Each rate shall cover the additional costs applicable to the relevant class of excavation (see 3.1).

8.3.5 Process base material by the following processes, as relevant, and use in base (applicable to 8.3.1 or 8.3.2, or both)

a) Screening .................................................. Unit: m³
b) Heavy grid rolling ......................................... Unit: m³
c) Mechanical modification ................................. Unit: m³
d) Stabilization ............................................... Unit: m³
In the case of mechanical modification no allowance will be made in measurement for any reduction in volume of the combined mixture over that of the individual materials compacted to the specified density.
The rates shall cover the additional costs of processing the material in accordance with the relevant specified or ordered method. In the case of stabilization the rate shall not cover the supply of the stabilizing agent (see 8.3.35). The terms of Subclauses 8.3.5(b) and 8.3.5(c) shall apply.

8.3.6 Screening plant/crusher plant (provisional). The terms of Subclause 8.3.6 of SABS 1200 ME shall apply.
8.3.7 Screed-out material not used in base. The terms of Subclause 8.3.7 of SABS 1200 ME shall apply.
8.3.8 Stabilizing agent. The terms of Subclause 8.3.8 of SABS 1200 ME shall apply.
8.3.9 Overhaul. The terms of Subclause 8.3.9 of SABS 1200 ME shall apply.
8.3.10 Borrow pits
a) Opening up ................................................. Unit: Sum
b) Rehabilitation ............................................. Unit: Sum
The terms of Subclause 8.3.10 of SABS 1200 D shall apply.
8.3.11 Waterbound macadam
a) 150 mm thick ................................................................. Unit: m³
b) 200 mm thick ................................................................. Unit: m³
The rate shall cover the cost of
1) supplying, loading, transporting, off-loading at the site of placing, placing, spreading, shaping, levelling, and compacting the coarse aggregate;
2) supplying, loading, transporting, off-loading at the site of placing, placing, spreading, and working in the filler (see 8.3.12 for material added to the filler);
3) supplying, transporting, and applying the water; and
4) slushing, sweeping and preparing the final surface of the layer to the stage where it is ready for the construction of the bitumen surface.

8.3.12 Material added to filler
a) Cement ................................................................. Unit: t
b) Slaked lime ................................................................. Unit: t
c) Other fine material ........................................................... Unit: m³
The rate shall cover the cost of supplying, transporting from the point of supply to the point of off-loading at the site of placing, storage, placing, spreading, and mixing with the filler.
APPENDIX A. APPLICABLE STANDARDS

Reference is made to the latest issues of the following publications:

<table>
<thead>
<tr>
<th>SABS 1083</th>
<th>Aggregates from natural sources</th>
</tr>
</thead>
<tbody>
<tr>
<td>SABS 1200 A</td>
<td>Civil engineering construction: General</td>
</tr>
<tr>
<td>SABS 1200 AA</td>
<td>Civil engineering construction: General (small works)</td>
</tr>
<tr>
<td>SABS 1200 C</td>
<td>Civil engineering construction: Site clearance</td>
</tr>
<tr>
<td>SABS 1200 D</td>
<td>Civil engineering construction: Site clearance (roads, subgrade)</td>
</tr>
<tr>
<td>SABS 1200 E</td>
<td>Civil engineering construction: Site clearance (roads, subgrade)</td>
</tr>
<tr>
<td>SANS 1200 F</td>
<td>Standard methods of testing road construction materials</td>
</tr>
<tr>
<td>SANS 0120</td>
<td>Code of practice for use with standardized specifications for civil engineering construction and contract documents</td>
</tr>
</tbody>
</table>

Part 3: Guidance for design, Section MF

ISBN 0-626-05933-4