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VOLUME 4

GUIDELINE ON CONTRACTING OF ROUTINE ROAD MAINTENANCE

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GUIDELINE ON CONTRACTING OF ROUTINE ROAD MAINTENANCE

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CONTRACTING OF ROUTINE ROAD MAINTENANCE

1. Preamble

The Government of the Republic of Namibia (GRN), through its Ministry of Works, Transport and Communication (MWTC) has commissioned the Swedish Consultants KM International AB to undertake a National Transportation Master Plan Study (NTMPS). The preparation of tools to be used by the Roads Authority for contracting of road works is one of the tasks of the Study.

The new Roads Authority is expected to contract with publicly owned operators for undertaking road construction and maintenance. Based on the current procedures made used by the Ministry, the Consultant shall design all the instruments and procedures required by the Roads Authority for contracting for such works. Efforts should be made to facilitate the use of labour-based methods when warranted from a cost-effectiveness point of view.

This draft guideline which deals with contracting of routine road maintenance has been prepared in co-operation between the Consultant and the Department of Transport of the Ministry of Works, Transport and Communication.

2. Purpose of this guideline

The purpose of this guideline is to provide advice and support to the Roads Authority and its appointed consultants for preparation of tender documents, and for the efficient administration and management of routine road maintenance by contract. It can also be used as an instrument for development and training of contractors.

The guideline is focused on contracting of routine road maintenance and covers

- the main principles for contracting
- General Conditions of Contract
- Standard Specifications
- Tender Documents
- Illustrating Samples

3. Main principles of the contract models

3.1 Structure of the system

The various maintenance activities to be carried out under contract are well known and established by the existing DOT organisation. It is envisaged that this organisation will continue doing the same tasks although under other regimes and principles more similar to those of the private sector. A Roads Contractor Company will be formed on the basis of the present executing organisation of the DOT. Private contractors, more or less experienced in road maintenance, are expected to take part as before or enter the scene. It is therefore necessary to create a practical contracting system which is simple enough but which clearly defines responsibilities, liabilities and the types of activities to be done. Furthermore, the technical requirements need to be specified.

At the outset of operations within a contract based road maintenance system there will probably be shortcomings which should be considered before embarking on the new system. After the implementation of the new system further shortcomings could also be experienced. The following should be taken into account:

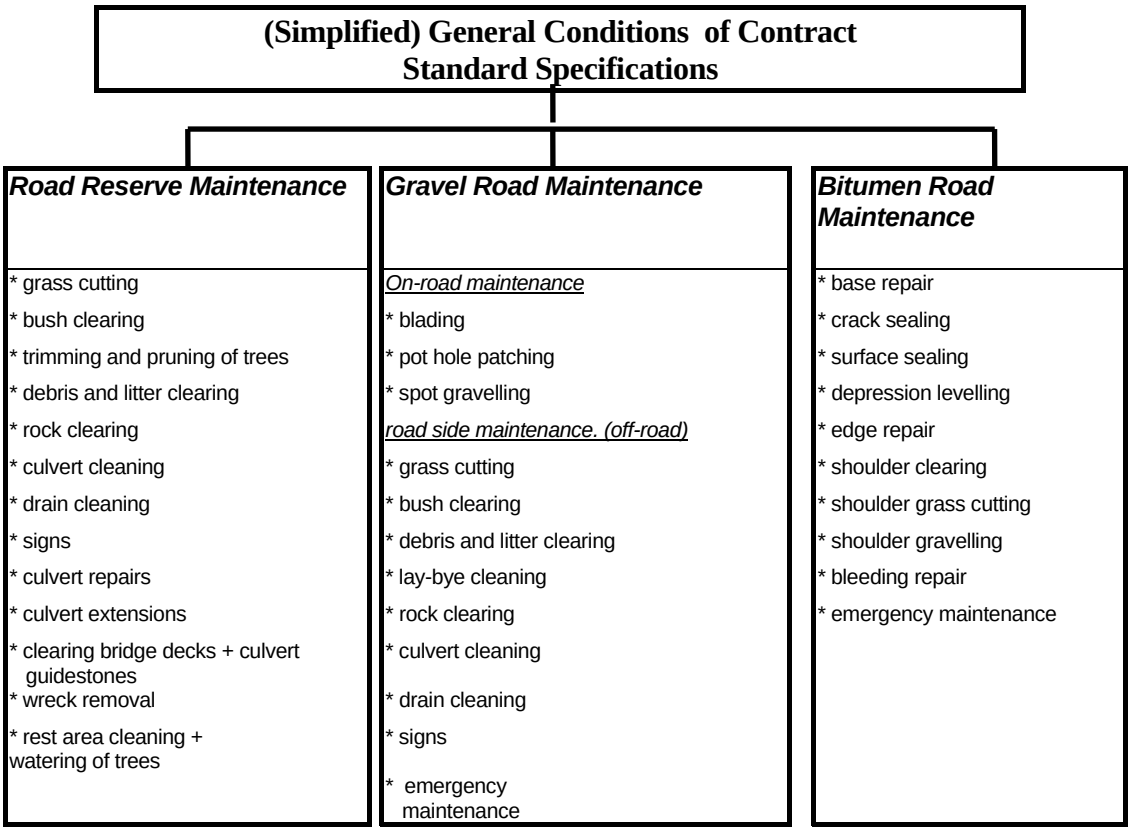
- The new Roads Contractor Company has limited experience from pre-calculation of costs associated with different maintenance activities;
- The small contractors which may opt for contract works have limited experience in road maintenance and the costing thereof;
- Cost consciousness may be limited at both of the mentioned actors;
- A certain period of ”learning” should be catered for in the transition between direct labour and contract works;
- Even in industrialised countries there are problems associated with maintenance contracts based on functional requirements. A private contractor is primarily interested in making money, not in providing a service which is based on requirements open for mis-interpretation;

The above-mentioned suggests that the Roads Authority should rather begin the transition to routine road maintenance through contracts based on unit prices and measured quantities. Routine road maintenance based on functional requirements must be seen as a long term target, commensurate with the experience gained and level of sophistication achieved by the new contractors entering the market.

Based on the current practices which appear sound the main structure of the system for contracting of routine road maintenance shown in Figure 3.1 overleaf has been developed.

It is expected that the model for gravel road maintenance will be commensurate with the existing contracts for blading which normally include most of the activities listed in the box in the middle of Figure 3.1.

Figure 3.1. Main contents of recommended contract models



Since only a few of the activities listed in the left box concerning road reserve maintenance will apply to gravel roads, specific contracts for road reserve maintenance are normally expected only to be used for bitumen roads. For gravel roads it seems practical to combine the road reserve maintenance with the maintenance of the gravel road pavement.

For bitumen roads which are normally maintained by equipment-based methods it seems more natural to apply a separate contract for the on-road maintenance of the road (*i.e.* roadway and side slopes), and another for the road reserve. This would facilitate the development of local small contractors using labour-based methods for the maintenance of the road reserve. In sparsely populated areas however the two contract models would be combined also for bitumen roads.

3.2 Measurement and payment methods

Maintenance activities that can be described by a functional requirement should be paid as a lump sum per year (in periodic payments) for fulfillment of the function. For other activities payments are made for actual work in accordance with work orders and at tendered or agreed unit prices.

The contract models should also include daywork schedules for equipment, materials and labour (for instance for emergency and other unplanned activities). The schedules should also include rough estimated quantities for dayworks so that those costs are included in the tender sum. This will make overpricing of the items in the daywork schedules less attractive.

3.3 Contract management and supervision

There are limited resources available for the management and supervision of contracts for road maintenance in the existing DOT organisation. The existing staff with the appropriate experience and interest should be regarded as a valuable asset in the process of change from direct labour to contract works. A suggestion which should be considered is to engage such staff on both sides, *i.e.* Employer and Contractor, over a period of time which could range from three to five years. This would primarily apply to the Roads Contractor Company but could also involve new small private contractors which need to be trained.

In the beginning of the transition period contracts should normally be based on unit prices which could initially be pre-set by the Employer and the contractors could compete on the basis of price adjustment factors.

4. General Conditions of Contract

4.1 Introduction

Several successful General Conditions of Contract (GCC) have been prepared by the engineering profession, based on experience gained over decades by both employer and employee in the contracting business. Whereas earlier GCC allocated more powers to the employer, more recent versions require the impartiality of a third party; in respect of roads normally the Engineer. As the construction industry became more sophisticated, with more professional personnel entering the industry, it also became more independent. The principles of equity became important as employers started to rely more on the *bona fides* of contractors and accepted that risk has a monetary value. The latest GCC hence allows the contractor more power and freedom.

In Namibia the CSRA GCC have been widely used and accepted by all parties. However in the "new" South Africa, where it originated from, the construction industry perceive it as being biased towards the employer and it is consequently not being used anymore. The SAICE GCC (6th edition 1990), sometimes with a number of amendments to bring it more in line with the CSRA GCC, are

presently being used in South Africa. A new document called the COLTO (Council of Land Transport Owners) GCC has been drafted and approved by SAFCEC (Contractor's Federation), SAICE (Engineer's Institute), Roads Authorities and legal drafters. This GCC will be used by the rural roads fraternity in the RSA as from 1998. The present CSRA Standard Specifications have also been amended (eg section on rehabilitation included, road sign section rewritten for the use of the new road signs, etc) and will in future be used under the COLTO banner in the RSA. *When available the COLTO GCC will be scrutinised by the Consultant and compared with the FIDIC GCC, for use on investment and periodic maintenance projects.* The CSRA Standard Specifications or its successor, the COLTO Standard Specifications, make use of several cross-references to its respective GCC. Since the COLTO Standard Specification will by far be the most appropriate for large Namibian contracts, the COLTO GCC could be the logic choice for periodic maintenance and investment projects.

The mentioned GCC however were all prepared for large sized projects and are cumbersome to adapt and use for smaller scale routine maintenance projects. The simplified Conditions of Contract in the Sample Bidding Documents for "Smaller" Contracts (SDB-SC) of the World Bank might even be too detailed.

Where major projects are co-financed (grant or loan) by international funding organisations, conditions such as FIDIC, that of the EU, the World Bank or the ADB will most probably be prescribed. Any of these could be implemented successfully if the COLTO or FIDIC GCC is not found acceptable. The objective of this section is hence to focus on and investigate which minimum conditions would be required to successfully outsource routine maintenance.

4.2 Purpose of the General Conditions of Contract

The GCC defines the relationship between the owner, contractor and supervisor. As such it prescribes the requirements, responsibilities and liabilities of the owner and the contractor and the functions and duties of the supervisor. One of its most important functions is to bind the contractor to fulfil his/her obligations - to complete the works within the specified time-frame and quality standards - to such extent that the judiciary, if so required, can enforce the successful completion of the project. The common and civil laws of a country overrides the GCC, but are too generalised and cumbersome to study and be applied on its own. The enforcement of technical specifications would be difficult, if not impossible, without the use of at least the minimum of conditions of contract.

The GCC allocates risk between the parties to the contract, which has a direct influence on the contract price.

In general the purpose of the GCC would be to cover the following aspects:

- Relationship between parties

- Description of general obligations, including workmanship
- Time-frame
- Variations of work (procedures and methods)
- Payment
- Resolving of disputes

The World Bank's GCC, as found in the SDB-SC document, are structured along the five major headings: General, Time Control, Quality Control, Cost Control, and Finishing the Contract, which are covered by the abovementioned.

The Department of Transport and Public Works of the Gauteng Provincial Government (RSA) recently compiled a sample tender document for smaller works (for both building and civil works, including roads) under their Small Emerging Contractor Development Programme. The eleven headings under which this document is structured, when combined, are also directly related to the six headings listed above.

4.3 Risk

The tendering process is one of balancing quantifiable risk against price. The understanding of the risk and its probability to occur is essential to its pricing. Unambiguous, concise conditions of contract that give a clear picture of the division of responsibility between parties, form the basis of a successful contract. Risks should therefore as far as is possible be identified and allocated between the parties in the contract document.

It is better to compensate a contractor when an uncertainty occur than to expect of him to tender therefor. Due to economies of scale, for example, it would be unfair to a contractor to arbitrarily reduce the value of work by a large margin. The contractor will identify such possibility as a risk. It is not in the interest of the employer to be "protected" too much, at a price presumably, if the probability of a risk to occur is low, or when it could be prevented through proper planning.

The phrase "or as decided by the engineer" is a further example of risk to the contractor and should be avoided in conditions and specifications where possible.

Another example is the use of too many lump sums, which entails that the designer devolves his responsibility to the contractor.

4.4 Standardisation

For a small project the temptation exists to combine the standard or general conditions of contract with the project-specific so-called special conditions of contract. In principle, however, the GCC should be kept separately to allow for calling for tenders on short notice. While the appointed consultant or staff of the Road Authority responsible for tenders could then only focus on project-related issues in preparing the tender documentation, prospective tenderers will also with time learn to know the contents of the standard documents and will accordingly only need to read and focus on the project-related sections of the tender.

Contractors could in addition adjust their costing systems to produce costs structured in accordance with standardised practise (and pay items in the schedule of quantities of the standard specifications). Standardisation thus promotes the generation of standardised rates for specific payment items, which protects both the employer and the contractor during the tender evaluation phase in that drastic deviations could be detected easily and either explained, balanced or rejected.

Small contractors will hopefully with time and within the declared objectives of the government, in future slowly develop into medium and larger sized contractors. It would hence be appropriate to establish a culture of proper structuring of contract documents at an early stage, in this case for the small-scale projects. The SDB-SC Conditions of Contract for example are complemented by Contract Data (time, money, thresholds) which serve a similar purpose to that of the Appendix to Tender normally included with the Tender Forms. Such data should be retained under the latter, if only to standardise.

Another way of standardisation is to prepare documentation commensurate with the level of sophistication required in the execution of a project and in accordance with the cost of plant and materials required therefor, if any. This also applies to the sophistication of the grammar used. Concise and clear sentences should as far as possible be used in general, but the more so in the case of small routine maintenance contracts.

4.5 Contents of the General Conditions of Contract

4.5.1 General

The more than 70 clauses found in the CSRA and FIDIC GCC, and the 62 clauses of the SAICE GCC are voluminous and difficult for the layman to comprehend and an appreciable portion thereof will in its present form most likely never be applicable to the small routine maintenance contracts. Where it

might in principle be applicable, it will probably have to be amended in one or other fashion to allow for the unsophisticated terminology which is envisaged for routine maintenance contractors. Even the World Bank's GCC for "Smaller Contracts" contains a total of 62 clauses which, although in a more clear and straightforward language, is still considered too bulky for small routine maintenance contracts. The same applies to the Gauteng GCC for small works with its 120, albeit shorter, clauses.

The creation of the Road Authority and Roads Contractor Company is *inter alia* based on the objective to stimulate the creation of small-scale contractors. Capacity building will hence be a priority for a number of years before contractors would have adequate experience in costing, pricing, tendering and quality assurance.

The initiation of this process under a long term lump sum tendering system would place the new contractor at risk and indirectly the employer, since the objective of capacity building would be jeopardised. The use of unit prices, initially pre-determined by the Road Authority, followed by an allowance for the factorising thereof to better suit the contractor's particular cost structure in a second contract, is rather recommended for the interim years. The GCC should hence allow for both unit price and lump sums, but much less of the latter initially. However, once contractors understand the level of risk involved in repetitive maintenance work, lump sum contracts become attractive from a documentation, supervision and administration point of view.

4.5.2 Gravel Road Routine Maintenance

The tender documents prepared and used thus far for blading of roads have been based on a simplified CSRA GCC (32 clauses). The high capital layout required in this case places the tendering for this activity out of reach of the very small contractor, and justifies a sophisticated GCC like that presently in use. On - road activities for gravel roads like pothole patching and spot gravelling are included in the Gravel Road Maintenance model outlined in Figure 3.1 above. Compaction of gravels normally require additional motorised equipment for long distance hauling of gravel, hauling of water, compaction, etc, which would increase the high capital layout for the activities under this model.

For this model it is therefore recommended to continue with the present system whereby contracts are based on a simplified CSRA GCC. The contents of these Conditions of Contract cover all aspects considered necessary for the Gravel Road Maintenance model in general and is also very much in line with the clauses of the World Bank's SDB-SC General Conditions of Contract. The amendments suggested for the current Contract No F1/10/2-41/96 in Annexure 7.1 should however be considered.

4.5.3 Bitumen Road Routine Maintenance

4.5.3.1 General

The level of sophistication of skills and equipment required for bitumen road routine maintenance in general is considered to be on the same level as for gravel road routine maintenance. This work could however also be done with very simple hand tools. The Ministry has already instructed Bicon Consulting Engineers to prepare tender documents for road maintenance using labour-intensive techniques. This study will therefore concentrate on a GCC commensurate with motorised hand tools (for breaking, mixing, compacting, etc) and heavier equipment such as a truck (± 5 tonne), heavy duty trailer and water tanker.

It is accepted that during the initial transfer of work from own forces (GRN) to the Roads Contractor Company and eventually to the private sector (future small contractors) the emphasis in the management and control of work will change

* from method specification to end specification;
* from regular supervision and instructions to irregular supervision and less instructions;
* from unit rate and detailed measurement of work to lump sum payment and controlling on a macro scale of only the level of service;
* from no insurance to all-inclusive insurance policies; etc.

The appropriate GCC for Bitumen Road Routine Maintenance should therefore be simple, but without forfeiting obligations and liabilities and allowing for initial guidance and instructions, especially in terms of the setting of priorities in maintenance activities.

4.5.3.2 Current Documentation

The Draft BMU (Bitumen Maintenance Unit) Tender Documentation prepared by Bührmann & Partners Consulting Engineers is the first compiled in Namibia for contracting of bitumen road maintenance work. The document has however not been finalised and put into practise yet. The Conditions of Contract are structured along seven headings, *viz*:

- Citizenship
- Employment and labourers
- Instructions by the Supervisor
- Measurement and payment for completed work
- Work
- Duration of contract
- Insurances and indemnities.

4.5.3.3 Proposed Amendments to Current Documentation

Although most of the aspects mentioned in section 4.2 above were covered or touched upon, the following issues should be amended or added:

- Restructuring of the clauses along the basic contents of a GCC in chronological order, as stated in section 4.2 above.
- Regulation of camp sites, where required, and cleaning thereof at de-establishment.
- Safety of traffic and pedestrians
- Handling of delays (penalty; bonus)
- Quality assurance of materials
- Contractor's supervision and lines of communication
- Working hours
- Subcontracting
- Work programme
- Retention monies
- Variations of work, Daywork and Extra Work.
- Claims and dispute resolution procedures.

4.5.3.4 Recommended General Conditions Contract

A draft contract document for the Bitumen Road Routine Maintenance model outlined in Figure 3.1, inclusive of a GCC, has been developed by the Consultant and is attached hereto in Annexure 7.2.

4.5.4 Road Reserve Maintenance

The activities under this maintenance model lend themselves well to labour - based work. In certain areas in Namibia however grass responds quickly to rains and will outgrow the cutting thereof using slow labour-intensive techniques. This would create a traffic safety hazard for months, which would be unacceptable. It should therefore rather be considered to contract grass cutting on its own, or combine it with the Bitumen Road Routine Maintenance model.

The GCC needed for grass cutting could be very similar to that proposed for Bitumen Road Routine Maintenance. A contract document for labour-based work will be prepared by a separate consultant.

5. Standard Specifications

The purpose of the Standard Specifications is to provide a rational instrument to be used as a norm for each one of the three contract models depicted in figure 3.1.

For gravel road maintenance the current contract document for blading contracts is recommended. Additional specifications to cover other activities to be performed in the road reserve can be supplemented in the Project Specifications only to include project-related requirements.

For bitumen roads a new version of Standard Specifications has been developed by the Consultant. The Standard Specifications are based on the Bitumen Road Maintenance Manual, First draft, August 1992, issued by the Ministry of Works, Transport and Communication (MWTC).

Bitumen routine road maintenance includes activities within the roadway or carriage-way. The roadway is the width between the outer shoulder breakpoints. For instance, the roadway width is 9.8 m on a road with a carriageway of 6.8 m and shoulders of 1.5 m. However, activities related to road signs, road feature markers and guardrails, normally within a width of 5.0 m each side from the shoulder breakpoint, are included in a bitumen routine road maintenance contract. The Project Specifications may define different widths.

A draft version of Standard Specifications for Bitumen Road Routine Maintenance is contained in the contract document appended hereto in Annexure 7.2. These Standard Specifications must be read in conjunction with the aforementioned manual.

A separate consultant will develop Standard Specifications for Labour-based Road Construction and Maintenance. Since maintenance of the road reserve is often suited for labour-based methods no separate Standard Specification for the road reserve maintenance will be developed as part of this Study.

6. Contract Document (Project document)

A typical contract document would consist of the following sections:

- Tender Notice
- Tender Rules
- General Conditions of Contract
- Special Conditions of Contract
- Standard Specifications
- Project Specifications
- Schedule of Quantities
- Forms to be completed by the Tenderer
- Form of Agreement
- Forms of Bid and/or Performance Bond
- Locality Plan
- Drawings

Apart from the General Conditions of Contract and Standard Specifications discussed above, the Consultant also prepared other typical sections to present a fairly complete contract document, attached hereto in Annexure 7.2. These sections are very much based on the current high standard contract documents presently in use in the Department of Transport for investment and rehabilitation projects.

Annexure 7.1 Clauses proposed to be amended in the General Conditions of Contract for the current blading contract, to be used in the contract documents for the Gravel Road Routine Maintenance Model

Annexure 7.1

Clauses proposed to be amended in the General Conditions of Contract for the current blading contract to be used in the contract documents for the Gravel Road Routine Maintenance Model

The following GCC amendments are suggested for the current blading contract, Contract No F1/10/2-41/96:

(a) The additional powers given to the Engineer by the Employer to *"vary the **nature** and **extent** of the work"* could be misused if not specified or limited, since it would make it impossible for the Contractor to submit a serious tender for this very high risk [Clause 2.5 (a)].

(b) Also the Engineer's power to *"**exclude** from the Site any person employed thereon to whom he may **reasonably take exception**"*, without limiting or defining the latter in more detail, could be a risk to the Contractor of unfair treatment of his/her personnel, should personalities clash [Clause 2.5(d)].

(c) The Engineer and Employer shall not be *"**liable for any damages** that might arise"* when the Contractor's operator is unavailable *"because of unforseen circumstances"*, and the Engineer is then entitled to make use of a *"competent operator"* in cases where the equipment is *"urgently needed"*. Even a perceived competent operator can cause damage to equipment, like in an accident, especially when not accustomed to a specific machine. The Employer cannot be exempted from its liabilities in such a case, and the clause should be amended from an equity point of view. The contract also accepts leased equipment, which belongs to a third party, which would complicate exemption from such liability [Clause 18].

(d) Approval must be sought to service plant during normal working hours. *",which shall not be unreasonably withheld."* could be added from an equity point of view. [Clause 21.1].

(e) The four sub-clauses under Clause 23 could be replaced by one or two sentences stating that plant should be licensed and used in accordance with existing legislation in force in Namibia. It is also not reasonable to hold the Contractor liable for the cost implications of statutory changes in law or regulations announced after award of tenders, as stipulated in the last paragraph. It should be revised [Clause 23].

(f) The Engineer's Representative has the *"right to reduce the number of hours recorded"* if in his *"opinion"* the plant has not worked at *"maximum capacity"*. Plant cannot work constantly at maximum capacity, and how such maximum will be determined is not clear. Reference to either published data, or minimum production rates in the Standard Specification should be made. [Clause 24.3].

(g) Sub-clauses 26.1 and 26.2 are very confusing and need to be rewritten [Clause 26]. The same argument applies to Clause 28.1 [Clause 28].

(h) The route of mediation and councilling is considered the correct route to follow as dispute resolution procedure. The role and function of the mediator to also act as adjudicator must however be clearly defined. (The World Banks SDB-SC GCC prefer the services of an Adjudicator, who normally is a judgement maker, and would make a judgement on some or other aspect as required, for example which is right, which is the best, which is worst, etc. A mediator is per definition a persuader who would intervene to seek a compromise to resolve a dispute between disagreeing parties).

The allowance for legal representation in the mediation process should be avoided if the aim of mediation is to solve problems before they become disputes, and if disputes occur to keep them out of the court of law. Any government as employer is financially much stronger than its smaller contractors. No small contractor can afford the escalating legal cost involved in a case drawn out over a long period of time. Such manipulation is possible within the common law.

The reference in the heading to *"Arbitration"* is wrong and must be deleted. (Litigation and formal arbitration are time-consuming and expensive processes governed by laws, and should be avoided for all types of small contracts). The words *"and in any such case"* in the fifth last sentence of clause 27.1 are confusing and should rather be deleted as well. [Clause 27].

(i) An upper limit for the rate tendered for establishment on site should be introduced. This is necessary to prevent unbalanced rates, aimed at receiving up-front payments [Clause 28].

(j) The basis for the determination of the coefficients in the Contract Price Adjustment formula is unknown. A realistic calculation indicates that the contractor would be compensated only about 50% of the real cost of inflation on plant and labour (profit and fuel costs excluded) when the formula is used. The formula must be checked and amended to better reflect actual cost fluctuations. [Clause 29].

(k) A clause on variations (from the Schedule of Quantities in the Tender) and on quality of work is required. It must be explained how these issues will be dealt with under the contract.

Annexure 7.2 Model Contract Document for Bitumen Road Routine Maintenance

CONTENTS

STANDARD SPECIFICATIONS FOR BITUMEN ROAD ROUTINE MAINTENANCE

1. GENERAL

1.1 Introduction

The Standard Specifications are based on the Bitumen Road Maintenance Manual, First draft, August 1992, issued by the Ministry of Works, Transport and Communication (MWTC). These Standard Specifications must therefore be read in conjunction with the manual.

Bitumen routine road maintenance includes activities within the roadway. The roadway is the width between the road shoulder breakpoints. For instance, the roadway width is 9.8 m on a road with a carriageway of 6.8 m and shoulders of 1.5 m. However, activities related to road signs, road feature markers and guardrails, normally within a width of 5.0 m each side from the shoulder breakpoint, are included in a bitumen routine road maintenance contract. The Project Specifications may define different widths.

1.2 Definitions and terms

The following terms, words or expressions are not complete, but cover the most important and generally used terms, words or expressions in the specifications. The following terms, words or expressions shall have the meanings hereby assigned to them.

.1 Asphalt surfacing

The layer or layers of asphalt constructed on top of the basecourse or bitumen seal.

.2 Basecourse

A layer of material constructed directly below the bitumen seal or asphalt surfacing.

.3 Borrow area

An area within designated boundaries, approved for the purpose of obtaining borrow material. A borrow pit is the excavated pit in a borrow area.

.4 Borrow material

Any gravel, sand, soil, rock, or ash obtained from borrow areas, dumps or sources other than cut within the road prism, and which is used in the construction of the works. It shall not include crushed stone obtained from commercial sources.

.5 Carriageway

The surface normally traversed by vehicles and which consists of one or a number of traffic lanes, including auxiliary lanes and shoulders.

.6 Lane

Part of a travelled way intended for a single stream of traffic in one direction, which has normally been demarcated as such by road markings.

.7 Median

The area between the two travelled ways of a dual carriageway, excluding the inner shoulders.

.8 Pavement layers

The upper layer of the road comprising the selected layers, subbase, basecourse and shoulder layers.

.9 Project specifications

The specifications relating to a specific project, which form part of the contract documents for such project, and which contain supplementary and/or amended specifications to the standard specifications.

.10 Road reserve

The entire area included by the boundaries of a road as proclaimed.

.11 Bitumen Seal

The application of one or more layers of bituminous binder with or without layers of crushed stone or sand in successive layers on the carriageway , shoulders or on any other compacted layer on which movement of traffic takes place.

.12 Utility Services

Cables, pipes or structures to provide inter alia , conduits for electricity, telephone and telegraph connections, water, sewage, etc.

.13 Side drain

An open longitudinal drain situated adjacent to and at the bottom of a cut or fill slope.

.14 Shoulder

The area between the outside travelled way and the shoulder breakpoint.

.15 Shoulder breakpoint

The line along which the extended flat planes of the surface of the shoulder and the outside slope of the fill and pavement intersect.

.16 Stabilisation

The treatment of the materials used in the construction of the roadbed, fill or pavement layers by the addition of a cementitious binder such as lime or Portland cement, a bituminous binder or the mechanical modification of the material through the addition of a soil binder.

.17 Spoil (material)

Material originating from construction operations and which is not utilised for road construction purposes.

.18 Subbase

The layer of material on top of the selected layers or fill and below the basecourse and shoulders.

.19 Travelled way

That portion of the carriageway which includes the various traffic lanes but exclude the shoulders.

1.3 General Requirements and provisions

.20 Programme

Due to the nature of maintenance work, items of work shall be carried out as a matter of routine. In certain cases of emergency, the Contractor will be called upon to do remedial work at very short notice in which case the Contractor shall proceed to carry out the work without delay and report to the Supervisor in writing as soon as practically possible the extent of the work carried out.

Apart from emergency work and items of work ordered by the Supervisor from time to time, the Contractor shall in terms of Clause C 1.1 of the General Conditions of Contract submit to the Supervisor for his approval a programme showing the order of procedure and method in which he proposes to carry out the maintenance activities which are of routine nature.

The Supervisor shall include in the contract document a description of the road(s) to be maintained and provide for each road approximate quantities for items of works which are of a routine nature.

If during the progress of the work the sequence of operations is altered, or if the programme is deviated from in any other way, the Employer may, without prejudice to his rights in terms of Clause C 1.2 of the General Conditions of Contract, require the Contractor to submit, within fourteen days of the date on which he has received a notice to this effect, a revised programme in terms of this Clause, which indicates the manner in which the Contractor undertakes to complete the works within the required time. Any proposal in the revised programme to accelerate the rate of progress shall be accompanied by positive steps to increase production by more and/or better labour, equipment provided to the site or by the available labour and equipment being utilised more effectively.

.21 Workmanship and quality control

It is the responsibility of the Contractor to produce work which conforms in quality and accuracy to all the requirements of the specifications and to the satisfaction of the Supervisor, and the Contractor must institute a quality control system.

The Contractor shall determine his own frequencies at which quality or process control tests are to be undertaken. The Supervisor will, however, undertake acceptance control tests for the judgement of workmanship and quality of products without accepting any responsibilities vested with the Contractor in terms of the contract.

.22 Measurement

.22.1 Schedule of Quantities

The quantities set out in the Schedule of Quantities are estimated quantities, measured in the indicated units, and are used for the comparison of tenders in awarding the contract. It must be clearly understood that only the actual quantities of work done or materials supplied shall be measured for payment.

.23 Payment

.23.1 Contract rates

In computing the final contract amount, payments shall be based on actual quantities of authorised work done in accordance with the specifications.

.23.2 Rates to be inclusive

The Contractor shall accept the payment provided in the contract and represented by the rates tendered by him in the Schedule of Quantities, as payment in full for executing and completing the work as specified, for procuring, furnishing, placing and installing all materials, for procuring and providing labour, supervision, plant, tools, for wastage, transport, loading and off-loading, handling, maintenance, temporary work testing, quality control including process control, overheads, profit, risk, and other incidentals necessary for the completion of the work.

The clause shall be applicable in full to all pay items, except where these requirements may have been specifically amended in any case.

.23.3 Pay items

The descriptions under the pay items in the various sections of the specifications, indicating the work to be allowed for in the tendered rates for such pay items, are for the guidance of the Contractor and do not necessarily repeat all the details of work and material required by and described in the specifications. These descriptions shall be read in conjunction with the relevant specifications and the Contractor shall, when tendering, allow for his process to be inclusive, as specified above under “Rates to be inclusive”.

.23.4 Rate only items

Opposite an item in the Schedule of Quantities where no quantity is given but a “rate only” is required, the Contractor shall fill in a rate or price which will constitute payment for any work which may be done under this item. Such rate only is used where it is estimated that little or no work will be required under the item, or where the item is to be considered as an alternative for another item where a quantity is given, or for variations in rates of application or mix proportions.

.24 Certificate on completion of the works

A certificate of completion of the works will be issued only when requested by the Contractor.

.25 Contractor's activities in respect of property outside the road reserve and other designated areas

The Contractor shall not enter upon private land outside the proclaimed road reserves and other designated areas for the purpose of the contract without the written confirmation from the Supervisor.

The Contractor shall put in writing all his agreements with owners of property outside the road reserve for temporary use of land, haul roads, etc.

.26 Remedial work

When upon examination by the Supervisor any part of the works or any equipment or material is found not to conform to the requirements of the specifications, the Supervisor may order the complete removal and replacement, at the Contractor's

expense, with satisfactory work or material or he may permit the Contractor to apply remedial measures in order to make good any such defects.

.27 Water

The Contractor himself shall make arrangements for procuring, transporting, storing, distributing and applying the water needed for the purpose of the contract. No direct payment will be made for providing water, the cost of which shall be included in the rates tendered for the various items of work for which water is needed.

.28 Gravel

Gravel shall be obtained from approved borrow pits indicated to the Contractor.

.29 Daily records

The Contractor shall furnish the Supervisor with daily records, on forms approved by the Supervisor, of work executed by him for each maintenance activity. The records shall include information such as description, location, measurements, plant and labour hours, where applicable and, all other information the Supervisor may require for record and measurement purposes.

.30 Site meetings

The Contractor or his authorised representative shall attend monthly meetings on site with the Supervisor at dates and times to be determined by the Supervisor. Such meetings will be held for evaluating the progress of the maintenance contract and for matters pertaining to the contract which any of the parties may wish to raise.

.31 Permanent presence

The Supervisor may require, if specified in the Project Specifications, that certain permanent maintenance team(s) or staff be established on site to carry out regular inspections of the road and carry out remedial measures as and when required.

.32 Road inspection

The Contractor shall perform inspections of the road (s) at least twice a month and shall note all conditions that are not in accordance with the standards specified in the contract and the corrective works planned or ongoing. The Contractor shall inspect any condition reported by members of the public, regulatory agencies, police authorities, etc. For the maintenance activities for which response times are specified, the Contractor shall carry out corrective measures within the specified time period.

The Contractor shall, within seven days of the end of each month, provide the Supervisor with a report of inspections completed during the previous month. The Supervisor may order maintenance interventions to be included in the next quarterly work programme based on the inspection report.

.33 Employment creation

.33.1 Labour optimisation

The usage of labour is to be optimised, which would result in specific portions of the work being executed by labour-based construction methods. At the discretion of the Contractor, on certain activities, plant will be substituted by labour taking into consideration:

a) the practical feasibility of constructing the activities utilising hand methods,
b) the economic feasibility of utilising labour instead of plant

c) the required standards; using labour-based methods shall not imply any reductions in the required standards or specifications

1.4 Contractor's establishment on site and general obligations

.34 General requirements

The Contractor shall establish his maintenance camps, offices, stores, workshops, and testing facilities at a location acceptable to the Supervisor. Accommodation, ablution and other facilities for the site staff shall also be provided as required and the standard of accommodation and the location of all facilities shall comply with requirements of the authorities concerned.

The Contractor shall enter into an agreement of occupation with the land owner or owners and copies of such agreements are to be provided to the Supervisor. After completion of the contract, the camps sites shall be left clean and tidy and free from obstructions. Copies of agreements of satisfactorily condition of sites at completion of the contract shall be provided to the Supervisor.

The Contractor shall maintain his camp facilities during the duration of the contract.

.35 Measurement and payment

There will be no separate measurement and payment items for the Contractor's establishment on site and general obligations. The associated costs shall be deemed to be included in the rates tendered for the various items of work included in the contract.

1.5 Housing, offices and laboratories for the Supervisor

The Contractor is not required to provide housing, offices, laboratory facilities and other services for the Supervisor or his personnel.

2. BITUMEN SURFACE MAINTENANCE

2.1 Base repair

.1 Scope of work

The repair of base and subbase layer failures resulting in localised deformation of the road surface together with crocodile cracking and/or development of potholes. The Bitumen Road Maintenance Manual (BRMM) describes cause and type of defects, trigger and restored conditions under Activity: Base repair, page 1.

This activity includes the reinstallation of all road marking lines that may have been destroyed in the operation with approved white or yellow road marking paints and glass beads.

.2 Materials requirements

.2.1 Basecourse material

All basecourse material must be taken from stockpiles identified by the Supervisor. When the Contractor chooses to obtain basecourse material from commercial sources it shall be sampled in accordance with TMH5 and be tested in accordance with TMH1 by an approved laboratory and the results submitted to the Supervisor for approval.

.2.2 Bitumen emulsion prime, MSP 1

BRMM Materials Procurement, page 5

.2.3 Bitumen anionic emulsion Spray Grade 60

BRMM Materials Procurement, page 1

.2.4 Bitumen pre-packed premix

BRMM Materials Procurement, page 5.

.2.5 Crusher dust

BRMM Materials Procurement, page 5

.2.6 Slurry mix preparation

The slurry mix shall be prepared in accordance with specifications given in BRMM, Materials procurement: Slurry mix preparation, pages 12 and 13.

.2.7 Road marking paint

BRMM Materials Procurement, page 6

.3 Plant and equipment

List of suitable items are provided in BRMM, Activity: Base repair, page 2.
The typical plant and equipment include the following main items:

a) Truck with amber flashing light
b) Soil compactor
c) Pavement breaker
d) Water trailer
e) Various tools: wheel barrows, picks, shovels, bass brooms, straight edge, watering can, etc.

.4 Methodology

The standard method and procedure is described in BRMM, Activity: Base repair, page 3 to 5. The method and procedure can serve as a guideline for the Contractor in his planning and execution of the works. The outlined procedure in brief is:

a) Set up traffic control
b) Mark the area to be patched
c) Excavate area
d) Prepare approved base course *(use cement stabilisation, if specified)*
e) Sweep compacted area
f) Mark border around patch and apply prime
g) Place pre-packed premix and compact
h) Tidy up work area and load equipment, and remove traffic control

.5 Quality standard

.5.1 Restored condition

The BRMM provides the following criteria:

a) Surface of patch to be smooth and level with the surrounding road surface.
b) Patch to be rectangular in shape and parallel to edge of road.

.5.2 Response time

Except for potholes there is no response time related to this activity. Areas to be attended to will be included in agreed annual and quarterly programmes.

For potholes the maximum response time commencing from the time first detected by or reported to the Contractor, within which the Contractor will complete the repair of the pavement deficiency, is 72 hours, unless otherwise specified in the Project specifications for the particular road or project.

.5.3 Tolerances

a) The edges of the completed surfacing shall not be above the existing surface by more than 5 mm. Nowhere shall the edges be below the surrounding road surface.
b) The thickness of the asphalt surfacing at any point shall not be less than 40 mm
c) When tested with a 3 m straight edge laid parallel to or at right angels to the road centreline the surface of the area shall not deviate from the bottom of the straight edge by more than 7 mm

.5.4 Quality of work

The standard method and procedure described in the BRMM for this activity has proved to be satisfactory. The Contractor is, however, responsible for the quality of his work. The base repair shall show no signs of failure, when inspected by the Supervisor within one year after completion. If failures are detected, the Contractor will be required to repeat the base repair of failed areas at his own cost. The correction of such sub-standard workmanship shall be carried out within the time period specified by the Supervisor.

.6 Measurement and payment

The unit of measurement for payment will be the square metre of base repair, sub-divided into the following square metre (m^2) categories, carried out to the Supervisor's approval.

Tender rates in Namibia Dollar per square metre (N$/$m^2$) for areas:

a) up 0.5 m^2
b) above 0.5 m^2 to 2.0 m^2)
c) more than 2.0 m^2

2.2 Surface patching

.7 Scope of work

The surface patching of potholes or minor surface failures on paved roads where the base layer or underlying bitumen layer is exposed with no evidence of base failure. The Bitumen Road Maintenance Manual (BRMM) describes cause and type of defects, trigger and restored conditions under Activity: Surface patching, page 1.

This activity includes the reinstallation of all road marking lines that may have been destroyed in the operation with approved white or yellow road marking paints and glass beads.

.8 Materials requirements

.8.1 Bitumen anionic emulsion Spray Grade 60

BRMM Materials Procurement, page 1

.8.2 Bitumen pre-packed premix

BRMM Materials Procurement, page 5

.8.3 Crusher dust

BRMM Materials Procurement, page 5

.8.4 Slurry mix preparation

The slurry mix shall be prepared in accordance with specifications given in BRMM, Materials procurement, 4. Slurry mix preparation, pages 12 and 13.

.8.5 Road marking paint

BRMM Materials Procurement, page 6

.9 Plant and equipment

Guidelines are provided in BRMM, Activity : Surface patching, page 2.
The typical plant and equipment include the following main items:

a) Truck with amber flashing light
b) Soil compactor
c) Pavement breaker
d) Water trailer
e) Various tools: wheel barrows, picks, shovels, bass brooms, straight edge, watering can, etc.

.10 Methodology

The standard method and procedure is described in BRMM, Activity: Surface patching, page 3. The method and procedure can serve as a guideline for the Contractor in his planning and execution of the works. The outlined procedure in brief is:

a) Set up traffic control
b) Prepare for patching
c) Prime the repair area
d) Place pre-packed premix in pot hole and compact
e) On deep potholes compact premix in layers
f) Blanket patch
g) Tidy up work area and load equipment, and remove traffic control

.11 Quality standard

.11.1 Restored condition

The BRMM provides the following criteria:

a) The potholes must look neat with a flat surface flush with the surrounding road surface
b) Potholes greater than 500 mm to be rectangular in shape

.11.2 Response time

The maximum response time commencing from the time first detected by or reported to the Contractor, within which the Contractor will complete the repair of the pavement deficiency is 72 hours, unless otherwise specified in the Project specifications for the particular road or project. The Contractor shall immediately upon detection set up danger warning signs as appropriate, depending on the location and character of the pothole.

.11.3 Tolerances

a) The edges of the completed surfacing shall not be above the existing surface by more than 5 mm. Nowhere shall the edges be below the surrounding road surface.
b) When tested with a 3 m straight edge laid parallel to or at right angels to the road centreline the surface of the area shall not deviate from the bottom of the straight edge by more than 7 mm

.11.4 Quality of work

The standard method and procedure described in the BRMM for this activity has proved to be satisfactory. The Contractor is, however, responsible for the quality of his work. The surface patching shall show no signs of failure, when inspected by the Supervisor within one year after completion. If failures are detected, the Contractor will be required to repeat the surface patching of failed areas at his own cost. The correction of such sub-standard workmanship shall be carried out within the time period specified by the Supervisor.

.12 Measurement and payment

The unit of measurement for payment will be the square metre (m^2) area of road, measured to the nearest 0.5 m^2, patched to the Supervisor's approval,

Tender rate: Namibia Dollar per square metre (N$/ m^2)

2.3 Crack sealing

.13 Scope of work

Includes sealing of cracks on paved roads using a rubber bitumen crack sealing emulsion. The Bitumen Road Maintenance Manual (BRMM) describes cause and type of defects, trigger and restored conditions under Activity: Crack sealing, page 1.

This activity includes the reinstallation of all road marking lines that may have been destroyed in the operation with approved white or yellow road marking paints and glass beads.

.14 Materials requirements

.14.1 Bitumen/rubber emulsion Rubspray 65

BRMM Materials Procurement, page 2

.14.2 Crusher dust

BRMM Materials Procurement, page 5

.14.3 Slurry mix preparation

The slurry mix shall be prepared in accordance with specifications given in BRMM, Materials procurement, 4. Slurry mix preparation, pages 12 and 13.

.14.4 Road marking paint

BRMM Materials Procurement, page 6

.15 Plant, equipment and signs

Guidelines are provided in BRMM, Activity : Crack sealing, page 2..
The typical plant and equipment include the following main items:

a) Truck with amber flashing light
b) Various tools: wheel barrows, picks, shovels, bass brooms, straight edge, watering can, etc.

.16 Methodology

The standard method and procedure is described in BRMM, Activity: Crack sealing, page 3. The method and procedure can serve as a guideline for the Contractor in his planning and execution of the works. The outlined procedure in brief is:

a) Set up traffic control

b) Prepare the crack
c) Apply crack sealant to the crack
d) Clean the equipment
e) Tidy up work area and load equipment, and remove traffic control

.17 Quality standard

.17.1 Restored condition

The BRMM provides the following criteria:
a) Sealed cracks to be watertight
b) Sealed cracks to look neat
c) Sealant to be level with the road surface
d) All sealant covered with crusher dust

.17.2 Response time

Cracks smaller than 3 mm: There is no response time related to sealing of cracks smaller than 3 mm. The annual programme will include estimated quantities of crack sealing. All cracks that will be included in the agreed annual and quarterly programmes shall be sealed before the commencement of the wet season.

Cracks wider than 3 mm: The maximum response time commencing from the time first detected by or reported to the Contractor, within which the Contractor will complete the repair of cracks wider than 3 mm, is 72 hours during the wet season, and 15 days during the dry season.

.17.3 Tolerances

a) The works shall be executed and finished strictly in accordance with the prescribed requirements
b) The sealed cracks shall be watertight , look neat and the sealant shall not project above the road surface by more than 3 mm.

.17.4 Quality of work

The standard method and procedure described in the BRMM for this activity has proved to be satisfactory. The Contractor is, however, responsible for the quality of his work. The crack sealing shall show no signs of failure, when inspected by the Supervisor within one year after completion. If failures are detected, the Contractor will be required to repeat the crack sealing of failed areas at his own cost. The correction of such sub-standard workmanship shall be carried out within the time period specified by the Supervisor.

.18 Measurement and payment

The unit of measurement for payment will be the kilometre of road, measured to the nearest 0.01 km crack sealed to the Supervisor's approval.

Tender rate: Namibia Dollar per kilometre (N$/km)

2.4 Surface sealing: - Slurry sealing

.19 Scope of work

The application of a bituminous slurry seal on a bitumen seal to restore its waterproofness while the base is still sound. The Bitumen Road Maintenance Manual

(BRMM) describes cause and type of defects, trigger and restored conditions under Activity: Surface sealing; - Slurry sealing, page 1.

This activity includes the reinstallation of all road marking lines that may have been destroyed in the operation with approved white or yellow road marking paints and glass beads.

.20 Materials requirements

.20.1 Slurry mix preparation

The slurry mix shall be prepared in accordance with specifications given in BRMM, Materials procurement: Slurry mix preparation, pages 12 and 13.

.20.2 Road marking paint

BRMM Materials Procurement, page 6

.21 Plant and equipment

Guidelines are provided in BRMM, Activity: Surface sealing - Slurry sealing, page 2. The typical plant and equipment include the following main items:

a) Truck with amber flashing light
b) As required for the preparation of slurry
c) Various tools: wheel barrows, shovels, bass brooms, straight edge, etc.

.22 Methodology

The standard method and procedure is described in BRMM, Activity: Surface sealing, - Slurry sealing, page 3. The method and procedure can serve as a guideline for the Contractor in his planning and execution of the works. The outlined procedure in brief is:

a) Set up traffic control
b) Sweep area to be repaired
c) Mark the area to be repaired
d) Spread slurry over affected area
e) Clean the equipment
f) Tidy up work area and load equipment, and remove traffic control

.23 Quality standard

.23.1 Restored condition

The BRMM provides the following criteria:

a) Cracked surface fully and evenly covered with slurry
b) Slurry patch rectangular with straight edges

.23.2 Response time

There is no response time related to this activity. Areas to be attended to will be included in the agreed annual and quarterly programmes.

.23.3 Tolerances

a) The works shall be executed and finished strictly in accordance with the prescribed requirements and fulfil the criteria specified under restored condition above.

.23.4 Quality of work

The standard method and procedure described in the BRMM for this activity has proved to be satisfactory. The Contractor is, however, responsible for the quality of his work. The slurry sealing shall show no signs of failure, when inspected by the Supervisor within one year after completion. If failures are detected, the Contractor will be required to repeat the slurry sealing of failed areas at his own cost. The correction of such sub-standard workmanship shall be carried out within the time period specified by the Supervisor.

.24 Measurement and payment

The unit of measurement for payment will be the square metre (m^2) area of road, measured to the nearest 0.5 m^2 slurry sealed to the Supervisor's approval.

Tender rate: Namibia Dollar per square metre (N$/m2)

2.5 Surface sealing: - Spray and chip seal

.25 Scope of work

The application of a bituminous spray and chip seal on a bitumen seal to restore its waterproofness while the base is still sound, or on a freshly prepared base course as a surface treatment. The Bitumen Road Maintenance Manual (BRMM) describes cause and type of defects, trigger and restored conditions under Activity: Surface sealing, - Spray and chip seal, page 4.

This activity includes the reinstallation of all road marking lines that may have been destroyed in the operation with approved white or yellow road marking paints and glass beads.

.26 Materials requirements

.26.1 Bitumen/rubber cationic emulsion Rubspray 65

BRMM Materials Procurement, page 2

.26.2 Bitumen cationic emulsion Spray Grade 65

BRMM Materials Procurement, page 1

.26.3 Stone (13 mm, 9.5 mm or 6.7 mm)

BRMM Materials Procurement, page 6

.26.4 Crusher dust

BRMM Materials Procurement, page 5

.26.5 Road marking paint

BRMM Materials Procurement, page 6

.27 Plant, equipment and signs

Guidelines are provided in BRMM, Activity : Surface sealing, - Spray and chip seal, page 5. The typical plant and equipment include the following main items:

a) Truck with amber flashing light
b) Twin-drum roller
c) Various tools: wheel barrows, hand spraying equipment, shovels, bass brooms, straight edge, etc.

.28 Methodology

The standard method and procedure is described in BRMM, Activity: Surface sealing, - Spray and chip seal, page 5. The method and procedure can serve as a guideline for the Contractor in his planning and execution of the works. The outlined procedure in brief is:

a) Set up traffic control
b) Sweep area to be repaired
c) Mark the area to be repaired
d) Prime base course (new seal)
e) Spray bitumen emulsion tack coat over affected area or base course
f) Spread chippings over the tack coat
g) Roll chippings
h) Spray bitumen emulsion penetration coat
i) Apply crusher dust to sprayed area
j) Clean the equipment
k) Tidy up work area and load equipment, and remove traffic control

.29 Quality standard

.29.1 Restored condition

The BRMM provides the following criteria:

a) New seal closely spaced chippings in single-later thickness
b) Even surface
c) No bleeding
d) Cracked surface fully and evenly covered with spray and crusher dust seal
e) Sealing patch rectangular with straight edges

.29.2 Response time

There is no response time related to this activity. Areas to be attended to will be included in the agreed annual and quarterly programmes.

.29.3 Tolerances

a) The edges of the completed surfacing shall not be above the existing surface by more than 5 mm. Nowhere shall the edges be below the surrounding road surface.
b) When tested with a 3 m straight edge laid parallel to or at right angels to the road centreline the surface of the area shall not deviate from the bottom of the straight edge by more than 7 mm

.29.4 Quality of work

The standard method and procedure described in the BRMM for this activity has proved to be satisfactory. The Contractor is, however, responsible for the quality of his work. The sealing shall show no signs of failure, when inspected by the Supervisor within one year after completion. If failures are detected, the Contractor will be required to repeat the spray and chip sealing of failed areas at his own cost. The correction of such sub-standard workmanship shall be carried out within the time period specified by the Supervisor.

.30 Measurement and payment

The unit of measurement for payment will be the square metre (m^2) area of road, measured to the nearest 0.5 m^2 area of spray and chip sealed to the Supervisor's approval.

Tender rates at Namibia Dollar per square metre (N$/$m^2$) for

a) resealing an existing seal

b) new seal

2.6 Surface sealing: - Spray and dust seal

.31 Scope of work

The application of a bituminous spray and dust seal on a bitumen seal to restore its waterproofness while the seal is still sound. The Bitumen Road Maintenance Manual (BRMM) describes cause and type of defects, trigger and restored conditions under Activity: Surface sealing, - Spray and dust seal, page 8.

This activity includes the reinstallation of all road marking lines that may have been destroyed in the operation with approved white or yellow road marking paints and glass beads.

.32 Materials requirements

.32.1 Bitumen/rubber cationic emulsion Rubspray 65

BRMM Materials Procurement, page 2

.32.2 Crusher dust

BRMM Materials Procurement, page 5

.32.3 Road marking paint

BRMM Materials Procurement, page 6

.33 Plant, equipment and signs

Guidelines are provided in BRMM, Activit : Surface sealing, - Spray and chip seal, page 5. The typical plant and equipment include the following main items:

a) Truck with amber flashing light
b) Various tools: wheel barrows, hand spraying equipment or watering cans, shovels, bass brooms, straight edge, etc.

.34 Methodology

The standard method and procedure is described in BRMM, Activity: Surface sealing, - Spray and dust seal, page 9. The method and procedure can serve as a guideline for the Contractor in his planning and execution of the works. The outlined procedure in brief is:

a) Set up traffic control
b) Sweep area to be repaired
c) Mark the area to be repaired
d) Spray bitumen-rubber emulsion over affected area
e) Apply crusher dust to sprayed area
f) Clean the equipment
g) Tidy up work area and load equipment, and remove traffic control

.35 Quality standard

.35.1 Restored condition

The BRMM provides the following criteria:

a) Cracked surface fully and evenly covered with spray and crusher dust seal
b) Sealing patch rectangular with straight edges

.35.2 Response time

There is no response time related to this activity. Areas to be attended to will be included in the agreed annual and quarterly programmes.

.35.3 Tolerances

a) The works shall be executed and finished strictly in accordance with the prescribed requirements and fulfil the criteria specified under restored condition above.

.35.4 Quality of work

The standard method and procedure described in the BRMM for this activity has proved to be satisfactory. The Contractor is, however, responsible for the quality of his work. The sealing shall show no signs of failure, when inspected by the Supervisor within one year after completion. If failures are detected, the Contractor will be required to repeat the spray and dust sealing of failed areas at his own cost. The correction of such sub-standard workmanship shall be carried out within the time period specified by the Supervisor.

.36 Measurement and payment

The unit of measurement for payment will be the square metre (m^2) area of road, measured to the nearest 0.5 m^2 area of spray and dust sealed to the Supervisor's approval.

Tender rate: Namibia Dollar per square metre (N$/$m^2$)

2.7 Bleeding removal

.37 Scope of work

Restoration of bitumen seal on spots and in wheel tracks where the binder has migrated to the riding surface. The Bitumen Road Maintenance Manual (BRMM) describes cause and type of defects, trigger and restored conditions under Activity: Bleeding removal, page 1.

This activity includes the reinstallation of all road marking lines that may have been destroyed in the operation with approved white or yellow road marking paints and glass beads.

.38 Materials requirements

.38.1 Power paraffin

Commercial quality

.38.2 Stone chipping

BRMM Materials Procurement, page 6

.38.3 Road marking paint

BRMM Materials Procurement, page 6

.39 Plant and equipment

Guidelines are provided in BRMM, Activity : Surface sealing, 1. Slurry sealing, page 2. The typical plant and equipment include the following main items:

a) Truck with amber flashing light
b) Water trailer
c) Twin drum roller

d) Various tools: watering cans with roseheads, shovels and bass brooms

.40 Methodology

The standard method and procedure is described in BRMM, Activity: Bleeding removal, page 3. The method and procedure can serve as a guideline for the Contractor in his planning and execution of the works. The outlined procedure in brief is:

a) Set up traffic control
b) Prepare bleeding spots for aggregate application
c) Scatter and spread aggregate over affected surface
d) Sweep area to be repaired
e) Roll aggregate well into bitumen seal
f) Tidy up work area and load equipment, and remove traffic control

.41 Quality standard

.41.1 Restored condition

The BRMM provides the following criteria:

a) Surfacing aggregate exposed to restore skid resistance of seal
b) Treated surface flush with surrounding sound surface.

.41.2 Response time

There is no response time related to this activity. Areas to be attended to will be included in agreed annual and quarterly programmes.

.41.3 Tolerances

a) The works shall be executed and finished strictly in accordance with the prescribed requirements and fulfil the criteria specified under restored condition above.

.41.4 Quality of work

The standard method and procedure described in the BRMM for this activity has proved to be satisfactory. The Contractor is, however, responsible for the quality of his work. The bleeding removal shall show no signs of failure, when inspected by the Supervisor within one year after completion. If failures are detected, the Contractor will be required to repeat the bleeding removal of failed areas at his own cost. The correction of such sub-standard workmanship shall be carried out within the time period specified by the Supervisor.

.42 Measurement and payment

The unit of measurement for payment will be the square metre (m^2) area of road, measured to the nearest 0.5 m^2 area of bleeding removal to the Supervisor's approval.

Tender rate: Namibia Dollar per square metre (N$/$m^2$)

2.8 Depression levelling

.43 Scope of work

The placing of premix or course slurry in thin layers into depressions in the road surface which cause an uncomfortable ride for the motorist and for ponding of water on the bitumen seal. The locations will include ruts, corrugations, localised depressions, and settled areas at bridge and culvert approaches.

The Bitumen Road Maintenance Manual (BRMM) describes cause and type of defects, trigger and restored conditions under Activity: Depression levelling, page 1.

This activity includes the reinstallation of all road marking lines that may have been destroyed in the operation with approved white or yellow road marking paints and glass beads.

.44 Materials requirements

.44.1 Bitumen pre-packed premix

BRMM Materials Procurement, page 5

.44.2 Bitumen cationic emulsion Spray Grade 60

BRMM Materials Procurement, page 5

.44.3 Road marking paint

BRMM Materials Procurement, page 6

.45 Plant and equipment

Guidelines are provided in BRMM, Activity: Depression levelling, page 2. The typical plant and equipment include the following main items:

a) Truck with amber flashing light
b) Twin drum vibrating flat roller (500 kg)
c) Various tools: tarpaulin, wheel barrows, tar buckets, picks, shovels, bass brooms, metal rakes, 3 m straight edge, etc.

.46 Methodology

The standard method and procedure is described in BRMM, Activity: Depression levelling, page 3. The method and procedure can serve as a guideline for the Contractor in his planning and execution of the works. The outlined procedure in brief is:

a) Set up traffic control
b) Mark the extent of the depression
c) Prepare area to be patched
d) Prime the area to be patched
e) Measure depression to determine appropriate quantity
f) Place pre-packed premix in layer (s) and compact
g) On deep depressions compact premix in layers, maximum 30 mm per layer
h) Tidy up work area and load equipment, and remove traffic control

.47 Quality standard

.47.1 Restored condition

The BRMM provides the following criteria:

a) Final surface to be smooth and level with the surrounding road surface level.
b) When tested with a 3 m straight edge, the surface should not deviate from the underside of the straight edge by more than 7 mm at any point.

.47.2 Response time

There is no response time related to this activity. Areas to be attended to will be included in agreed annual and quarterly programmes.

.47.3 Tolerances

a) The works shall be executed and finished strictly in accordance with the prescribed requirements and fulfil the criteria specified under restored condition above.
b) The edges of the completed surfacing shall not be above the existing surface by more than 5 mm. Nowhere shall the edges be below the surrounding road surface.

.47.4 Quality of work

The standard method and procedure described in the BRMM for this activity has proved to be satisfactory. The Contractor is, however, responsible for the quality of his work. The depression levelling shall show no signs of failure, when inspected by the Supervisor within one year after completion. If failures are detected, the Contractor will be required to repeat the depression levelling of failed areas at his own cost.
The correction of such sub-standard workmanship shall be carried out within the time period specified by the Supervisor.

.48 Measurement and payment

The unit of measurement for payment will be the square metre (m^2) area of road, measured to the nearest 1.0 m^2 area of depression levelling to the Supervisor's approval. Where the thickness of the premix exceeds 30 mm, the area shall be measured separately for each layer.

Tender rate: Namibia Dollar per square metre (N$/$m^2$)

2.9 Edge repairs

.49 Scope of works

The repair of ravelled edges on paved roads using premix. The Bitumen Road Maintenance Manual (BRMM) describes cause and type of defects, trigger and restored conditions under Activity: Edge repairs, page 1.

Where the basecourse at the edges must be repaired to a depth exceeding 75 mm and/or the width exceeds 250 mm, the operation will be deemed as Base Repair and will be executed, measured and paid for under **Item 2.1 - Base Repair.** The width of repair, i.e. the edge distance from centreline, will be indicate by the Supervisor for each section of road.

This activity includes the reinstallation of all road marking lines that may have been destroyed in the operation with approved white or yellow road marking paints and glass beads.

.50 Materials requirements

.50.1 Bitumen pre-packed premix

BRMM Materials Procurement, page 5

.50.2 Bitumen cationic emulsion Spray Grade 60

BRMM Materials Procurement, page 5

.50.3 Road marking paint

BRMM Materials Procurement, page 6

.51 Plant and equipment

Guidelines are provided in BRMM, Activity: Edge repairs, page 2. The typical plant and equipment include the following main items:

a) Truck with amber flashing light
b) Soil compactor
c) Various tools: wheel barrows, tar buckets, picks, shovels, bass brooms, metal rakes, picks, shovels, 2 m straight edge, etc.

.52 Methodology

The standard method and procedure is described in BRMM, Activity: Edge repairs, page 3. The method and procedure can serve as a guideline for the Contractor in his planning and execution of the works. The outlined procedure in brief is:

a) Set up traffic control
b) Prepare area to be repaired
c) Mark the edge of the road
d) Prime the area
e) Place pre-packed premix and compact in layers, maximum 30 mm per layer
f) Build up edge support
g) Tidy up work area and load equipment, and remove traffic control

.53 Quality standard

.53.1 Restored condition

The BRMM provides the following criteria:

a) The road edge reinstated to its original position and not widened or narrowed
b) The surface of the repaired area to be a continuation of the existing road crossfall.
c) Sufficient side support along edge of paved road
d) Earth shoulder correctly shaped to allow water to drain away from the road surface.

.53.2 Response time

The maximum response time commencing from the time first detected by or reported to the Contractor, within which the Contractor will complete the repair of the pavement deficiency is:

a) 72 hours for edge failures exceeding 250 mm in width, and
b) as per annual programme for failures less than 250 mm in width,

unless otherwise is specified in the Project specifications for the particular road or project. The Contractor shall immediately upon detection of a serious edge failure set up danger warning signs as appropriate, depending on the location and character of edge failure.

.53.3 Tolerances

a) The works shall be executed and finished strictly in accordance with the prescribed requirements and fulfil the criteria specified under restored condition above.

.53.4 Quality of work

The standard method and procedure described in the BRMM for this activity has proved to be satisfactory. The Contractor is, however, responsible for the quality of his work. The edge repairs shall show no signs of failure, when inspected by the Supervisor within one year after completion. If failures are detected, the Contractor will be required to repeat the edge repairs of failed areas at his own cost.
The correction of such sub-standard workmanship shall be carried out within the time period specified by the Supervisor.

.54 Measurement and payment

The unit of measurement for payment will be the square metre (m^2) area of road, measured to the nearest 0.1 m^2 area of edge repairs to the Supervisor's approval. Where the thickness of the premix exceeds 30 mm, the area shall be measured separately for each layer.

Tender rate: Namibia Dollar per square metre (N$/$m^2$)

3. SHOULDER MAINTENANCE

3.1 Shoulder blading

.1 Scope of work

The trimming of shoulder build-up and reshaping and recompaction of trimmed-off shoulder material. This activity should be carried out only when the moisture content is at or near optimum for compaction with a twin-drum vibratory roller or alternatively, with the addition of water brought to the site. The Bitumen Road Maintenance Manual (BRMM) describes cause and type of defects, trigger and restored conditions under Activity: Shoulder blading, page 1.

.2 Plant and equipment

Guidelines are provided in BRMM, Activity: Shoulder blading, page 2. The typical plant and equipment the following main items:

a) Truck with amber flashing light
b) Shoulder grader
c) Water trailer
d) Twin-drum roller
e) Various tools: shovels, brooms, rakes, etc.

.3 Methodology

The standard method and procedure is described in BRMM, Shoulder blading:, page 3. The method and procedure can serve as a guideline for the Contractor in his planning and execution of the works. The outlined procedure in brief is:

a) Set up traffic control
b) Trim shoulder build-up
c) Prepare shoulder for compaction
d) Compact shoulders
e) Tidy up work area and load equipment, and remove traffic control

.4 Quality standard

.4.1 Restored condition

The BRMM provides the following criteria:

a) Shoulder cross fall from pavement edge to shoulder breakpoint of minimum 3% and maximum 4%
b) Shoulder level at pavement edge flush with pavement

.4.2 Response time

There is no response time related to this activity. Areas to be attended to will be included in the agreed annual and quarterly programmes.

.4.3 Tolerances

a) The works shall be executed and finished strictly in accordance with the prescribed requirements and fulfil the criteria specified under restored condition above.

.5 Measurement and payment

The unit of measurement for payment will be the kilometre (km) of shoulder blading, each shoulder measured separately to the nearest 0.1 km, sub-divided into the following kilometre (km) categories, carried out to the Supervisor's approval.

Tender rate: Namibia Dollar per kilometre of single shoulder (N$/km)

a) compaction at natural moisture content
b) compaction with addition of water

3.2 Shoulder mowing

.6 Scope of work

Shoulder mowing consists of cutting of grass and herbaceous plants down to a level not exceeding 100 mm above average ground level in a combined operation of machine and hand slashing.

The machine mowing consists of mowing all tall vegetation on shoulders, the inside of curves, at intersections and the approaches to signs.

The hand slashing of tall vegetation shall be used at places inaccessible to mowers such as around structures, guardrails, signs, posts and lamp posts at intersections.

The Bitumen Road Maintenance Manual (BRMM) describes cause and type of defects, trigger and restored conditions under Activity: Shoulder mowing, pages 1 and 2. The trigger value will be specified in the Project specifications for each particular project.

.7 Plant and equipment

Guidelines are provided in BRMM, Activity: Shoulder mowing, pages 2 and 5. The typical plant and equipment include the following main items:

a) Truck with amber flashing light
b) Tractor fitted with: two high intensity amber flashing lights
c) Grass mower
d) Various tools: slashers, shovels, rakes, hay forks, etc.

.8 Methodology

The standard methods and procedures are described in BRMM, Shoulder mowing, pages 3 and 6. The methods and procedures can serve as a guideline for the Contractor in his planning and execution of the works. The outlined procedure in brief is:

a) Set up traffic control
b) Allocate work areas for hand slashing and machine mowing respectively
c) Cut vegetation
d) Where necessary, arrange for removal of cut vegetation. (The project specifications provide information on the necessity and procedures for removal).
e) Tidy up work area and load equipment, and remove traffic control

.9 Quality standard

The shoulder mowing shall be carried out to the following quality standard:

a) Vegetation mowed to a height of less than 100 mm on the shoulders to the width specified for the particular road or project.

b) The area shall be left neat and tidy

.9.1 Response time

There is no response time related to this activity. Intervention frequency and suitable month for intervention will be included in the agreed annual and quarterly programmes.

.10 Measurement and payment

The unit of measurement for payment will be the kilometre (km) of shoulder mowing, each shoulder measured separately to the nearest 0.1 km, and as approved by the Supervisor.

Tender rate: Namibia Dollar per kilometre of single shoulder (N$/km)

3.3 Shoulder gravelling

.11 Scope of work

The dumping, shaping and compaction of material along the edge of a paved road which has a drop off of more than 50 mm over a distance not exceeding 100 m.
The Bitumen Road Maintenance Manual (BRMM) describes cause and type of defects, trigger and restored conditions under Activity: Shoulder gravelling, page 1.

.12 Materials requirements

.12.1 Shoulder gravel material

Shoulder gravel material shall consist of base course material. The material must be taken from stockpiles identified by the Supervisor. When the Contractor chooses to obtain base course material from commercial sources it shall be sampled in accordance with TMH5 and be tested in accordance with TMH1 by an approved laboratory and the results submitted to the Supervisor for approval.

.13 Plant and equipment

Guidelines are provided in BRMM, Activity: Edge repairs, page 2. The typical plant and equipment include the following main items:
a) Tip truck
b) Water trailer
c) Twin-drum roller
d) Various tools: picks, shovels, mass brooms, rakes, picks, shovels, etc.

.14 Methodology

The standard method and procedure is described in BRMM, Activity: Shoulder gravelling, page 3. The method and procedure can serve as a guideline for the Contractor in his planning and execution of the works. The outlined procedure in brief is:
a) Set up traffic control
b) Load shoulder material onto truck
c) Dump material on shoulder
d) Spread the material over shoulders and wet material to optimum moisture content
e) Compact shoulders
f) Tidy up work area and load equipment, and remove traffic control

.15 Quality standard

.15.1 Restored condition

a) Shoulder rebuilt to the level of the pavement edge.
b) Shoulder cross-fall from pavement edge to shoulder breakpoint of minimum 3% and maximum 4%

.15.2 Response time

The maximum response time commencing from the time first detected by or reported to the Contractor, within which the Contractor will complete the repair of the drop of at the shoulder is 3 days when drop is located in inside shoulder on curved sections, and 10 days on outside shoulder or straight sections of the road, unless otherwise is specified in the Project specifications for the particular road or project.

.15.3 Tolerances

a) The works shall be executed and finished strictly in accordance with the prescribed requirements and fulfil the criteria specified under restored condition above.

.16 Measurement and payment

The unit of measurement for payment will be the kilometre (km) of shoulder gravelling, each shoulder measured separately to the nearest 0.1 km, and as approved by the Supervisor.

Tender rate: Namibia Dollar per kilometre and single shoulder (N$/km)

4. ROAD SIGNS AND MARKINGS MAINTENANCE

4.1 Road sign cleaning

.1 Scope of work

The cleaning of dirty or faded road signs. The Bitumen Road Maintenance Manual (BRMM) describes cause and type of defects, trigger and restored conditions under Activity: Road sign cleaning, page 1. The width of the area in which sign cleaning shall be carried out will be defined in the Project specifications for each particular project.

.2 Materials requirements

Ammonium based detergent and cleaning pads for "Doodle Bug"

.3 Plant and equipment

Guidelines are provided in BRMM, Activity: Sign cleaning, pages 2. The typical plant and equipment include the following main items:

a) Truck with amber flashing light
b) Water trailer
c) Hand tools: Long handled "Doodle Bug" with extendible aluminium handle, 20 litre drums for water and detergent solutions respectively
d) Ladder (for large signs)

.4 Methodology

The standard method and procedure is described in BRMM, Activity: Sign cleaning, page 3. The method and procedure can serve as a guideline for the Contractor in his planning and execution of the works. The outlined procedure in brief is:

a) Set up traffic control

b) Prepare detergent solution
c) Clean the sign with detergent solution and wash sign off with clean water
d) Tidy up work area and remove traffic control

.5 Quality standard

a) The works shall be executed and finished strictly in accordance with the prescribed requirements and fulfil the criteria specified in the BRMM.

.5.1 Response time

The Contractor shall wash all signs at least once annually after the wet season. In addition, the Contractor will wash signs which are subject to frequent mud or grime spray as required.

The maximum response time commencing from the time first detected by or reported to the Contractor, within which the Contractor will complete the sign cleaning is 24 hours for warning and regulatory signs, and 7 days for other signs, unless otherwise is specified in the Project specifications for the particular road or project.

.6 Measurement and payment

The unit of measurement for payment will be the kilometre of road , measured to the nearest 0.1 km, for sign cleaning to the Supervisor's approval.

Tender rate: Namibia Dollar per km (N$/km)

4.2 Road sign erection and repair

.7 Scope of work

The erection of new, and the repair of missing, faded, damaged, or not clearly visible metal signboards. The Bitumen Road Maintenance Manual (BRMM) describes cause and type of defects, trigger and restored conditions under Activity: Road sign erection and repair, page 1

.8 Materials requirements

BRMM Materials Procurement, page 2, and under Activity: Sign erection and repair, page 2.

.9 Plant and equipment

Guidelines in BRMM, Activity: Sign erection and repair, page 2.

.10 Methodology

The standard method and procedure is described in BRMM, Activity: Sign erection and repair.

.11 Quality standard

a) The works shall be executed and finished strictly in accordance with the prescribed requirements and fulfil the criteria specified in the BRMM.

.11.1 Response time

The Contractor shall inspect all signs at least twice a year and shall present a list of deficiencies to the Supervisor. A repair programme will be agreed based on each inspection.

The maximum response time commencing from the time first detected by or reported to the Contractor, within which the Contractor will repair or replace suddenly damaged signs is 24 hours for warning and regulatory signs, and 7 days for other signs, unless otherwise is specified in the Project specifications for the particular road or project.

.12 Measurement and payment

Dayworks as per Schedule of Quantities

4.3 Road marking

.13 Scope of work

The restoration of worn or obliterated road markings over distances not exceeding 100 m, as and when instructed by the Supervisor. The Bitumen Road Maintenance Manual (BRMM) describes cause and type of defects, trigger and restored conditions under Activity: Road marking repairs, page 1

.14 Materials requirements

BRMM Materials Procurement, page 6

.15 Plant and equipment

Guidelines in BRMM, Activity: Road marking repair, page 2. The typical plant and equipment include the following main items:

a) Truck with amber flashing light
b) Hand tools: Paint brush, paint roller, extension handle, paint tray, bucket, etc.

.16 Methodology

The standard method and procedure is described in BRMM, Activity: Road marking repair, page 3. The method and procedure can serve as a guideline for the Contractor in his planning and execution of the works. The outlined procedure in brief is:

a) Set up traffic control
b) Mark out road markings
c) Paint markings
d) Clean equipment
e) Tidy up work area and remove traffic control

.17 Quality standard

a) The works shall be executed and finished strictly in accordance with the prescribed requirements and fulfil the criteria specified in the BRMM.

.17.1 Response time

The maximum response time commencing from the time first detected by or reported to the Contractor, within which the Contractor will complete the road marking is 72 hours for barrier and centre lines, and 7 days for other lines, unless otherwise is specified in the Project specifications for the particular road or project.

.18 Measurement and payment

The restoration of road markings as a result of the various bitumen maintenance activities are all included in the payment of respective activity and is not measured and paid for under this activity.

The unit of measurement for payment will be the kilometre (km) to the nearest 0.1 km of road marking repairs, as approved by the Supervisor.

Tender rate: Namibia Dollar per kilometre (N$/km)

4.4 Road feature markers, erection and repair

.19 Scope of work

The placing and repair of road feature markers and posts along the road, normally within a distance of 5 m away from the outer shoulder edge. The Bitumen Road Maintenance Manual (BRMM) describes cause and type of defects, trigger and restored conditions under Activity: Road feature markers, erection and repair, page 1

.20 Materials requirements

Under relevant sections in BRMM Materials Procurement and under Activity: Road feature markers erection and repair, page 2.

.21 Plant and equipment

Guidelines in BRMM, Activity: Road feature markers, erection and repair, page 2. The typical plant and equipment include the following main items:

a) Truck with amber flashing light
b) Various tools: picks, shovels, paint brushes, tins, relevant stencils, etc.

.22 Methodology

The standard method and procedure is described in BRMM, Activity: Road feature markers, erection and repair, page 3. The method and procedure can serve as a guideline for the Contractor in his planning and execution of the works. The outlined procedure in brief is:

a) Set up traffic control
b) Attend to the various markers identified for erection or repair, for instance: rectangular concrete markers, barrier line markers, culvert markers, etc.
c) Tidy up work area and remove traffic control

.23 Quality standard

.23.1 Restored condition

a) Markers clearly visible and in good state of repair.
b) Features correctly marked

.23.2 Response time

The Contractor shall inspect all feature markers at least twice a year and shall present a list of deficiencies to the Supervisor. A repair programme will be agreed based on each inspection.

The maximum response time commencing from the time first detected by or reported to the Contractor, within which the Contractor will repair or replace sudden damaged road feature markers is 7 days, unless otherwise is specified in the Project specifications for the particular road or project.

.23.3 Quality of work

a) The works shall be executed and finished strictly in accordance with the prescribed requirements and fulfil the criteria specified in the BRMM.

.24 Measurement and payment

Dayworks as per Schedule of Quantities

4.5 Road studs installation

.25 Scope of work

The installation of surface type roadstuds bonded to the surface of paved roads using an epoxy adhesive. The Supervisor will identify the locations and the need of roadstuds. The Bitumen Road Maintenance Manual (BRMM) describes cause and type of defects, trigger and restored conditions under Activity: Road studs installation, page 1.

.26 Materials requirements

Under relevant sections in BRMM Materials Procurement and under Activity: Roadstud installation (surface type), page 2.

.27 Plant and equipment

Guidelines in BRMM, Activity: Roadstud installation (surface type), page 2. The typical plant and equipment include the following main items:

a) Truck with amber flashing light
b) Various tools: wheel barrow, hammer, paint brushes, tins, relevant stencils, etc.

.28 Methodology

The standard method and procedure is described in BRMM, Activity: Roadstud installation (surface type), page 3. The method and procedure can serve as a guideline for the Contractor in his planning and execution of the works. The outlined procedure in brief is:

a) Set up traffic control
b) Mark roadstud position (new)
c) Remove damaged roadstuds
d) Place or replace road studs and prepare surface
e) Fit roadstuds
f) Tidy up work area and remove traffic control

.29 Quality standard

.29.1 Restored condition

a) The roadstuds placed at correct intervals and positions as shown in the Traffic Marking Handbook
b) The entire base of the roadstud bonded to the road surface
c) No adhesive on reflective faces of roadstuds

.29.2 Response time

The maximum response time commencing from the time first detected by or reported to the Contractor, within which the Contractor will complete the installation of road studs is 7 days, unless otherwise is specified in the Project specifications for the particular road or project.

.29.3 Quality of work

a) The works shall be executed and finished strictly in accordance with the prescribed requirements and fulfil the criteria specified under restored conditions above.

.30 Measurement and payment

The unit of measurement for payment will be the number of roadstuds installed to the Supervisor's approval

Tender rate: Namibia Dollar per number of road studs (N$/number)

5. ROAD SIDE MAINTENANCE

5.1 Litter control

.1 Scope of work

The collection and removal of debris, trash and litter from the designated area The area to be covered is the area between the two outer shoulder edges, and rest areas. The Bitumen Road Maintenance Manual (BRMM) describes cause and type of defects, trigger and restored conditions under Activity: Litter control, page 1.

.2 Materials requirements, plant and equipment

Guidelines in BRMM, Activity: Litter control, page 1. The typical materials, plant and equipment include the following main items:

a) Truck with amber flashing light
b) Large paper or plastic bags
c) Pointed steel rod

.3 Methodology

The standard method and procedure is described in BRMM, Activity: Litter control, page 2. The method and procedure can serve as a guideline for the Contractor in his planning and execution of the works. The outlined procedure in brief is:

a) Switch on amber flashing light whenever the truck stops along the road
b) Collect, load and remove litter/debris

.4 Quality standard

.4.1 Restored condition

All debris/trash/litter removed from the designated area. The area shall be checked weekly and the response time shall be one week.

.4.2 Response time

The maximum response time commencing from the time first detected by or reported to the Contractor, within which the Contractor will remove litter is 7 days, unless otherwise is specified in the Project specifications for the particular road or project. Vehicles and equipment abandoned at the road side shall be reported to the Supervisor immediately.

.4.3 Quality of work

a) The works shall be executed and finished strictly in accordance with the prescribed requirements under BRMM, Activity: Litter control, page 2, and fulfil the criteria specified under restored conditions above.

.5 Measurement and payment

The unit of measurement for payment will be the kilometre (km) to the nearest 0.1 km of litter control, as approved by the Supervisor.

Tender rate: Namibia Dollar per kilometre (N$/km)

6. ROAD FURNITURE MAINTENANCE

6.1 Guardrail installation and repair

.1 Scope of work

The installation of new guardrails, at the correct height and offset from the road edge, according to standard plan N2550. The Bitumen Road Maintenance Manual (BRMM) describes cause and type of defects, trigger and restored conditions under Activity: Guardrail installation, page 1 and Guardrail repair 1.

.2 Materials requirements, plant and equipment

Guidelines in BRMM, Activity: Guardrail installation, page 2, and Guardrail repair, page 2.

.3 Methodology

The standard method and procedure is described in BRMM, Activity: Guardrail installation, pages 3 to 9, and Guardrail repair, pages 3 and 4. The method and procedure can serve as a guideline for the Contractor in his planning and execution of the works.

.4 Quality standard

a) The works shall be executed and finished strictly in accordance with the prescribed requirements and fulfil the criteria specified in the BRMM.

.4.1 Response time

The Contractor shall inspect all guardrails at least twice a year and shall present a list of deficiencies to the Supervisor. An installation and repair programme will be agreed based on each inspection.

The maximum response time commencing from the time first detected by or reported to the Contractor, within which the Contractor will repair or replace suddenly damaged guardrails is 7 days, unless otherwise is specified in the Project specifications for the particular road or project.

.5 Measurement and payment

Dayworks as per Schedule of Quantities

7. EMERGENCY REPAIRS

7.1 Emergency earth- and layerwork repair

.1 Scope of work

The re-instatement of cut and fill slope failures and washaways which have occurred in the road due to landslides, sinkholes, erosion or any other occurrence.

The Contractor shall be prepared to carry out emergency work and will respond to prevent and repair damages caused by floods, and washaways that constitute or have potential to create unsafe conditions on roads for the users and adjacent properties.

.2 Execution of work

In the event of a flood or a washaway, the Contractor will immediately respond to establish at least one trough lane for traffic, either by repairing erosion or constructing a detour route around the affected section.

The Contractor will immediately notify the Supervisor and provide an estimate of the costs associated with the repair.

The Supervisor shall instruct the Contractor to proceed with the re-instatement work to be carried out once the condition has been identified, and an agreement has been made on a work and time programme, and costs.

Depending on the extent and nature of the repair the Supervisor may elect to cause another contractor to complete the works

.3 Response time

The Contractor will perform emergency earth- and layerwork response maintenance and repairs, including the establishment of detours as necessary, within 3 hours of a complete cutting of a road, and within 9 hours when one lane is cut, unless otherwise is specified in the Project specifications for the particular road or project.

The Contractor shall immediately upon detection set up danger warning signs as appropriate, depending on the location and character of the failure.

.4 Quality standard

The re-instatement work shall require a standard of workmanship to produce repair work not liable to settle after constructed and commensurate with normal standards and specifications. Applicable sections of the BRMM shall be adhered to regarding materials, procedures, methods and quality standards, as well as standards and procedures laid down by the Supervisor.

.5 Measurement and payment

Measurement and payments for executed and ordered works will be made in accordance with Contract unit rates, dayworks rates or negotiated rates as appropriate depending on the location and nature of work, etc.

7.2 Road accident response

.6 Scope

The Contractor will respond to road accidents as required:

a) provide traffic control and restore traffic movement,
b) contain road spillage,
c) establish and record accident and vandalism,
d) repair damage to roads from accident and vandalism, and
e) remove vehicles, cargo and debris as necessary

(if this activity should be included, the contents of the activity must be completed)

8. DAYWORK

8.1 Scope

This section covers the listing of daywork items for use in determining payment for work which cannot be quantified in specific units in the Schedule of Quantities, or work ordered by the Supervisor, during the routine maintenance period, which was not foreseen at the tender stage, for which no applicable rate exists in the Schedule of Quantities.

8.2 Ordering of daywork

No daywork shall be undertaken without written authorisation from the Supervisor.

8.3 Work reserved for dayworks

The following activities in the standard specifications are reserved for inclusion under dayworks and payment under the relevant items in the dayworks schedule:

a) Item 4.2 - Road sign, erection and repair
b) Item 4.4 - Road feature markers, erection and repair
c) Item 6.1 - Guardrail installation
d) Item 7.1 - Emergency, earth- and layerwork repair
e) Item 7.2 ? - Road accident response *(if the activity should be included)*

The Supervisor may also instruct other works, due to new or unforeseen circumstances, to be carried out on a daywork basis.

The Contractor must keep daily records on dayworks for consideration and approval by the Supervisor. The format of the records shall be as directed by the Supervisor.

The Schedule of Quantities included in the Tender Documents will provide detailed information on measurement and payments of dayworks.

PROJECT SPECIFICATIONS

PART A: GENERAL

1. Miscellaneous

The Standard Specifications have been written to cover all phases of work usually encountered on bitumen routine road maintenance, and they may therefore cover items of work not contemplated on this particular project.

2. General description of the project

This project comprises the bitumen routine road maintenance of road…… ……from …….....……..to .....for a period of one year, commencing on…….....The contract includes an optional extension of one additional year, subject to successful negotiations between the Employer and the Contractor. The negotiations will take place two months before the completion of the Contract. At that time, the expected maintenance activities for the next year will be evaluated and the contents of the evaluation will form the basis for the negotiations. The unit prices included in the original contract may be adjusted to take into account price fluctuations as well as the extent of work and quantities foreseen for the extended period.

2.1 Boundaries of work

Bitumen routine road maintenance includes activities within the roadway. The roadway is the width between the outer shoulder breakpoints. For this project the roadway width is……. m, based on a carriageway of …… m and shoulders of …… m. All road signs, road feature markers and guard-rail maintenance shall be included for a width of …….*(5.0 m?)* m each side from the shoulder breakpoint.

2.2 The site

The site of the works includes the road reserve area along the road section defined above, although bitumen routine maintenance activities will only be carried out within the limits specified above. Borrow and stockpile areas provided by the Employer are included in the site. The Contractor must make his own arrangement for land he may require where plant and/or materials for use in the works can be stored. He shall obtain the written approval from the owners concerned. The Contractor's arrangements shall also be approved by the Supervisor.

2.3 Other contractors

Other Contractor (s) may on behalf of the Employer carry out simultaneous maintenance activities in the road reserve outside the widths defined for this contract. The Contractor shall afford all reasonable opportunities to any other contractors employed by the Employer for carrying out their work. Any problem related to the coordination of such simultaneous activities shall immediately be reported to the Supervisor.

2.3 Contractor's camp site

The Contractor shall establish his camp(s) at a site provided by himself at a site accepted by the Supervisor, all in accordance with Standard Specifications, section 1.4.
Camps may not be erected in the road reserve.

3. Detailed description of the project

3.1 Nature of work

The description of the project contained in this section is merely an outline of the contract works. Approximate quantities of each type of work to be carried out in accordance with the contract documents are listed in the Schedule of Quantities.

The nature of bitumen routine road maintenance work to be carried out under this contract includes: *(suggested list, some items may not be used in a particular project):*

a) establishment of camp sites
b) accommodation of traffic
c) maintenance of;
   - road surface
   - shoulders
   - road sign clearing and markings
   - road side
   - road furniture
   - emergency repair

3.2 Traffic safety and environmental aspects

3.2.1 Safety

The contract will be executed under traffic conditions and the safety of the motorist shall be of prime consideration. Crossing of the road by maintenance vehicles shall be limited to the practical minimum and all slow moving vehicles shall travel on the road verges, off the pavement.

All vehicles and items of mobile plant operating on the site shall be supplied with electrically operated amber rotating beacons of robust construction. The Standard Specifications provide details on safety and traffic arrangements for each maintenance activity.

All normal work in the designated area shall be limited to the period between sunrise and sunset.

Failure to maintain roadsigns, warning signs or rotating lights, etc. in good condition shall constitute a reason for the Supervisor to bring the works to a stop until the defective items have been repaired to the required standard.

The Contractor may not commence maintenance activities before adequate provision has been made to accommodate traffic in accordance with the requirements of the contract documents and the Road Signs Manual, May 1997.

Typical road sign layouts *(from the Road Signs Manual ?)* are included in the schedule of drawings *(Appendix ?)*

3.2.2 Accommodation of traffic

Accommodation of traffic will not be paid for separately and any costs associated with it must be included in the rates of the various items where accommodation of traffic is needed.

3.2.3 Environmental requirements

Disposal of bituminous based material shall only be at an approved location and by means of an approved, method arranged beforehand with the Supervisor.

3.3 Programme

The period of this contract is one year with an optional extension of an additional one year (ref. Section 2 above). A proposed first year programme is illustrated in Appendix A. This programme is supplied as a guide to Tenderers and is in no way binding to the Employer.

Approximate quantities of each type of work to be carried out in accordance with the contract documents are listed in the Schedule of Quantities.

The following activities are predetermined (scheduled):

a) base repair
b) crack sealing
c) surface sealing
d) depression levelling of less severe nature
e) edge repairs of less severe nature
f) shoulder blading
g) shoulder mowing (frequency per annum)
h) litter control (weekly)

The following activities are responsive and shall be carried on a continuous basis as and when required in accordance with the criteria of response time specified for each of the following activities:

i) surface patching
j) bleeding removal
k) depression levelling of severe nature
l) edge repairs of severe nature
m) shoulder gravelling
n) road sign, erection and repair
o) road marking repairs
p) road feature markers, erection and repair
q) road studs installation
r) guardrail installation and repair
s) emergency repair

The Supervisor will agree on annual and quarterly programmes (for the first year) based on the Contractor's tender programme, and any changes to the programmes will be communicated to the Contractor at least one month in advance.

3.4 Utilisation of appropriate resources

A major objective of this project is that optimum utilisation shall be made of the resources existing within the vicinity of the site and that these resources shall be improved and enhanced in and through their utilisation in the execution of the contract works.

The Contractor shall in his tender describe how he intends to organise and make use of such resources.

3.5 Overhaul

Overhaul is not applicable to this contract, and the Contractor should ensure that the transport cost, of all materials is included in his tendered rates.

PART B: MATTERS RELATED TO THE STANDARD SPECIFICATIONS FOR BITUMEN ROUTINE ROAD MAINTENANCE

(examples of particular clarifications and specifications for a specific project)

1. Section 1. General

(specify width of roadway to be covered and area to be covered for road sign and road feature marker attendance)

2. Section 2. Surface maintenance: Base repair,

Subsection 2.1.4 Methodology

Cement stabilisation of base course material shall be used.

3. Section 2. Surface maintenance: Surface patching

Subsection 2.2.5.2 Response time

The maximum response time commencing from the time first detected by or reported to the Contractor, within which the Contractor will complete the repair of the pavement deficiency shall be 48 hours.

4. Section 3. Shoulder maintenance: Shoulder blading

3.1.1 Scope of work

Shoulder blading shall include addition of water brought to the site to enable compaction to be carried out at or near optimal moisture content.

5. Section 3. Shoulder maintenance: Shoulder mowing

Subsection 3.2.3 Methodology

Grass cuttings need to be removed from the shoulder and disposed off in the road reserve at suitable locations which do not impede drainage conditions. The Supervisor will provide further guidance.

Subsection 3.2.4.1 Response time

The maximum grass height on shoulders is 1 m, or alternatively: shoulder mowing shall be carried out once a year in the month of……., or twice a year in months……and……

ROADS AUTHORITY

CONTRACT NO RAXXX/XX

ROADS NUMBER(S) XXXXXXX, XXXXXXXX, (ETC)

TENDER PRICE

NAME OF TENDERER : **.....**

TENDER PRICE	TIME FOR COMPLETION (Months)

SIGNED ON BEHALF OF TENDERER

.....

SECTION 1 : TENDER NOTICE

ROADS AUTHORITY

CONTRACT NO (RAXXX/XX)

BITUMEN ROAD ROUTINE MAINTENANCE ON

TRUNK/MAIN/DISTRICT ROAD No (XXXX)

FOR APPROXIMATELY (XXX) KM
BETWEEN (XXXXXXXX) AND (XXXXXXXX)

NOTICE TO CONTRACTORS

Tenders are hereby invited from capable civil engineering contractors for the aforementioned works.

On or after the date scheduled below, documents for the contract will be ready for collection from the office of the Roads Authority, Private Bag (XXXX, TOWN), Namibia, Room No (XXX), on payment either in cash or by bank certified cheque, in favour of the Roads Authority, of the amount of (XXXXX) Namibia Dollars (N$XXXXXX) which amount is not refundable.

Tenderers shall make their own arrangements for the collection of the documents and the despatch thereof to whatever destination of their choice.

DOCUMENTS AVAILABLE ON OR AFTER	**Date**	**:**	**XX MONTH XXXX**
SITE INSPECTION	**Date**	**:**	**XX MONTH XXXX**
	Time	**:**	**XXXX**
	Place	**:**	**XXXXXXXXXXX**
TENDER CLOSES	**Date**	**:**	**XX MONTH XXXX**
	Time	**:**	**11:00**

The Employer's Contracts Engineer and/or the Supervisor will meet intending Tenderers' representatives on the date and at the time and place scheduled above for an inspection of the site (please note on no other date nor at any other time). It is compulsory that Tenderers' representatives are present at and for the duration of the inspection. A maximum of two representatives per bona fide Tenderer will be allowed. Latecomers to the Site Inspection may be considered as non-attendants, at the sole discretion of the Executive Officer.

Sealed tenders completed in accordance with the requirements set out in the documents and endorsed "Contract No (XXXX/XX)" will be accepted by (*the Contracts Engineer, Private Bag XXXXXX, Town*) until 11:00 on the date scheduled above, at which time the tenders will be opened in public.

The Roads Authority does not bind itself to accept the lowest or any tender, nor will it assign any reason for the rejection of any tender.

All tenders submitted will be subject to the Tender Regulations of the Roads Authority.

THE EXECUTIVE OFFICER : ROADS AUTHORITY

ROADS AUTHORITY

CONTRACT No XXX/XX

ROAD NUMBERS XXX,XXX, ETC

SECTION 2 : TENDER RULES

ROADS AUTHORITY

CONTRACT No RA XXX/XX

ROADS NUMBERS XXX,XXX, ETC

Section 2 : Tender Rules

Contents **Page**

ROADS AUTHORITY

CONTRACT No RA XXX/XX

ROAD NUMBER(S) XXX,XXX, ETC

NOTE : Only tenders from contractors registered as a business concern in Namibia with the necessary capability and/or experience to satisfactorily execute these works will be considered.

1. TENDER AND OTHER FORMS TO BE COMPLETED

The tender shall be signed and witnessed on the Tender Form incorporated herein by a person duly authorised to do so. A tender submitted by a corporation must bear the seal of the corporation and be attested by its Secretary. The Schedule of Quantities shall be fully priced and totalled in the currency of the Republic of Namibia to show the amount of the tender, and the summary thereof shall be signed. The certificates, schedules and forms contained herein shall be completed and signed by the Tenderer in black ink.

Where the space provided in the bound documents is insufficient, separate schedules may be drawn up in accordance with the given formats. These schedules shall then be bound together with a suitable title page and submitted with the tender documents. All such schedules must be signed.

2. TENDER ALL-INCLUSIVE

The Tenderer must allow in the tender for all labour, material, constructional plant, temporary works, taxes and duties, and everything else necessary for the execution and completion of the Works in accordance with the tender documents.

3. ALTERATIONS TO TENDER DOCUMENTS

No unauthorised alteration or addition shall be made to the Form of Tender, to the Schedule of Quantities or to any other part of the tender documents. If any such alteration or addition is made or if the Schedule of Quantities, other schedules, forms and certificates are not properly completed, the tender may be rejected.

4. COSTS INCURRED BY TENDERER

The Employer will not be responsible for or pay for any expenses or losses which may be incurred by any Tenderer in the preparation and submission of the tender or in visiting the site in connection therewith.

5. ATTENDANCE OF SITE INSPECTION

The Tenderer shall inform himself of the nature of the site. The Employer will consider a tender only if the official site inspection arranged by the Engineer has been attended by a representative who must :

(a) be suitably qualified to comprehend the implications of the work involved; and

(b) be the Tenderer or be in the direct employ of the Tenderer.

6. TENDER ACCEPTANCE

The Employer does not bind himself to accept the lowest or any other tender.

No reason for the acceptance or rejection of a tender will be given.

7. TENDER WITHDRAWAL OR MODIFICATION AFTER CLOSING DATE

(1) The Employer may ask any Tenderer for a clarification of his tender, or to amend or adjust imbalanced tendered rates. However, only clarifications or amendments to imbalanced tendered rates which do not change the tender sum may be accepted.

(2) Tenders shall remain valid for a period of sixty (60) days from the time set for the opening of tenders and no tender may be withdrawn during this period unless the Employer informs the Tenderer in writing before the end of this period that his tender has not been accepted.

(3) Should the selected Tenderer fail to sign a contract or give notice of his inability to execute the contract, the Employer may disqualify this Tenderer and accept another tender from those already received.

8. CANCELLATION OF CONTRACT

(1) If the Employer is satisfied that any person (being an employee, partner, director or shareholder of the Tenderer or a person acting on behalf of or with the knowledge of the Tenderer), firm or company

(a) is executing a contract with the Employer unsatisfactorily;

(b) has offered, promised or given a bribe or other gift or remuneration to any officer or employee in the service of the Roads Authority in connection with the obtaining or execution of a contract;

(c) has acted in a fraudulent manner or in bad faith or in any other unsatisfactory manner in obtaining or executing another contract, or that he has managed his affairs in such a way that he has in consequence thereof been found guilty of a criminal offence;

(d) has approached an officer or employee of the Roads Authority or in the service of the Supervisor before or after tenders have been called for, with the aim of influencing the award of the contract in his favour;

the Employer may, cancel any contract between the Employer and such person, firm or company and no tender from such person, firm or company shall be favourably considered for a specified period.

9. SUBMISSION OF TENDERS

All tenders and supporting documents (original documents or certified copies of original documents only) shall be submitted strictly in accordance with the instructions given in the official tender advertisement not later than the closing hour and date given in the Tender Notice.

All tenders and supporting documents (original documents or certified copies of original documents only) must be sealed in an envelope on which the contract number and title is

clearly stated, and the name of the Tenderer reflected on the reverse side of the envelope, and clearly addressed to *The Contracts Engineer, Private Bag XXXX, TOWN, Namibia.*

10. AMENDMENTS TO TENDER BY EMPLOYER

The Employer reserves the right to correct arithmetical or other errors in the extension of rates and totals in the tender. The Tenderer will be informed of the effect of any corrections on his Tender Sum prior to the acceptance of the tender. In no case will tendered rates be adjusted when correcting

such errors. In the event of there being any rates which are declared to be unacceptable or unbalanced by the Employer for reasons which the Employer will indicate, the Tenderer will, be requested to justify any specific rate or rates, i.e. to give a financial breakdown of how such rate or rates were obtained, and subsequently to consider amending and adjusting such rate or rates while retaining the corrected, if required, Tender Sum unchanged and fixed.

11. DELEGATION OF AUTHORITY BY EMPLOYER

The Employer may delegate any power conferred upon him in these rules to an officer or employee of the Employer.

12. TENDER RULES BINDING

The Tender Rules as well as the instructions given in the official tender advertisement shall be binding upon all Tenderers submitting a tender for the service or services stated in the tender documents.

13. NOTICE(S) TO TENDERERS

Additional information and amendments to the tender documents will be conveyed to the Tenderers by the Employer or his agents, prior to the closing date of the tender, by means of Notices to Tenderers. Acknowledgement of receipt thereof shall be documented on Form E in Section (XXX) of these documents.

ROADS AUTHORITY

CONTRACT No RA XXX/XX

ROAD NUMBER(S) XXX,XXX, ETC

SECTION 3 : GENERAL CONDITIONS OF CONTRACT

ROADS AUTHORITY

CONTRACT No RA XXX/XX

ROAD NUMBER(S) XXX,XXX, ETC

Section 3 : General Conditions of Contract Contents

Contents **Page**

A BASIS OF CONTRACT

A1. Definitions and Interpretations

A1.1 **Contractor** means the person or corporate body whose bid to carry out the works has been accepted by the Employer.

A1.2 **Contract Period** means the period as defined in the Agreement, and extended in terms of the General Conditions of Contract.

A1.3 **Delegate** means the person to whom the Supervisor delegates any of his duties and responsibilities in writing with a copy thereof handed to the Contractor.

A1.4 **Employer** means the Roads Authority who may delegate certain powers to the Contracts Engineer.

A1.5 **Letter of Acceptance** means the letter from the Employer to the successful Tenderer confirming acceptance of his tender.

A1.6 **Site** means the area on which the Works are to be carried out, including camping sites and other sites defined by the Employer.

A1.7 **Site Agent** means the Contractor's representative who shall be on Site during execution of operations by the Contractor, and who will receive instructions on behalf of the Contractor from the Supervisor.

A1.8 **Supervisor** means the party named in the Special Conditions of Contract to act as Supervisor for the Contract.

A1.9 **Works** means that which the Contract requires the Contractor to construct, install, maintain and hand over to the Employer.

A1.10 In interpreting these General Conditions of Contract, singular also means plural, male also means female, and vice versa.

A2. Co-operation and Mutual Trust

A2.1 The Contractor and his Site Agent, as well as the Employer and the Supervisor undertake to act in a spirit of co-operation and mutual trust. The Supervisor is to decide on contractual matters between the Employer and the Contractor fairly and impartially.

A3. Supervisor

A3.1 The Supervisor will be appointed by the Employer and will administer the contract on behalf of the Employer.

A3.2 The Supervisor will from time to time instruct the Contractor in writing which operations and activities must be executed and clearly specify the area to be covered. The Contractor shall respond to written instructions given by the Supervisor within the response times specified in the Standard Specifications.

A3.3 Work instructed by the Supervisor can be specified in a discontinuous and repetitive manner, if so required, but shall as far as possible follow a sequence to reduce the movement of work teams.

		A3.4	The Supervisor shall keep written copies, which shall be co-signed by the Contractor, of all his instructions to the Contractor. The Contractor shall take, and comply with, instructions only from the Supervisor (or his Delegate).
A4.	**Subcontracting**	A4.1	The Contractor may subcontract with the permission of the Supervisor but may not assign the Contract without approval of the Employer in writing. Subcontracting does not alter the Contractor's obligations.
A5.	**Contractor's Risks**	A5.1	All risks, loss or damage to physical property and of personal injury and death which arise during and in consequence of the performance of the Contract are the responsibility of the Contractor. *(compulsory insurance ?).*
A6.	**Indemnity**	A6.1	Each party is liable for and indemnifies the other against losses, expenses and claims for loss or damage to physical property, personal injury, and death caused by his own acts.

B. GENERAL OBLIGATIONS AND WORKMANSHIP

B1.	**Extent of Contract**	B1.1	The Contractor shall with due care and diligence execute and complete the Works, and remedy any defect therein in accordance with the provisions of the Contract, to the satisfaction of the Supervisor. The Contractor shall provide all superintendence, labour, materials, plant, equipment and everything required for the proper fulfilment of his obligations under the Contract.
B2.	**Contractor's Employees**	B2.1	The Contractor shall only employ Namibian citizens or personnel in possession of a work permit valid for the intended duration of the Contract.
		B2.2	The conditions of employment and agreements between the Contractor and his employees shall be in writing and kept safe for the duration of the Contract.

		B2.3	The Contractor shall make his own arrangements with third parties for camp sites for his employees. Camp sites shall be cleaned to the written satisfaction of the land owner at the end of the Contract as a condition for the release of the retention monies due to the Contractor.
B3.	**Quality Control**	B3.1	The Supervisor will visit the Works on a regular basis to inspect the quality of work. Should the Contractor not perform the work as specified or instructed by the Supervisor, the Contractor shall correct such defective work at his own cost before certification for payment will be done.
		B3.2	Where the quality of materials, which have been purchased from a supplier for incorporation into the Works, are suspect, the Contractor shall supply samples to the Supervisor when requested for testing by a third party. If not in conformance with the Specifications, the cost of both the samples and tests will be carried by the Contractor.
B4.	**Safety and Convenience of Traffic and Pedestrians**	B4.1	The Contractor shall protect the works properly and so arrange his operations that the minimum danger and inconvenience is caused to vehicle and pedestrian traffic. Road signs, cones, barricades and other traffic control measures shall be erected and applied as specified in the Contract.
C.	**TIME**		
C1.	**Programme of Work**	C1.1	Within the time stated in the Appendix to Tender the Contractor shall submit to the Supervisor for his approval a programme showing the general methods, arrangements, order, timing and resources allocated for all the activities required for the Works, in order to meet specified interim target dates and the intended completion date of the Contract.
		C1.2	The Supervisor may request updated programmes to monitor accelerated production rates, should the Contractor fall significantly behind programme.
C2.	**Commencement of Work**	C2.1	The Contractor shall start with the works within thirty (30) calender days from the date on which the site is handed over to him by the Employer, by means of the Letter of Acceptance of his tender.
C3.	**Time for Completion**	C3.1	The time for completion is stated in the Appendix to Tenderer, starting on the date on which the site is handed over to him, or within an extended time as may be approved by the Employer, for any substantial increase in estimated quantities, exceptionally inclement weather or delays not due to any action on the part of the Contractor.
C4.	**Working Hours**	C4.1	Except in the case of emergency work, no work may be executed outside normal working hours on Monday to Saturday, unless approved in writing by the Supervisor.
C5.	**Penalty for Delays in Progress**	C5.1	Retention monies will be increased from 10% to 15% of monthly payment certificates for as long as

the Contractor is behind programme by more than fourteen (14) calender days. The Contractor shall forfeit 10% of his retained retention monies per month of late completion of the Contract, to the Employer

C6. Termination of Contract

C.6.1 Where the work is not performed in the spirit of the Contract, the Supervisor has the authority to summarily suspend the contract, and the Employer may for the same reason terminate the contract. Criteria which might lead to suspension and termination are:

- unsatisfactory progress of the work
- refusal to carry out reasonable instructions given by the Supervisor
- refusal to correct work which is not in compliance with the specifications
- persistent labour disputes that require intervention of third parties
- persistent endangering of traffic
- trespassing on, or damage to properties adjacent to the road reserve.

D. VARIATIONS

D1. Variations

D1.1 The Supervisor shall make any variation of the sequence, form, quality or quantity of the works or any part thereof that may, in his opinion, be desirable to appropriately maintain the road(s) under the contract, and the Contractor shall carry out any instruction of the Supervisor related to such variation.

D2. Payment for Variations

D2.1 A variation in terms of Clause D1.1 shall be paid for at the tendered unit rate, daywork rate if no unit rate exist, or at a rate to be determined (called an Extra Work rate) in accordance with existing rates and agreed upon between the Contractor, Supervisor and Employer.

D2.2 The Contractor may be called upon, in cases of emergency, like washaways, vehicle accidents and fire hazards, to provide any service or work commensurate with his resources. Such emergency work shall be treated as a Variation in terms of Clause D1.1.

D2.3 Where the quantities of a Pay Item vary by more than 50% from that estimated in the Schedule of Quantities, and the tendered amount of this Pay Item exceeds 30% of the Tender Price, the Contractor is entitled to negotiate a new rate based on proven cost.

E. PAYMENT

E1. Measurement

E1.1 Work completed and approved by the Supervisor shall on a monthly basis be measured for payment by the Supervisor, in the presence of the

Contractor when preferred by the latter. Measurements shall in general be taken along the centreline of the road, and perpendicular thereto.

E2. Payment and Retention

E2.1 The Contractor shall be paid monthly the amount due to him, based on the measurements done and certified in accordance with Clause E1.1, within thirty (30) calender days of certification by the Supervisor. In cases where large quantities of materials are to be build into the Works and where such materials are properly safeguarded, the Supervisor may on written request pay 80% of the paid purchase value thereof to the Contractor as payment for Materials on Site. A retention amount of 10% of each payment shall be retained by the Employer as a performance guarantee for the fulfilment of the Contractor's obligations in terms of the Contract.

E3. Price Adjustment

E3.1 The price of bitumen only shall be increased or reduced by the net variation in the purchase price of bitumen, based on the submission of acceptable invoices following a statutory increase in price. This clause shall apply *mutatis mutandis* to fuel if so stated in the Special Conditions of Contract.

F. CLAIMS AND RESOLUTION OF DISPUTES

F1. Claim Procedures

F1.1 Should the Contractor wish to enter a claim for additional compensation, extension of time or any damages, he shall within twenty-eight (28) calender days after such circumstances arose on which he intend to base his claim, motivate and submit his claim. If his claim is accepted in principle as a legitimate claim by the Employer, the Contractor shall be advised in writing of the date on which full particulars must be submitted.

F2. Declaration of a Dispute

F2.1 Should a disagreement arise between the Contractor and the Supervisor (the Parties) as to any matter relating to the meaning of, or arising out of the Contract, the Contractor shall in writing request the Employer to give a decision on the disagreement, which the Employer shall do within fourteen (14) calender days of receipt thereof.

F2.2 The Employer's decision shall be final and binding, unless the Contractor within fourteen (14) days of receipt thereof by written notice to the Employer, rejects the decision. If still unresolved within a further fourteen (14) days, either Party may declare the disagreement a dispute.

F3. Resolution of Dispute

F3.1 The Parties, in terms of Clause A1.1 hereof, shall from a mutually agreed panel of mediators, select a Mediator. The Mediator shall have access to all relevant documents, records and evidence on which each party relies and shall notify both Parties of his decision within fourteen (14) days of receipt of all information required by him.

F3.2 The decision of the Mediator shall be final and

			binding unless one or both parities within a further fourteen (14) days, apply to the Mediator to state any question of law upon which the dispute hinges, for final opinion of a Council chosen by agreement between the parties. The opinion so given shall be final and binding upon the Mediator and the parties to the dispute, and not subject to appeal.
F4.	**Cost of Mediator**	F4.1	The professional fees and reimbursable costs of the Mediator are borne equally by the Parties. The Mediator shall determine which percentage of the cost of the Council shall be borne by each Party, proportional to the inverse of the success rate of each Party's case in the dispute.

ROADS AUTHORITY

CONTRACT No RA XXX/XX

ROAD NUMBER(S) XXX,XXX, ETC

SECTION 4 : SPECIAL CONDITIONS OF CONTRACT

INTRODUCTION

The clauses of the Special Conditions of Contract are amending, or adding to, the clauses of the General Conditions of Contract and are not replacing the said clauses referred to unless otherwise indicated.

The Special Conditions of Contract have priority over the General Conditions of Contract.

The clauses of the Special Conditions of Contract are numbered "SCC" followed in each case by the number of the relevant clause or subclause in the General Conditions of Contract and its relevant heading, or (where new and unrelated conditions of contract are introduced) by numbers following the last Clause number in the General Conditions of Contract and appropriate headings.

CLAUSE	**HEADING**	**VARIATION, CLARIFICATION**
SCC X	.....	.....
SCC XX	.....	.....

ROADS AUTHORITY

CONTRACT No RA XXX/XX

ROAD NUMBER(S) XXX,XXX, ETC

SECTION 5 : STANDARD SPECIFICATIONS

ROADS AUTHORITY

CONTRACT No RA XXX/XX

ROAD NUMBER(S) XXX,XXX, ETC

SECTION 6 : PROJECT SPECIFICATIONS

ROADS AUTHORITY

CONTRACT No RA XXX/XX

ROAD NUMBER(S) XXX,XXX, ETC

SECTION 7 : SCHEDULE OF QUANTITIES

ROADS AUTHORITY

CONTRACT No RA XXX/XX

ROAD NUMBER(S) XXX,XXX, ETC

SECTION 8 : FORMS TO BE COMPLETED BY TENDERER

ROADS AUTHORITY

CONTRACT No RA XXX/XX

ROAD NUMBER(S) XXX,XXX, ETC

SECTION 8 : FORMS TO BE COMPLETED BY TENDERER

CONTENTS **PAGE**

NOTE: 1. THESE FORMS MUST BE COMPLETED USING BLACK INK.

Where the space provided in the bound documents is insufficient, separate schedules may be drawn up in accordance with the given formats. These schedules shall then be bound together with a suitable contents page and submitted with the tender documents. All such schedules must be signed.

2. THE TENDERER IS REMINDED ALSO TO COMPLETE THE "TENDER PRICE" FORM IN THE FRONT OF THE TENDER DOCUMENT.

ROADS AUTHORITY

CONTRACT No RA XXX/XX

ROAD NUMBER(S) XXX,XXX, ETC

A : CERTIFICATE OF TENDERER'S VISIT TO THE SITE

This is to certify that I, ...

representative of (Tenderer) .....

of (address) .....…

.....

.....……

Telephone No .....……

Fax No .....

in the company of (Supervisor'sname) .....…….

visited and examined the site on (Date) .....

I further certify that I have made myself familiar with all local conditions likely to influence the work and the cost thereof, that I am satisfied with the description of the work and the explanations given by the said Supervisor and that I understand perfectly the work to be done, as specified and implied, in the execution of this contract.

TENDERER'S REPRESENTATIVE: .....

SUPERVISOR: .....

ROADS AUTHORITY

CONTRACT No RA XXX/XX

ROAD NUMBER(S) XXX,XXX, ETC

B : AUTHORITY FOR SIGNATORY

Signatories for companies must establish their authority by attaching to this form a copy of the relevant resolution of the Board of Directors, duly signed and dated. An example is shown below:

By resolution of the Board of Directors at a meeting on

..... 19 ..... at ..... ,

Mr ..... ,

whose signature appears below, has been duly authorised to sign all documents in connection with this tender for Contract No RA XXX/XX and any contract which may arise therefrom on behalf of (block capitals)

.....

SIGNED ON BEHALF OF THE COMPANY BY:
……

IN HIS CAPACITY AS:
……

DATE:
……

SIGNATURE OF SIGNATORY:
……

WITNESSES:

1 ……

2 ……

ROADS AUTHORITY

CONTRACT No RA XXX/XX

ROAD NUMBER(S) XXX,XXX, ETC

COMPANY STAMP : .....

ROADS AUTHORITY

CONTRACT No RA XXX/XX

ROAD NUMBER(S) XXX,XXX, ETC

C : SCHEDULE OF WORK CARRIED OUT BY TENDERER

The Tenderer must insert in the spaces provided below, a list of work similar to this Contract which was completed by his firm during the past five (5) years, and similar work at present under construction by his firm.

EMPLOYER : NAME AND TEL NO	SUPERVISOR : NAME	DESCRIPTION OF WORK	VALUE OF WORK	YEAR COMPLETED

ROADS AUTHORITY

CONTRACT No RA XXX/XX

ROAD NUMBER(S) XXX,XXX, ETC

SIGNED ON BEHALF OF TENDERER : .....

D : SCHEDULE OF CONSTRUCTIONAL PLANT

The Tenderer must state below what constructional plant will be immediately available for the work should he be awarded the contract.

DESCRIPTION, SIZE, CAPACITY	QUANTITY

ROADS AUTHORITY

CONTRACT No RA XXX/XX

ROAD NUMBER(S) XXX,XXX, ETC

SIGNED ON BEHALF OF TENDERER: .....

E : NOTICES TO TENDERERS

In submitting my/our tender, the tender sum given in paragraph 1 of my/our tender form includes in full the effects of the following notice(s) to tenderers.

NOTICE NUMBER	SUBJECT MATTER OF NOTICE

ROADS AUTHORITY

CONTRACT No RA XXX/XX

ROAD NUMBER(S) XXX,XXX, ETC

SIGNED ON BEHALF OF TENDERER: .....

F : TENDER FORM

The Executive Officer
Roads Authoriy
Private Bag XXXX
WINDHOEK

Sir,

CONTRACT NO. RA XXX/XX
BITUMEN ROAD ROUTINE MAINTENANCE ON ..... ROAD No ..... BETWEEN ..... AND .....

1. Having examined the documents for the execution of the abovementioned work, as well as the notices published thereafter, I/we, the signatories offer to execute the whole of the said Works in conformity with the said documents and annexures for the sum of:

.....

..... (N$ .....)

or such other sum as may be ascertained in accordance with the Conditions of Contract, and the tender rules which are applicable to this Contract, as well as the conditions contained in this tender form.

2. I/We acknowledge that all certificates, lists and forms which are included in this document for completion by the Tenderer, have been fully completed by me/us and are part of my/our tender.

3. I/We bind myself/ourselves to complete and deliver the whole of the Works of this Contract within ..... months, calculated from the date of receipt of the written instruction in terms of Clause C2.1 of the General Conditions of Contract, the Contractor's holidays during December and January included.

ROADS AUTHORITY

CONTRACT No RA XXX/XX

ROAD NUMBER(S) XXX,XXX, ETC

4. If I/we do not complete the whole Works within the time period for which I/we tendered in paragraph 3 hereof, I/we agree to pay to the Employer, as a penalty for such failure, an amount equivalent to 10% of the retention amount for each calendar month, or part thereof, by which my/our time stated for completion is exceeded, and the Employer may, without prejudice to any other method of recovery subtract monthly such amounts from any money due or to become due to me/us.

5. If my/our tender is accepted, I/we bind myself/ourselves to sign the Form of Agreement, included in this document, within a period of fourteen (14) days after notification that my/our tender has been accepted.

6. I/We agree to abide by this tender for a period of sixty (60) days from the closing date for the submission of tenders, and it shall remain binding on me/us and may be accepted at any time before the expiry of that period.

7. Unless and until a formal agreement is prepared and executed, this tender, together with your written acceptance thereof, shall constitute a binding contract between us and shall be deemed for all purposes to be the contract agreement.

8. In the event of there being any arithmetic errors in the priced Schedule of Quantities, I/we agree to their being corrected, the rates being taken as correct.

9. I/We acknowledge that you are not bound to accept the lowest or any tender that you may receive and that you will not defray any expenses incurred by us in tendering.

10. I/We agree and undertake to commence with the abovementioned Works within thirty (30) days of receipt of notice from the Engineer requiring work to commence.

11. My/Our *domicilium citandi et executandi* is at .....

.....

in the Republic of Namibia.

SIGNED ON BEHALF OF THE TENDERER : .....

SIGNATORY'S NAME
(IN CAPITAL LETTERS) : .....

DATED THIS: : ..... **DAY OF** ..... **19** .....

ON BEHALF OF : .....

ADDRESS : .....

.....

.....

TELEPHONE NUMBER : .....

ROADS AUTHORITY

CONTRACT No RA XXX/XX

ROAD NUMBER(S) XXX,XXX, ETC

FAX NUMBER : .....

WITNESS

SIGNATURE : .....

NAME (IN CAPITAL LETTERS) : .....

ADDRESS : .....

.....

.....

G : APPENDIX TO TENDER

ITEM	REFERENCE CLAUSES	STIPULATION
Validity of tender	Tender Rule 7(2)	60 days after closing date for tenders
Time within which a programme of works has to be submitted	GCC1.1	21 calender days
Time for completion	GCC C3.1	XXX calender months
Amount of liquidated damages	GCC C5.1	10% of retention amount per month or part thereof
Percentage of receipt value of Materials on Site	GCC E2.1	80 percent
Percentage of retention	GCC E2.1	10 percent
Time within which payment has to be made	GCC E2.1	30 days after certification by the Supervisor

ITEM	CLAUSE(S) IN GENERAL CONDITIONS OF CONTRACT	STIPULATION
PRICE VARIATION FOR BITUMEN		GCC E3.1
ITEMS :	**PRICE BASIS ON WHICH VARIATIONS SHALL**	**RATES OR PRICES FOR THE BASE MONTH INCLUDING TRANSPORT AND ALL APPLICABLE TAXES, AND GIVE**

ROADS AUTHORITY

CONTRACT No XXX/XX

ROAD NUMBER(S)

	BE DETERMINED	SOURCE OF MATERIAL
MSP 1 Spray Grade (60) anionic emulsion		
Stable grade (60) cationic emulsion		
Penetration Grade 80/100 Bitumen		
Penetration Grade 150/200 Bitumen		
Other:		

Note: The Contractor shall be required to substantiate the above rates or prices with documentary evidence when called upon to do so.

SIGNED ON BEHALF OF TENDERER: .....

H : CERTIFICATE OF INDEMNITY

I, ...

duly authorised by a resolution of the Board of Directors of

.....

to do so, do hereby indemnify the Employer as is required in terms of this Contract.

.....
CONTRACTOR

.....

ROADS AUTHORITY

CONTRACT No XXX/XX

ROAD NUMBER(S)

DATE

WITNESSES:

1. .....

2. .....

ROADS AUTH

CONTRACT N

ROAD NUMB

SECTION 9 : FORM OF AGREEMENT

ROADS AUTHORITY

CONTRACT No XXX/XX

ROAD NUMBER(S)

FORM OF AGREEMENT

THIS AGREEMENT entered into at **XXXXXX** in the **REPUBLIC OF NAMIBIA**

on this the ..... day of ..... 19 .....

between THE ROADS AUTHORITY (hereinafter called "the Employer") of the one part, herein represented by

.....

in his/her capacity as Executive Officer and

.....

(hereinafter called "the Contractor") of the other part, herein represented by

.....

in his/her capacity as .....

WHEREAS the Employer is desirous that certain works must be executed, namely:

BITUMEN ROAD ROUTINE MAINTENANCE OF ..... ROAD No ..... AND ..... BETWEEN ..... AND .....

and has accepted a tender by the Contractor for works;

THEREFORE THIS AGREEMENT ATTESTS AS FOLLOWS:

1. The Contractor shall execute and complete the works in accordance with the contract document which consist of the following:

(a) the General Conditions of Contract;
(b) the Standard Specifications;
(c) the Tender Rules;
(d) Special Conditions of Contract;
(e) the Project Specifications;
(f) the priced Schedule of Quantities (which includes the Preamble to the Schedule of Quantities);
(g) the said Tender and Annexures to Tender;
(h) all Forms, Certificates and Lists which the Tenderer was required to complete;
(i) any Addenda and Notice(s) to Tenderers issued before the tender date and incorporated in the Tender;
(j) the Letter of Acceptance.
(k) the Contract Drawings (if issued);
(l) the Borrow Pit Data Sheets (if issued)

All the documents must be seen as part of this agreement and must be read and interpreted as such.

2. The period allowed for the completion of this contract is ..... months (the Contractor's holidays during December and January included), calculated from the commencement date of the Contract as defined in Clause C2.1 of the General Conditions of Contract. This period may be

amended in accordance with the stipulations contained in the Contract, but if the stated or thus amended

time period is exceeded, it is agreed that the Contractor shall pay the Employer, as liquidated damages, an amount equivalent to 10% of the retention amount per calendar month, or part thereof, by which the said completion period is exceeded.

It is further agreed that the Employer may, without prejudice to any other method of recovery deduct such sum monthly from the Contractor from any monies due or to become due to the Contractor, in terms of this Agreement.

3. In the event of any differences or discrepancies between or within any documents forming part of, or connected with, or bearing upon the Contract, these shall be determined and resolved in accordance with the stipulations of Clause F2.1 of the General Conditions of Contract.

4. In consideration for the payment to be made by the Employer to the Contractor, as hereinafter stated, the Contractor hereby covenants with the Employer to execute and complete the Works, in conformity in all respects with the stipulations of the Contract.

5. The Employer hereby covenants to pay the Contractor in consideration of the execution, on time and in the manner prescribed, and completion of the Works, the contract price at the times and in the manner prescribed by the Contract. The amount to be paid by the Employer to the Contractor for the due and faithful performance of the Works, shall be a sum to be determined from the quantity of work actually carried out at the rates and sums shown in the priced Schedule of Quantities.

IN WITNESS whereof the parties hereto have set their hands and seals (if any) in the presence of the subscribing witnesses:

SIGNED FOR AND ON BEHALF OF THE EMPLOYER : .....

WITNESS : .....

NAME : .....

WITNESS : .....

NAME : .....

SIGNED FOR AND ON BEHALF OF THE CONTRACTOR : .....

WITNESS : .....

NAME : .....

WITNESS : .....

NAME : .....

ROADS AUTHORITY

CONTRACT No XXX/XX

ROAD NUMBER(S)

SECTION 10 : LOCALITY PLAN

ROADS AUTHORITY

CONTRACT No XXX/XX

ROAD NUMBER(S)

SECTION 11 : DRAWINGS

(PROJECT TITLE……..)

SCHEDULES OF QUANTITIES

CONTENTS

1. Preamble to the schedule of quantities

1. For the purpose of this Schedule of Quantities, the following words shall have the meanings hereby assigned by them:

Unit:	The unit of measurement for each item of work as defined in the Specifications
Quantity:	The number of units of work for each item
Rate:	The payment per unit of measurement at which the Tenderer tenders to do the work
Amount:	The product of the quantity and the rate tendered for each item.
Provisional Sum:	A sum designated to be used in part or in full as determined by the Supervisor for payment under Dayworks.

2. This preamble and Schedule of Quantities form an integral part of the Contract Documents.

3. The quantities set out in the Schedules of Quantities are approximate quantities only. The quantities of work finally accepted and certified for payment, and not the quantities given in the Schedule of Quantities given in the Schedules of Quantities, shall be used for determining payments to the Contractor.

4. Rates shall be comprehensive in accordance with subclause 1.3.5.2 of the Standard Specifications.

5. The Tenderer shall fill in a rate against all items where the words "rate only" appear in the amount column.

6. Unless quantities vary as provided for in Clause D2.3 of the General Conditions of Contract the tendered rates shall be valid irrespective of any change in the quantities during the execution of the Contract.

7. The Works executed will be measured for payment in accordance with the methods described in the Standard Specifications under the various payment items, notwithstanding any custom to the contrary.

8. The short descriptions of the payment items given in the Schedule of Quantities are only for the purpose of identifying the items and providing specific details. For more detailed information regarding the extent of work entailed under each item, reference is made to the Standard Specifications, Project Specifications, Drawings and Conditions of Contract

9. All rates and sums of money in the Schedule of Quantities shall be in Namibia Dollars and whole cents.

10. Pay item numbers are listed in the Schedule of Quantities. These numbers refer to the corresponding item number in the Standard Specifications. Certain pay item numbers appearing in the Schedule of Quantities are prefixed by the letter (BP??). These letters signify that either

    - a new pay item not listed in the Standard Specification has been described and listed in the Project Specifications, or
    - that an existing measurement and/or payment clause occurring in the Standard Specifications has been clarified and/or modified in the Project Specifications.

1. Dayworks

2.1 General

Tenderers shall complete this schedule which will be used for the valuation of work ordered by the Supervisor in writing to be carried out on a daywork basis, in accordance with Clause 8 of the Standard Specifications and Clause D2.1 of the General Conditions of Contract.

2.2 Labour charges

a) The actual cost of labour to be included as daywork charges shall include the salaries or wages of gangers or charge hands working with their gangs but shall exclude the costs of the time of the foremen or supervisors which shall be deemed to have been included in the sums tendered for the relevant items in Section A. Bitumen Routine Road Maintenance.

b) Work outside normal working hours, over weekends and on Public holidays, as chargeable under the contract , will be paid in accordance with the requirements of the Labour Law.

c) Salaries and wages shall be deemed to be the basic salary/wage remuneration or actual cost of labour which shall be substantiated by acceptable payroll and documentary evidence by the Contractor.

d) Fringe benefits not reflected in basic salary and wages, and other costs payable due to statutory requirements, shall be deemed for daywork payment purposes to be overhead expenses and not included in the basic salary and wage.

e) The percentage tendered as an on-cost on the actual cost of salaries and wages for labour shall include for all overhead charges, profit, liabilities, obligations, risks and incidentals for all workmen to execute work by daywork.

2.3 Materials charges

a) The net cost price of materials (inclusive of General Sales Tax) actually delivered to the Site to be included as daywork charges shall include the costs of delivery to the usual points at which materials are received on the Site.

b) Before ordering any material, the Contractor shall submit quotations to the Supervisor for his approval, and shall submit such vouchers and receipts to the Supervisor as may be necessary to prove the amount claimed.

c) The percentage tendered as an on-cost on the net cost price of materials shall include for all handling, overheads, profit, liabilities, obligations, risks and incidentals and other on-costs for the supply, delivery and distribution of materials for daywork to the individual site(s) where daywork is in progress.

2.4 Plant charges

a) The hourly rates for "standard" items of plant entered in Schedule B shall be used where dayworks are instructed. The Tenderer must show in Form D that he is in possession of the listed items of plant or plan to purchase or hire certain items.

b) When the Contractor plans to use an item of plant on the Works which is not shown in Schedule B, such an item must be added to Schedule B with a dayworks "rate only" entered against it.

c) The tenderer shall enter "rate only" for "occasional" items of plant which the Supervisor may wish to hire on a daywork basis for special purposes, for instance, in emergency situations. In case the Contractor does not own an item of such plant or do not plan to hire or purchase such an item, no rate must be given in Schedule B.

d) The hourly rate shall constitute the daywork rate for the plant and will be deemed to include all costs for consumable, stores, fuel, maintenance, depreciation, ground-engaging tools and all other incidentals necessary to operate the plant for purposes for which it was designed.

e) Sixty percent (60%) for the rate as tendered will be paid in respect of plant which is being employed for daywork, but is standing idle on the specific instructions of the Supervisor, as full compensation for idle cost of plant.

f) For plant not on Site, the cost of establishing items of plant on the site for daywork on the specific instruction of the Supervisor will be negotiated with the Contractor at the time such daywork is contemplated.

2.5 Measurement and payment

A Daywork Schedule (B) has been included in Schedule of Quantities, for the Tenderer to Tender percentages as an on-cost on the actual cost of labour and the net cost of materials. Plant hire rates will be paid in accordance with the hourly rates for the various items as listed in Schedule B.

Schedule B: Dayworks

Item 1. Labour

a) Provisional sum for salaries and wages……..Provisional Sum
b) Tendered percentage as an on-cost on the
actual cost of labour on Item 1 a)……...……Percent (%)

Item 2. Materials

a) Provisional sum for materials……..Provisional Sum
b) Tendered percentage as an on-cost on the
actual cost of labour on Item 2 a)……...……Percent (%)

Item 3. Plant

Items 3 a) to k)……..…hour (h)
Items 3 l) to p)……..……..hour (rate only)

(PROJECT TITLE……..)

2. SCHEDULE OF QUANTITIES

CONTRACT No RA XXX/XX

SUMMARY OF SCHEDULE OF QUANTITIES

BITUMEN ROUTINE ROAD MAINTENANCE

		N$
2	**Bitumen Surface Maintenance**	……
3	**Shoulder Maintenance**	……
4	**Road Signs and Markings Maintenance**	……
5	**Road Side Maintenance**	……
6	**Road Furniture Maintenance**	……
7	**Emergency Repair**	
SUB-TOTAL		……
TOTAL DAYWORKS		……
TOTAL SCHEDULE OF QUANTITIES		……
PROVISIONAL SUM FOR CONTRACT PRICE ADJUSTMENT		……
CONTINGENCY FOR ADDITIONAL/EXTRA WORK		……
TENDER SUM CARRIED TO FORM OF TENDER (FORM F)		……

Appendix A

Activity	Frequency	January	February	March	April	May	Months June	July	August	September	October	November	December
			heavy rains									small rains	
2. Surface maintenance													
Base repair	annually												
Surface patching	as required												
Crack sealing	annually												
Surface sealing	annually												
Bleeding removal	as required												
Depression levelling													
- severe nature	as required												
- less severe nature	annually												
Edge repairs													
- severe nature, > 250 mm	as required												
- less severe nature, < 250 mm	annually												
3. Shoulder maintenance													
Shoulder blading	annually												
Shoulder mowing	.....times per annum												
Shoulder gravelling	as required												
4. Road signs and markings maintenance													
Road sign cleaning	annually and as required												
Road sign, erection and repair	as required												
Road marking repairs	as required												
Road feature markers, erection and repair	as required												
Road studs installation	as required												
5. Road side maintenance													
Litter control	weekly												
6. Road furniture maintenance													
Guard rail, installation and repair	as required												
7. Emergency repair	as required												

Legend:

Programmed period for the activity

Additional period when the activity can be carried out

As and when required in accordance with response time