



Otjozondjupa Regional Council



BIDDING DOCUMENT

For

Procurement of Works

PROCUREMENT REFERENCE NO:
W/RFQ/OTRC-06/2024/2025

PROCUREMENT DESCRIPTION:

Re-graveling and Blading of Gravel Roads in Tsumkwe
Settlement, Otjozondjupa Region

Name of Bidder:

Contact Number of Bidder:

Email Address of Bidder:

Authorized Representative:

Total price:

Signature:

Closing Date & Time: 23rd September 2024; 10h00

Procurement Management Unit
Otjozondjupa Regional Council
P.O. Box 1682
Otjiwarongo
Namibia

Standard Bidding Document

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Otjozondjupa Regional Council



Tel: 067-303702
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P.O. Box 1682
Otjiwarongo
Namibia

Letter of Invitation

PROCUREMENT REFERENCE NO: W/RFQ/OTRC-06/2024/2025

DESCRIPTION: Re-graveling and Blading of Gravel Roads in Tsumkwe Settlement, Otjozondjupa Region

The Otjozondjupa Regional Council invites you to submit your best quote for Construction of the Re-graveling and Blading of Gravel Roads in Tsumkwe Settlement, Otjozondjupa Region, as described in detail in the bidding document hereunder.

Please prepare and submit your quotation on or before **23rd September 2024, 10h00** in accordance with the instructions given or inform the undersigned if you will not be submitting a quotation.

Any resulting contract shall be subject to the terms and conditions referred to in the bidding document.

Administration Queries, if any, should be addressed to **Ms. L. Mwazi** via email to lmwazi@otjozondjuparc.gov.na

Yours Faithfully

Mrs S.M.K. TUAHUKU

HEAD: PROCUREMENT MANAGEMENT UNIT



SECTION I: INSTRUCTIONS TO BIDDERS

1. Rights of Public Entity

Otjozondjupa Regional Council

- (a) have the right to accept or reject any quotation or to cancel the quotation process and reject all quotations at any time prior to contract award.

2. Preparation of Quotations

You are requested to quote for the works mentioned in Section III, by completing, signing and returning:

- (a) the Quotation Letter in Section II with its annexure for Bid Securing Declaration;
- (b) the Priced Activity Schedule in Section IV;
- (c) the Specifications and Compliance Sheet in Section V; and
- (d) any other attachment as deemed appropriate

You are also advised to carefully read the complete Request for Quotations document, including the Special Conditions of Contract in Section VII, before preparing your Quotation.

3. Validity of Quotations

The quotation validity period shall be **90** days from the date of bid submission deadline.

4. Eligibility Criteria

To be eligible to participate in this Quotation exercise, you should:

- (a) have a valid certified copy of Founding Statement for any of the followings:
 - i) an entity incorporated or registered under the company or close corporation laws in Namibia;
 - ii) co-operative registered under the laws regulating co-operatives in Namibia;
 - iii) document serving as of registration as a Trust and Trust deed for a trust registered under laws regulating trusts in Namibia;
- (b) have valid original or certified copy of Good Standing Tax Certificate;
- (c) have valid original or certified copy of Good Standing Social Security Certificate;
- (d) have a valid certified copy of Affirmative Action Compliance Certificate or proof from Employment Equity Commissioner that bidder is not a relevant employer or exemption issued in terms of Section 42 of the Affirmative Action Act, 1998;

- (e) original or certified copy of partnership agreement in the case of partnership, a valid joint venture agreement in the case of a joint venture or valid agreement in case of other similar arrangement, but a bidder or supplier who is a sole proprietor only needs to comply of (a) to (d)
- (f) have or sign a written undertaking as contemplated in section 138(2) of the Labour Act, 2007;
- (g) Complete document in full
- (h) Civil Trade Qualifications of owner or employees
- (i) Sign all pages where applicable and initial the whole document;
- (j) One bidding document per bidder including partnership;
- (k) Certified copy of owner or owners/ bidder Identification Document;
- (l) Bank rating letter with C or better rating;
- (m) **Brief company profile**
 - i) List of equipment to be used on the project and proof of machinery ownership or consent letter from possible lessor)
 - ii) List of skilled /Technical expertise and their CV
 - iii) List successfully previously completed projects in the last 5 years (of the same nature) with contactable references.

5. Bid Security/Bid Securing Declaration

Bidders are required to sign a bid security declaration form

6. Works Completion Period/Validity period of Quotation

The validity period of the quotation is **90 days** and the completion period for works shall be **90 days** after acceptance and issue of Purchase Order and the signing of contract agreement. Deviation in completion period shall not be accepted but shall be considered if such deviation is reasonable.

7. Sealing and Marking of Quotations

Quotations should be sealed in a single envelope, clearly marked with the Procurement Reference Number, addressed to the Otjozondjupa Regional Council with the Bidder's name and contact details at the back of the envelope.

8. Submission of Quotations

Bid must be registered in the register provided by Council before deposited in the bid box, located at **Otjozondjupa Regional Council's Head Quarters at 22 Henk Willems Street, Otjiwarongo; Ground Floor-Block B** not later than **10h00** on **23rd September 2024**.

Please take note: Late quotations will be rejected.

9. Opening of Quotations

Quotations will be opened internally immediately after the closing time referred to in section 8 above. A record of the Quotation Opening stating the name of the bidders, the amount quoted will be posted on the website of **Otjozondjupa Regional Council** and available to any bidder on request within 3 (three) working days of the Opening.

10. Evaluation of Quotations

Otjozondjupa Regional Council shall have the right to request for clarifications in writing during evaluation. Offers that are substantially responsive shall be compared on the basis of evaluated cost, to determine the most substantially responsive evaluated quotation.

11. Technical Compliance

The Specifications and Compliance Sheet details the minimum specifications of the works to be carried out. The specifications have to be met, but no credit will be given for exceeding the specifications.

12. Prices and Currency of Payment

Prices for the execution of works shall be fixed in Namibian Dollars as quoted. Quotations shall cover all costs of labour, materials, equipment, overheads, profits and all associated costs for performing the works, and shall include all duties. The whole cost of performing the works shall be included in the items stated, and the cost of any incidental works shall be deemed to be included in the prices quoted.

13. Margin of Preference

Shall apply as per Code of Good Practice.

14. Award of Contract

The Bidder having submitted the substantial responsive bid shall be selected for award of contract. Award of contract shall be by issue of a Contract Agreement and Letter of Acceptance in accordance with terms and conditions contained in Section VI: Contract Agreement and General Conditions of Contract.

15. Notification of Award and Debriefing

Otjozondjupa Regional Council shall after award of contract promptly inform all unsuccessful bidders in writing of the name and address of the successful bidder and the contract amount and post a notice of award on its website **within 7 days**. Furthermore, the Public Entity shall attend to all requests for debriefing made in writing **within 7 days** of the unsuccessful bidders being informed of the award.

16. Payment terms

The Employer undertakes to effect payment within 30 days after completion of the services to the satisfaction of the Client subject to the Service Provider submitting all required documents to initiate the payment. Final payment shall be adjusted to reflect any noncompliance in the execution of the contract.

SECTION II: QUOTATION LETTER

(to be completed by Bidders)

*[Complete this form with all the requested details and submit it as the first page of your quotation with the Priced Activity Schedule and documents requested above. A signature and authorisation on this form will confirm that the terms and conditions of the RFQ prevail over any attachments. **If your quotation is not authorised, it will be rejected***

Quotation Addressed to:	Otjozondjupa Regional Council
Procurement Reference Number:	W/RFQ/OTRC-06/2024/2025
Subject matter of Procurement:	Re-graveling and Blading of Gravel Roads in Tsumkwe Settlement, Otjozondjupa Region

I/We offer to execute the Works detailed in the Statement of Requirements, in accordance with the terms and conditions stated in your Request for Sealed Quotations referenced above.

I/We confirm that we are eligible to participate in this Quotation exercise and meet the eligibility criteria specified in Section 1: Instructions to Bidders

I/We undertake to abide by the Conduct of Bidders and Suppliers as provided under the Public Procurement Act during the procurement process and the execution of any resulting contract.

I/We have read and understood the content of the Bid Security/Bid Securing Declaration (BSD) attached hereto and subscribe fully to the terms and conditions contained therein. I/We further understand that this subscription will lead to the disqualification on the grounds mentioned in the BDS]

The validity period of our Quotation is _____ days *[insert number of days]* from the date of the bid submission deadline.

I/We confirm that the prices quoted in the Priced Activity Schedule are fixed and firm and will not be subject to revision or variation, if we are awarded the contract **prior to the expiry** date of the quotation validity.

Works will commence within _____ *[insert number]* days from date of issue of Purchase Order/ Letter of Acceptance and signing the contract agreement.

Quotation Authorised by:

Name of Bidder		Company's Address and seal	
Contact Person			
Name of Person Authorising the Quotation:		Position:	Signature:
Date		Phone No./E-mail	

Appendix to Quotation Letter
BID SECURING DECLARATION
(Section 45 of Act)
(Regulation 37(1)
(b) and 37(5))

Date:

Procurement Ref No. W/RFQ/OTRC-06/2024/2025

To: Otjozondjupa Regional Council

I/We* understand that in terms of section 45 of the Act a public entity must include in the bidding document the requirement for a declaration as an alternative form of bid security.

I/We* accept that under section 45 of the Act, I/we* may be suspended or disqualified in the event of

- (a) a modification or withdrawal of a bid after the deadline for submission of bids during the period of validity;
- (b) refusal by a bidder to accept a correction of an error appearing on the face of a bid;
- (c) failure to sign a procurement contract in accordance with the terms and conditions set forth in the bidding document, should I/We* be successful bidder; or
- (d) failure to provide security for the performance of the procurement contract if required to do so by the bidding document.

I/We* understand this bid securing declaration ceases to be valid if I am/We are* not the successful Bidder

Signed:
[insert signature of person whose name and capacity are shown]

Capacity of.....
[indicate legal capacity of person(s) signing the Bid Securing Declaration]

Name:
[insert complete name of person signing the Bid Securing Declaration]

Duly authorized to sign the bid for and on behalf of: [insert complete name of Bidder]

Dated on _____ day of _____
[insert date of signing]

Corporate Seal (where appropriate)

[Note*: In case of a joint venture, the bid securing declaration must be in the name of all partners to the joint venture that submits the bid or a dully authorised assigned member/partner of that close corporation]



Republic of Namibia

Ministry of Labour, Industrial Relations and Employment Creation

Witten undertaking in terms of section 138 of the Labour Act, 2015 and section 50(2)(d) of the Public Procurement Act, 2015

1. EMPLOYER'S DETAILS

Company Trade Name.....

Registration Number

Vat Number:

Industry/Sector:

Place of Business.....

Physical Address.....

Tell No.....

Fax No.....

Email Address.....

Postal Address.....

Full name of Owner/Accounting Officer.....

.....

Email Address.....

2. PROCUREMENT DETAILS

Procurement Reference No.....

Procurement Description:

.....

.....

Anticipated Contract Duration:

Location where work will be done, good/services will be delivered: **Tsumkwe Settlement**

3. UNDERTAKING

I *[insert full name]*, owner/representative
of *[insert full name of company]*

hereby undertake in writing that my company will at all relevant times comply fully with the relevant provisions of the Labour Act and the Terms and Conditions of Collective Agreements as applicable.

I am fully aware that failure to abide to such shall lead to the action as stipulated in section 138 of the labour Act, 2007, which include but not limited to the cancellation of the contract/licence/grant/permit or concession.

Signature:

Date:

Seal.....

Please take note:

1. *A labour inspector may conduct unannounced inspections to assess the level of compliance*
2. *This undertaking must be displayed at the workplace where it will be readily accessible and visible by the employees rendering service(s) in relations to the goods and services being procured under this contract.*

SECTION III: STATEMENT OF REQUIREMENTS

SECTION III - PART A: STANDARD SPECIFICATIONS

The Contractor should take note that the General Description of the Works serves to outline the extent of the works, but does not limit the amount of work which may be required of the Contractor under this contract. Reference must be made to the Project Specifications, the Schedule of Quantities, and the Construction Drawings for a more detail description of the works.

STANDARD SPECIFICATIONS

SECTIONS 1000 & 2000

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PART A: STANDARD SPECIFICATIONS**RE-GRAVELLING, BLADING AND STORMWATER ACCOMODATION OF ROADS****1100 PREAMBLE TO THE STANDARD SPECIFICATIONS****1101 SCOPE**

Section 1000 covers the construction of gravel and sand layers, and the re-gravelling of existing wearing courses, of proclaimed roads.

1102 DEFINITIONS

Definitions of words or phrases in the General Conditions of Contract are not repeated in the Standard Specifications.

Unless inconsistent with the context in these Specifications, the following words or phrases shall have the meaning hereby assigned to them:

1103 BORROW AREA

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

1104 BORROW MATERIAL

Any gravel, sand, soil or rock obtained from borrow areas, which is used in the construction of the Works.

1105 CARRIAGEWAY

The road surface between the shoulder breakpoints, normally traversed by vehicles.

1106 FILL

The portion of the earthworks between the roadbed, the side slopes and the wearing course, shown on the typical cross-sections in the Drawings. Material imported to make up roadbed material shall also be classified as fill.

1107 INLET AND OUTLET (END) STRUCTURES

The structures guiding stormwater through a drainage culvert in a road.

1108 MITRE DRAIN AND BANK

An open drain constructed in natural soil at an angle to the centre line of the road to divert water from a side drain. Mitre drains include mitre banks placed across the side drains to force water into the mitre drain and away from the road.

1109 PROJECT SPECIFICATIONS

Project or contract-specific specifications to supplement or amend the Standard Specifications, collectively forming the Specifications.

1110 ROADBED

The natural in-situ material or existing wearing course on which the fill, or if no fill is specified then the new wearing course, will be constructed.

1111 ROAD RESERVE

The entire area within the boundaries of a road as proclaimed.

1112 ROADS ORDINANCE

The Roads Ordinance, 1972 (Ordinance 17 of 1972) as amended, or replaced.

1113 ROAD PRISM

That portion of the road construction in fill above the original ground level, and that in cut below the original ground level, excluding any pavement and wearing course layers, but including side-drains.

1114 SIDE DRAIN

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

1115 SHOULDER BREAKPOINT

The line between the planes formed by the carriageway and the side slopes of a road.

1116 VERGE

The area between the road reserve boundaries, excluding the roadbed and side drains, over the length of the road.

1117 BLADE-KILOMETRE

The area covered with one grader-pass over a length of one (1) kilometre. The width of a grader-pass shall be the width between the outside lines of the wheels of the grader plus 900 millimetres.

1118 NORMAL BLADING

Light and heavy blading done in multiple blade-kilometre passes on or along a road that is not a track road.

1200 GENERAL

1201 SERVICES

It is not the intention to move or reinstate any service in, through, or over the road reserve during the re-gravelling of an existing road. Where new gravel roads are constructed and the Contractor is instructed to move or re-align existing services, it shall be done under Dayworks.

The Contractor and the Supervisor shall agree on the position of all known services at the start of the Contract, and on how to avoid damage to these services. The Contractor shall be held responsible for damage caused by him to services pointed out to him.

1202 ROAD INTERSECTIONS AND JUNCTIONS

Except where otherwise specified, no additional payment over and above payment under the pay items included in the Contract will be made for gravelling or re-gravelling, in the confined space of intersections, junctions or other facilities such as rest areas or busstops in the road reserve.

1203 RAILWAY LINES

All work carried out adjacent to railway lines shall be in accordance with the requirements of the authority or company responsible for railways in Namibia.

1204 WATER AND GRAVEL ARRANGEMENTS

Where the availability of water has not been assessed by the Employer, the Contractor shall do so before submitting his Bid for the Works. Arrangement for and procuring of water, within the ambit of the Roads Ordinance, shall be the responsibility of the Contractor. Shorter haul distances shall have preference when water sources are selected. The Contractor shall agree with the Supervisor on the requirements and method of payment in respect of the activities required to provide construction water on the Site, which decisions shall always be based on cost-efficiency. The instructions of the Supervisor may include compaction at in-situ moisture content, compaction at lower than optimum moisture content, temporary moving of the compaction teams to another section of road, drilling of boreholes, construction of temporary PVC-lined earth dams, installation of borehole and pumping equipment, pumping of water over long distances, hauling of water over long distances, construction of haul roads, and standing idle or working at reduced production rates as a result of a shortage of construction water. Payment for instructed standing idle or for instructed reduced production time will in general be made as specified under Dayworks Clause 8021 in respect of the instructed standing idle of plant and equipment.

The Employer shall locate all borrow pits for use by the Contractor. If not yet done at Bid stage, the Contractor shall before the start of the project, if so requested, make available to the Supervisor a track dozer or back-actor with operator, to prospect for and locate borrow pits. The Contractor may also be instructed during the Contract Period, to assist in additional prospecting for gravel. Payment for prospecting shall be done under Dayworks. The Supervisor shall in writing instruct the appropriate and efficient use of borrow material. The cost of delays due to non-compliance of the Contractor with the instructions of the Supervisor will be carried by the Contractor. The cost of delays resulting from no usable material being available in dedicated borrow pits, or from a lack of an instruction by the Supervisor, or where standing-idle is instructed to search for material, shall be carried by the Employer.

Line diagrams, if included with the Bid documents, will provide basic information on the availability of gravel and water for construction, and general information in respect of the locality of the road, materials and private properties. ***The Employer shall, if available, provide detailed test results of borrow material with such line diagrams.*** The

Contractor shall within one month of completion of a project, update all the information on the line diagram to reflect the “as-built” situation.

Arrangement for and procuring of road construction gravel or sand shall, as for water, be the responsibility of the Contractor. The Contractor shall conform to the regulations of the Minister in respect of borrow pits in cultivated land.

The laying of quick-coupling pipelines, drilling of boreholes or construction of small earth dams may be instructed by the Employer where it is considered necessary to reduce the cost to procure construction water. The position and construction details of boreholes and earth dams shall be provided by the Employer. Payment for the provision of construction water will be made under Pay Items 16.04, 17.04 and 17.05, and under Dayworks in respect of the drilling of boreholes and in respect of the purchasing of water.

1205 SETTING-OUT

Setting-out of the horizontal road alignment of a new gravel road shall be done by the Contractor between the points of intersection (PI's) determined by the Employer. No setting-out will be required for re-gravelling operations, unless so specified in the Project Specifications or by the Supervisor.

The Contractor shall set out and control the width of the road, which shall be centred around the road centre line, as well as the bellmouths of all accesses, intersections, rest areas and busstops, in accordance with the Drawings or instructions of the Supervisor.

1206 WORKMANSHIP AND QUALITY CONTROL

The onus rests with the Contractor to produce work which conforms in quality and accuracy of detail to all the requirements of the Specifications and Drawings. The Contractor shall, at his own expense, institute a quality control system and ensure adequate supervision and control of his work at all times. In cases where less personnel than that offered in the Contract is made available on Site, including Supervisor's staff, the Employer may reduce payment under Daywork rates.

It is not required to establish a materials laboratory on Site, but the Site Agent or his Representative shall conduct basic measurements and tests, to assess the blading after on-road breaking-down with a grid roller, moisture content, geometry and density of the gravel layer on a continuous basis, to ensure compliance with specified minimum standards. He shall submit the results of his measurements and tests to the Supervisor for approval in the format specified in the Contract, or as agreed upon, ***as a pre-condition for the acceptance of and full payment for the processing of completed pavement layers. The payment shall be reduced by 25% of the payment due for the processing of the completed layer, for as long as the contractor does not provide agreed upon soil testing equipment and acceptable test results.***

1208 ENVIRONMENT

The Contractor shall be conscious of the impacts road construction and maintenance activities can, and normally do, have on the natural environment and shall at all times arrange his operations so that these impacts are reduced to a minimum.

A high standard of finishing and trimming shall be maintained in the road reserve and at borrow pits. If so instructed the Contractor shall under Dayworks also finish off and trim old existing borrow pits.

To promote re-growth of trees in mined out borrow pits, topsoil and overburden material shall be removed, if so instructed, prior to stockpiling of the gravel in the pit and replaced after the completion of hauling operations. The Contractor may be instructed to leave an amount of stockpiled gravel in the borrow pit for use during future routine maintenance activities.

No tree, especially big ones, shall be removed in borrow pits, at camp sites and in the road reserve, unless it is a road traffic safety hazard and within 15 metre of the road centreline, or when no alternative solution can be found to save the tree. The Supervisor must at all times approve the removal of any tree with a trunk size larger than 300 mm in diameter. A penalty to the amount determined in the Project Specifications shall be imposed for every such tree which is removed unnecessarily and without approval. Where certain plant species have to be carefully removed, protected and re-planted at completion of the road, such work shall be done on written instruction of the Supervisor under Dayworks.

No bitumen, oil, batteries, filters or any other toxic substances shall be buried in borrow pits or at camp sites.

1300 ESTABLISHMENT ON SITE AND GENERAL OBLIGATIONS**1301 ESTABLISHMENT ON SITE**

The Contractor shall be responsible for the arrangement and establishment of all labour, plant and materials on Site, including accommodation, services, transport and other incidentals.

Construction camps are in general located on private property near the road reserve. Prior approval for a camp site obtained in writing from the landowner shall be submitted to the Supervisor before establishment of camp. The number of camp sites that will be applicable to the Contract, shall be as specified in the Project Specifications or Schedule of Quantities, or instructed in writing by the Supervisor.

Where the Contractor is instructed to establish a completely new gravel unit on Site, payment will be made at Daywork or agreed Extra Work rates.

1302 ACCOMMODATION OF TRAFFIC

The Works shall be undertaken in a manner which will reduce the interference with public traffic to a minimum, consistent with established re-gravelling practice. Although inconvenience to road users will be inevitable, the Contractor must ensure that road users have continuous access on, and to, a public road. In all dealings with the travelling public, the Contractor and his personnel shall handle any complaint with deliberate tact, courtesy and understanding.

Temporary road traffic signs shall at all times be displayed at the Works as specified in the Drawings included or referred to in Section 11000 hereof. The traffic signs shall be covered or removed when not required at nighttime and over weekends. No deviation is generally required and the Contractor shall regulate traffic with flagmen and take all precautions necessary to promote the safe and easy flow of traffic on or next to the gravel layer under construction.

The Contractor, if so instructed in writing, shall nevertheless provide a deviation at places with a high traffic safety risk. Except where otherwise specified, no additional payment over and above payment under the pay items included in the Contract, will be made for the construction of the deviation and the measures required to control traffic.

Where so instructed by the Supervisor, the construction of a temporary deviation will only require the temporary removal of excessive loose sand, and the reinstatement thereof when such a deviation is not used anymore. Payment for both operations will be made under pay item 34.01(b) - Heavy Blading.

Should the Contractor neglect to apply the road traffic safety measures specified, the Supervisor may, if he is of the opinion that traffic safety is at risk, temporarily stop the works until the Contractor complies with the Specifications.

1303 MEASUREMENT AND PAYMENT

Item	Unit
13.01 Establishment and Re-establishment:	
(a) Establishment/de-establishment	[lump sum]

The lump sum Bidder under sub-item (a) shall represent full compensation for the Contractor's fixed costs to establish on Site and to de-establish his resources at completion

of the Contract.

Seventy percent (70%) of the lump sum shall be paid after establishment of all Bidder plant, equipment and personnel on Site, and the remaining thirty percent (30%) after all resources have been removed and all camp sites cleaned and handed back to the landowner.

The Contractor's charges to maintain his site organization, accommodation and plant on Site, and costs in respect of general site and office overheads, profit, financing costs, risks and legal and contractual obligations of a preliminary or general nature, shall not be paid separately and shall be included in his rates Bidder under and spread between the pay items included in the Schedule of Quantities.

Payment will also not be made separately for accommodation of traffic and the Contractor shall include the cost thereof in the rates Bidder under the pay items in the Schedule of Quantities. Where the construction and maintenance of a diversion is instructed in writing by the Supervisor, payment shall be made at the rates Bidder under the relevant pay items of these Specifications.

1400 CLEARING AND GRUBBING

1401 SCOPE

This section covers the clearing of the Site and the grubbing for construction of the Works.

1402 CLEARING

Clearing shall consist of the removal of trees - as provided for in Clause 1208 hereof - shrubs, other vegetation, rubbish, fences, rocks, boulders and other objectionable material, including flattening of ant hills, backfilling of cavities, disposal of all material resulting from clearing and grubbing, and trimming and finishing of the cleared areas.

No tree shall, unless specifically so instructed, be removed outside the middle 30 m width of the road reserve of a Trunk and Main Road, but all shrubs within the 60 m road reserve shall be cleared. In the case of a District Road, unless otherwise instructed, all trees, shrubs and other vegetation shall be cleared only over the middle 30 m width of the road reserve.

The Contractor shall allow in his rates for *the movement of* a certain amount of soil or gravel which may be inherent in or unavoidable during the process of clearing.

1403 GRUBBING

All roots and stumps exceeding 30 mm in diameter shall be removed by hand from stockpiles and during spreading of gravel on the road.

For the construction of a new gravel road through dense growth areas, all visible roots and stumps exceeding 75 mm in diameter shall be removed from the roadbed. Matted roots shall as far as possible be removed as part of the clearing process. No special criss-cross ripping will in general be required.

All material resulting from clearing and grubbing shall be spread around the borrow pit, stockpiled together, or disposed of in the mined-out pit and covered with soil or gravel, as instructed by the Supervisor. Material from clearing and grubbing in the road reserve shall be spread outside the reserve, or when so instructed, stockpiled and burned or removed.

1404 MEASUREMENT AND PAYMENT

Item	Unit
14.01 Clearing and grubbing	[ha]

The unit of measurement for clearing and grubbing is the hectare (ha). The quantity shall be taken as the area in hectare, to the nearest 0,1 ha, designated by the Supervisor and cleared and grubbed in accordance with these Specifications.

The Bidder rate shall include full compensation for all work necessary for the clearing of the surface, the removal and grubbing of trees and tree stumps, cutting of branches flattening of ant hills, backfilling of cavities, disposal of the material resulting from clearing and grubbing, and trimming and finishing of the cleared areas, all as specified in this section.

If removal of material is instructed, additional payment for loading and transporting thereof shall be made under Dayworks.

1500 BORROWING OF MATERIALS

1501 SCOPE

This section covers the work involved in obtaining borrow materials for work under this Contract, including negotiations with landowners, clearing, stripping and disposing of topsoil and overburden, excavating and loading selected material for use in the Works, and finishing-off the borrow areas.

1502 NEGOTIATIONS WITH OWNERS AND AUTHORITIES

The Contractor shall observe all legal provisions, especially those in the Roads Ordinance, No 17 of 1972, in respect of his activities at borrow pits and when finishing-off borrow pits. The Contractor's attention is also drawn to the provisions of Clause 1204 hereof.

In the event where negotiations are not possible or where no equitable solution can be reached, the Contractor shall refer the matter to the Supervisor.

1503 OBTAINING BORROW MATERIALS

Borrow materials for the wearing course shall be obtained from approved sources of supply listed and described in the borrow pit plans, or from such other sources as may from time to time be tested and approved by the Supervisor. If so instructed, the Contractor shall haul gravel from different sources for mixing on the road.

The Contractor may, if he so elects, prospect for material of higher quality at a closer distance to the road, at his own cost. If successful and his new borrow pit is utilised, the Supervisor may approve partial payment of the cost of prospection, under Dayworks, but only when prior agreement with the Supervisor was reached on the need for and control of the prospection.

No borrow pit shall be opened without a written approval by the relevant authority, unless otherwise instructed by the Supervisor.

1504 BORROWING AND HAULING OF MATERIALS

(a) Removal of overburden

Removal of topsoil and overburden, collectively called overburden, and to what depth, shall be specified by the Supervisor. The overburden stockpiles shall be shaped, outside the outer limits of the borrow pit, to have a triangular cross-section of fairly similar height over the length of every stockpile, to enable easy calculation of the volume thereof.

Overburden, if removed and stockpiled separately, shall be used to finish and trim the borrow pit to promote re-growth in the pit, after the borrow pit is mined out.

(b) Excavating and stockpiling of borrow material

Borrow material shall be excavated within the limits and depths specified on the borrow pit plans, or as instructed in writing by the Supervisor.

The Contractor shall take all reasonable precautionary measures so as to avoid contamination of suitable borrow material. Hard oversize material, which will not break down during processing on the road, shall be isolated during loading and left in the borrow pit.

The material in the borrow pit shall be ripped and excavated in a manner that will ensure the effective breaking-down of the material in the borrow pit before it is loaded. Borrow materials are classified, for payment purposes, into the following categories:

(i) Fine Material

Wearing course material which does not require ripping to enable efficient stockpiling, and which only need nominal breaking-down on the road shall be classified as “fine material”.

(ii) Medium Material

“Medium gravel” will need only one-directional ripping in the borrow pit to enable efficient stockpiling. This material will produce only a small percentage (the normal quantity of less than 5%) of oversize material along the constructed wearing course after normal grid rolling, which shall be 4 complete roller passes, in which 50% overlaps are required, with a 13 ton to 15 ton grid roller at a speed of at least 12 km per hour.

(iii) Course Material

Material which requires two-directional ripping to enable efficient stockpiling and which needs heavy grid rolling on the road, shall be classified as “course material”. After heavy grid rolling, which will require another 2 to 4 complete grid roller passes, this material will inevitably still produce a large percentage (5% to 10%) oversize material, which will not be useable in the wearing course.

For classification purposes all ripping shall be done with a ripper penetration force of minimum 8000kg and a minimum ripper pryout force of 15000kg as per specifications of the manufacturer of the crawler dozer. The Supervisor shall classify borrow material.

No classification for payment purposes, will be done for fill material used in the earthworks.

If there is any doubt concerning the quality of the borrow material being excavated at any time, the Contractor shall notify the Supervisor before such material is brought onto the road.

Stockpiling of gravel shall be done well ahead of the time it will be required on the road, to allow proper inspection and approval thereof by the Supervisor.

If so instructed, material with a high clay content shall be stockpiled in a borrow pit, and hauled and mixed with gravel on the road to improve its engineering properties.

Material for earthworks, if required, shall be taken from fill borrow pits to be opened not closer than 800 m apart along the road, with a screen of natural vegetation of at least 50 m wide between the edges of the road reserve and the borrow pit.

Unless otherwise instructed by the Supervisor, the Contractor shall stockpile an additional one thousand cubic metre (1000 m) of gravel at each and every wearing course borrow pit used in the gravelling of a road, as a source of gravel for future routine maintenance operations.

(c) Hauling of Borrow Material

Only one access haul road shall be cleared per borrow pit.

No **separate** payment shall be made for the construction and maintenance of water and gravel haul roads. **Only haul roads identified for gravelling at Bid stage, and indicated as such on the relevant line diagram, shall be graveled** under the pay items provided for in the Contract. **Public roads, where used as haul roads, shall be bladed, watered or graveled only if specifically so instructed by the Supervisor, at the appropriate Bidder rates for these activities.**

The average haul distance applicable to any work day shall be the haul distance measured along the agreed haul road, which shall normally be the shortest road available, between the centre of the borrow pit and the centre of the volume of material hauled during that day.

These records shall be available for inspection on a continuous basis.

Where so approved by the Supervisor, and where the effects on the safety of traffic has been properly taken into consideration, the Contractor may offload more material on the road than could be worked into the gravel layer, on condition that tipped heaps be flattened and cut into a neat windrow outside the shoulder breakpoint of the road, that TW401/402 hazard marker road signs be placed and properly anchored at 100 m intervals against the windrow, and that all advance warning and speed reduction signs be erected and maintained so as to withstand wind forces caused by vehicles travelling at 100 km per hour. ***Offloading ahead of processing shall be limited to a distance equal to the Bidder production length for two days.***

Gravel may be offloaded over an unlimited distance where the road is not open to traffic, such as in the case of an entirely new road or where a temporary deviation is constructed.

(d) Finishing-off of Borrow Areas

On completion of his operations in a borrow area, the Contractor shall reinstate the entire area so as to blend it with the surrounding area and to permit re-establishment of vegetation.

Except where otherwise instructed, no slopes in the borrow area shall be steeper than 1 in 3 after finishing off the borrow area.

All oversize material and unwanted vegetation shall be buried in the borrow pit and the entire pit shall then be covered with a layer of overburden material, if available. Where thick overburden occurs, the Supervisor may instruct that a percentage thereof be trimmed neatly outside the borrow pit.

The Contractor shall progressively trim and finish-off all borrow areas to the written satisfaction of the respective land owners, but latest by the end of the Contract, as a condition for the release of the retention monies due to the Contractor.

If so directed, the borrow area shall not be trimmed and finished-off, but fenced-off and provided with a gate. Such work shall be done under Section 6000 or Dayworks, as instructed by the Supervisor.

All stockpiled gravel shall be the property of the Employer.

1600 BLADING OF ROADS

1601 DESCRIPTION OF THE WORK

The number of blade passes required for normal blading over the width of a road between the shoulder break points, depends on the functional classification of each road and will vary between three and five blades.

The roads to be bladed under the Contract and the applicable road widths are specified in the Project Specifications. The Employer may add or delete roads, or increase or reduce the number of blade-passes required to properly maintain a road during the contract period.

NORMAL BLADING maintenance work shall include the following activities:

a) Light Blading

- (i) Cleaning and reforming of existing drainage channels in the road reserve.
- (ii) Regular opening of culvert inlet and outlet structures, grid gates and water courses within the road reserve, by removing gravel bladed by the Contractor's grader onto or into these structures and courses.
- (iii) Removal of stone exceeding 30 mm in size from the road surface, as well as any gravel windrows which could affect traffic safety.
- (iv) Cleaning of and making of temporary repairs to road signs and grid gate wires and plates, and reporting to the Supervisor if in need of major repairs or replacement.

ADDITIONAL BLADE-PASSES may also be instructed for work on the side slopes of a road, which may include blading of material from or to the side slope, clearing of grass, shrubs and saplings, blading of surface erosion, or for general trimming purposes

b) Heavy Blading (Only When Instructed in Writing)

Heavy blading is associated with blading at lower speed and gear, and shall include:

- (i) Blading of certain mountainous/rocky areas
- (ii) Clearing of grass, shrubs and saplings in the road reserve, normally over a width of three (3) blade-passes on both sides of the road.
- (iii) Cutting into the road surface after good rains, as described in Clauses 3403 (a) and (b) hereof.

Where surface maintenance by dragging is agreed upon, payment will be made under Dayworks or other agreed rates.

c) Wet Blading with Compaction

This exercise will be carried out with all the light blading exercise.

- (i) Wet the top layer with a water bozer and allow damping of layer.
- (ii) Allow enough time for the water to soak in.
- (iii) After the damping, start with blading the top layer with a grader.
- (iv) After blading start compacting with a roller compactor.
- (v) Repeat compaction with a roller compactor after the layer have

dried.

1602 BLADING STANDARDS

a) Cross Sections

The road prism shape must be maintained in its present shape regardless of whether it has the required shape as shown on the Drawings, or not. Road characteristics shall be maintained at junctions and curves.

If the road has to be re-shaped to the required cross section, the Supervisor will issue instructions for this work to be done on a Daywork basis or as Heavy Blading, as may be agreed upon.

Details of typical cross sections of gravel roads, side drains and mitre drains and mitre banks, are shown on the Drawings of Section V Part C of this Specification.

b) Damaging the Road Surface

Where any section of road has a hard smooth surface layer, the Contractor shall under no circumstances scarify, break or cut into such a layer in an attempt to correct the shape of the road when it does not meet the camber or cross-fall standards. Cutting into such a road surface will only be permitted during or after good rains, if so instructed by the Supervisor, when the road surface has been wetted sufficiently to allow re-compaction under traffic. Cutting into a hard surface will be paid for under Heavy Blading and may include shallow scarifying by grader.

c) Length of Section under blading

The length of a section of road which may be bladed at any time, will depend on the condition of the road surface, the type of material on the road, the topography and the width of the road.

The Supervisor will give guidance and advice regarding the maximum distance on any sub-section to be graded per day at any time. Such distances may be lengthened or shortened at the discretion of the Employer depending on the performance of the Contractor and prevailing local conditions.

The start point and end point of any section to be bladed must be positioned such that the driver of any vehicle approaching a section under blading maintenance, will have an unobstructed view of at least two hundred (200) metres to the warning signs erected by the operator.

d) Windrows

No windrows shall remain on the road or road shoulder at the end of a day's work. In the event that a machine breakdown occurs and a windrow has to

be left on the road, danger signs as specified in the Drawings shall be placed at the beginning and end of such a windrow to warn traffic during night time.

Where blading has to be carried out on the approaches to a motor grid gate or a bridge, a section of two hundred (200) metres on either side of the grid gate or bridge shall first be bladed over the full road width before the remainder of the road is commenced with.

At positions where other roads intersect with the road under maintenance, no windrow shall be left across the access. During and after blading operations, the road surface of accesses must be cleared of gravel, oversize aggregate, etc., which may result from the blading operation. Such clearing may be done by hand or machine. Payment for the clearing work will not be paid for separately and compensation shall be deemed to be included in the rate Bidder per blade-kilometre under light blading. In cases where there is an abnormally high frequency of accesses to be dealt with (i.e. more than 10 accesses per 20km road), such additional 'access clearing work' may be instructed by the Supervisor to be carried out under Dayworks.

e) Blading Speed

Low blading speeds shall be maintained to ensure conformity with the Specifications. Higher speeds to increase production will not be allowed. The speed recommended for any section will be prescribed by the Supervisor and may be subject to alteration depending upon the performance of the Contractor and prevailing local conditions.

Best results are generally obtained when a machine is operated in third gear at approximately 75% of maximum engine revolutions. The use of fourth gear will not be allowed. Practice has shown that a speed of 8 kph should not be exceeded.

The grader shall at all times be operated in such a manner that the blading action does not cause corrugations on or chopping of the road surface. In order to limit the risk of damage to the road surface, the production rates of the Contractor shall in addition be limited to the following maximum values:

- | | | |
|-------|----------------|--|
| (i) | Light Blading: | Average Target Production/GU = 68 bl.km/day
(max. 72 bl.km/day) |
| (ii) | Heavy Blading: | Average Target Production/GU = 45 bl.km/day
(max. 53 bl.km/day) |
| (iii) | Dayworks: | Max. Target Prod./GU = 10 hours/day or 200
hours/month |
| (iv) | Light Blading: | Max. Speed = 8 km/hour |
| (v) | Heavy Blading: | Max. Speed = 6 km/hour |
| (vi) | Light Blading: | Maximum Annual Target Production/GU =
agreed Production days per Contract Region x 68 bl.km/day |

Notwithstanding the above limitations, the Supervisor may instruct in writing, in justified cases with a low risk of damage to the road surface, an increase in the average production rate for light blading, provided that the

specified quality is achieved.

f) Mitre Drains

The forming of mitre drains and banks may be instructed by the Supervisor. In special circumstances this work may be executed outside the road reserve.

The major portion of the material cut from the V-shaped open ditch by grader shall be bladed onto a berm alongside the ditch to form the mitre drain. The remainder is carried forward with the movement of the grader and will result in a berm slightly bigger on one end of the drain. For this reason mitre drains shall always be cut and formed from its outlet end towards the road.

The Supervisor may also instruct a 'Table-Drain' (with the base of the drain having the width of a grader) instead of the V-shaped drain, in order to minimize the effects of erosion.

1603 WORKMANSHIP

A high standard of workmanship is required under this Contract. For the purposes of this Clause the following criteria will be monitored and shall constitute sub-standard workmanship over the entire length where any one of the criteria is violated:

- (a) Undercutting of the edge of the road, causing storm water to pond against, or flow all along the road edge instead of transversely into a side drain.
- (b) Non-standard crossfall of the gravelled width. In certain circumstances correct shaping of the road will not be required, but in these instances the Contractor will be informed by the Supervisor.
- (c) Loose rocks or stones, pot-holes or bumps in the road surface.
- (d) Cutting into hard compacted surfaces during dry periods and causing loss of compaction in otherwise smooth hard surfaces.
- (e) Creating corrugations by maintaining too high blading speeds or operating the machine with wrong tyre pressures, causing "jumping" of the grader.
- (f) Sight distance of traffic warning signs at the start and end points of sections being bladed do not conform to the requirements.

If the operator fails to comply with the standard of workmanship required in terms of this Contract, such sub-standard work must be made good and repaired at the Contractor's own cost and in his own time, before the Contractor is allowed to continue with the programmed work. Payment for the affected blading sections will only be made after the sub-standard work has been rectified and approved by the Supervisor.

In cases where the damage caused by the Contractor is of such an extent that the Employer has to commit outside resources for urgent repair work to such sections, the cost of such repair work undertaken by the Employer will be recovered from any monies due to the Contractor.

If the operator of a grader fails to comply with the standard of workmanship required in terms of this Contract, the Engineer may deduct hours or blade-kilometres from that claimed in the monthly payment certificate. The number of hours or blade kilometres deducted will be proportional to the quantity of sub-standard workmanship.

Where the operator is on holiday or on sick leave, the services of the relief operator shall be made available to continue with the blading operation.

1604 EXECUTION OF WORK

(a) General

Blading shall be executed to the standards specified in Clauses 1602 and 1603 of these Specifications.

The roads to be maintained under this Contract will be specified in the Project Specifications. The Contractor shall take care not to disturb any service or service marker, such as pipelines, in the road reserve. Reference pegs and trigonometric beacons in the road reserve shall not be disturbed, after having been pointed out by the Supervisor to the Contractor.

The number of blades on any specific road section shall be as specified or instructed and included in the monthly work programs and may not be deviated from.

Blading shall be done so as to produce a surface with a comfortable riding quality and acceptable finish. All surface irregularities must be filled with gravel or fine material moved in front of the grader blade set at an angle across the road. Upon completion, a layer of fine material not more than ten (10) mm thick, must cover the high spots on the road.

Blading cycles are to commence alternatively on the left or right side of the road in order for gravel moved from left to right during any cycle, to be moved from right to left during the following cycle.

Blading normally consists of picking up loose material with the grader blade from the one side of the road and progressively spreading this material together with other loose material on the road over the complete width of the carriageway. The last blade width on a section is to be bladed such that the gravel is cut completely across the last blade width, and spread over the side slope of the road without leaving a prominent windrow of material.

The Supervisor may from time to time order the Contractor to pick up loose material from the side slope of the road prism onto the edge of the road

before blading on the carriageway continues. He may also order any excess material to be bladed off the road onto the opposite side slope where it can be picked up again during the following cycle. Where instructions are given to pick up material from the side slope or to cut excess material onto the side slope, additional blade-kilometre passes as instructed will be added for payment purposes. Unless specifically otherwise agreed with the Supervisor, the Bidder rate for light blading shall apply to this activity.

Heavy blading will be instructed only in certain mountainous and rocky areas and in cases where hard surfaces need to be cut to improve the riding quality or cross-fall of the road surface during wet soil conditions. Unless otherwise instructed in writing by the Supervisor, all blading will be light blading.

The duty of the labourer(s) at the grader shall include removal of stones, tins, bottles, roots, etc. from the road surface and road reserve and opening up of drains, culvert inlets and outlets, bridge deck outlets and grid gates blocked and filled up with material moved during blading operations. The clearing of grass, shrubs and branches of trees obstructing the view to guide blocks, guardrails and traffic signs, as well as the cleaning of road signs are part of his duties. The Supervisor may instruct any reasonable appropriate task which will require work done by hand or with hand tools. The labourer(s) allocated to the grader must at all times be present during blading operations.

The Contractor may from time to time be instructed by the Supervisor to employ casual labour to repair large potholes on the road. Where gravel or water need to be imported from outside the road reserve, it shall be the responsibility of the Employer. Repairing of potholes shall be done under Dayworks.

Specifications for surface maintenance by dragging will be agreed upon with the Contractor, where this method is introduced as alternative maintenance strategy.

(b) Daily Record of Work

A return to accurately record the quantity of work carried out shall be completed on a daily basis.

The following information shall be included in the daily progress returns:

- (i) All work done.

1605 MEASUREMENT AND PAYMENT

Item	Unit
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16.01 Blading of gravel roads, side slopes and road reserves: (Normal blading)**(a) (i) Light blading****[bl-km]****(b) (i) Heavy blading****[bl-km]**

The unit of measurement for **sub-items 16.01 (a) and (b)** Light and Heavy Blading shall be the blade-kilometre pass, bladed in accordance with the approved Program of Works, or as authorized in writing by the Supervisor. No payment for unauthorized work shall be made. Where blading of the surface has not been carried out satisfactorily, where the Contractor does not have the required personnel on Site, or where the duties specified in the Specifications are not carried out, payment will be withheld unless or until corrected by the Contractor.

The Bidder rates for **sub-items 16.01 (a) and (b)** shall include full compensation for providing and using the road grader with operator and one labourer, fuel included, all equipment, tools and materials required, and all other costs incidental thereto, and **shall also include an allowance for down time of the Contractor's plant and equipment, as well as for all daily transport costs to and from the work point, as well as for the cost of moving the grader unit between daily blading sections, as well as the distance travelled from the Depot to the first location at the start of a month plus the distance travelled from the last location back to the Depot at the end of the month, if applicable, as agreed on the monthly program.**

The Bidder rates under **sub-items 16.01 (a) and (b)** shall furthermore include the Contractor's charges to set up and maintain his organization and plant on Site, as well as general site and office overheads, including supervision, administration, maintenance of camp sites, counting of traffic, accommodation of traffic, as well as profit, financing costs, risks and legal and contractual obligations of a preliminary or general nature, which are not specifically measured for payment under any other pay item.

1700 EARTHWORKS

1701 SCOPE

This section covers the work involved in the preparation or compaction of the roadbed, construction of fills up to the stage where the road is ready for the placing of the wearing course, and provision of cross-drainage in the form of drifts.

1702 ROADBED PREPARATION

The Supervisor will inspect the existing road ahead of the re-gravelling programme and will in writing instruct the Contractor exactly which sections shall receive roadbed treatment and which not. Roadbed preparation may also include limited improvement of the existing vertical and horizontal alignments. An indicative road length over which roadbed preparation will be required is implied in the Schedule of Quantities. The often rapid deterioration of an existing thin wearing course may however result in major changes to the amount of roadbed preparation finally instructed as the project progresses.

Roadbed Preparation shall comprise of Light Blading or Heavy Blading, as Light Roadbed Preparation, or as Heavy Roadbed Preparation and may include the spraying of water under pay item 16.04 or 17.04 as appropriate.

Light and Heavy Blading shall cover the full road width, including the side slopes. Light Blading is meant to remove a thin layer of loose material (typically less than 20 mm on average) and vegetation from the road surface.

Heavy blading is associated with blading at lower speed (approximately 70 % of normal blading speed) and gear, and shall include:

- Blading of certain mountainous/rocky areas;
- Clearing of grass, shrubs and saplings in the road reserve, normally over a width of three (3) blade –passes on both sides of the road, and
- Cutting into the road surface after good rains. Shallow scarifying may be required at isolated spots when cutting into the existing road surface.

Where surface maintenance by dragging is agreed upon, payment will be made under Day-work or other agreed rates.

Under Light Roadbed Preparation the Contractor shall cut thick layers of loose material from the road surface (typically to a depth not exceeding 50 mm on average), without scarifying the existing in-situ traffic compacted remains of the existing gravel wearing course. The Supervisor shall instruct whether the material so removed from the road surface is to be re-used in the new wearing course, or whether it shall be discarded by cutting and spreading it over the side slope.

Heavy Roadbed Preparation shall include the scarifying, watering and compaction of the in-situ gravel or other material to a depth of 150 mm over the entire length of road, or on shorter pre-selected sections. Where borrow material has to be imported, the in-situ roadbed material shall be scarified, and cut to the correct width if required, the necessary imported material placed dry, and the combined material mixed, oversize broken down to remove oversize material, watered and compacted to 150 mm depth over the specified width of the

road formation. Compaction shall be done by three (3) compete heavy roller passes, with each pass overlapping the previous pass by 50%. The heavy roller shall be a vibratory roller of not less than 10 ton static weight, or a four wheel pneumatic roller with a weight of not less than 30 ton.

Where material is imported on instruction of the Supervisor, payment for obtaining and importing the additional material from a designated borrow pit shall be made under pay items 15.01, 15.02, 15.03, 16.02, 16.03 and 16.04.

In the case of new gravel road construction the roadbed shall be prepared as Heavy Roadbed Preparation by ripping, shaping and compacting the in-situ material to a width of one metre outside the toe of the road formation.

Watering, if so instructed, shall be paid for under pay item 16.04 or pay item 17.04, as applicable.

If the construction of cuttings on a new road is instructed, it will be done under Dayworks or at an agreed rate, if not separately allowed for in the Project Specifications.

1703 FILLS

If so instructed, a fill layer shall be imported and constructed on the roadbed, compacted to at least 90% Modified AASHTO density, or 100% in the case of a non-plastic sand fill. No material with a CBR lower than 3% at the specified density shall be used as fill material. Where the roadbed is sand, end tipping and spreading by track dozer of the fill material may be required. Where dry compaction is instructed due to a lack of construction water, the Contractor may be required to proceed at a reduced production rate. Extension of Time will be granted where such an instruction results in a delay.

Fill material shall not contain any rock with a maximum dimension exceeding 100 mm after breaking-down and compaction.

Construction of high fills, if required, shall be as specified in the Project Specifications or as instructed by the Supervisor.

1704 DRIFTS

The construction of fill, if any, shall be discontinued where the road crosses a river or water course. The Contractor shall undercut the floor of the water course or riverbed to a depth of 300 mm below the invert level and construct a wearing course of 300 mm in thickness, as specified on the Drawings. If so, instructed the Contractor shall stabilise the floor of the riverbed, and approaches thereto, by adding five percent (5%) ordinary portland cement, properly mixed into the wearing course before watering and compaction thereof. Payment for adding cement shall be at the nett cost price of the cement, including the cost of delivery to the Site plus ten percent (10%). Payment for excavating and spoiling material from the riverbed shall be done under Dayworks.

1705 MEASUREMENT AND PAYMENT

Item	Unit
17.01 Roadbed preparation	
a) Road width	
(i) Heavy blading only	[bl-km]

(ii) Light roadbed preparation	[km]
(iii) Heavy roadbed preparation	[km]

The unit of measurement for sub-item (a)(ii) and (a)(iii) shall be the kilometre (km), to the nearest 0,1 kilometre, of roadbed prepared and compacted as specified in Clause 1602 hereof.

The bidder rate for sub-item 17.01(a)(i) shall include full compensation for cutting into existing hard surfaces to a depth generally not exceeding 50 mm, which may include scarifying of the surface over isolated areas, so as to improve the evenness of the existing surfacing as roadbed for re-gravelling thereof. The rate shall also include compensation for cutting the loosened material into a windrow on the road shoulder.

The bidder rate for sub-item 17.01(a)(ii) shall include full compensation for the cutting of all loose material from the road surface to a maximum average depth of 50 mm, into a windrow on the road shoulder, or spreaded over the shoulders where so instructed.

The Bidder rate for sub-item 17.01(a)(iii) shall include full compensation for shaping, scarifying, mixing of in-situ and imported borrow material if required, and preparing and compacting the material as specified.

Payment for importing material for roadbed preparation shall be made under items 17.02.

Item	Unit
17.02 Processing of fill	[m³]

The unit of measurement shall be the cubic metre (m³) of material measured in the compacted fill and shall be computed as 75% of the loose volume of the material transported to the road, as measured in the hauling trucks.

The bidder rate shall include full compensation for ripping required in fine (soft), medium and coarse (hard) borrow material respectively, stockpiling (as maybe required), selecting, removing oversize when loading, and loading of the borrow material onto trucks in the borrow pit, spreading, processing, purchasing of water, watering, mixing, compacting and finishing the fill as specified, and for removing and disposing of up to 5% oversize material.

Item	Unit
17.03 (a) Hauling of material	[m³-km]

The unit of measurement for item 17.03(a), the same volume so hauled multiplied by the hauling distance (m³ - km). The quantity shall be calculated daily, based on the loose volume hauled and the average hauling distance between the centre of the borrow pit and the centre of a continuous length of fill or roadbed make-up layer dumped on the road. The volume of material hauled shall be based on clock-printed data.

The Bidder rate shall include full compensation for transporting the material, off-loading thereof at the point of use. The Bidder rate shall also allow for the effects the terrain may have on the rate of hauling.

Item	Unit
17.04 (a) Hauling of water	[k/-km]

The unit of measurement for item 17.04(a), the same volume so hauled multiplied by the hauling distance (k/-km). The quantity shall be calculated daily, based on the volume of construction water hauled and the distance between the water source and the centre of the completed and accepted processed material layer.

The Bidder rates for items (a) shall include full compensation for loading and transporting the water to the Works and for the spraying thereof on the road.

1800 LAYERWORKS

1801 SCOPE

This section covers the construction *or reconstruction* of natural gravel wearing course layers and the forming or cleaning of side drains.

1802 MATERIAL

Gravel material for the wearing course shall be obtained only from approved borrow pits. Borrow material shall be classified as either fine, medium or coarse, as defined in Clause 1504 (b) hereof. If so instructed, clayey or other gravel material shall be mixed into the wearing course gravel to improve the engineering properties of the material.

Where natural gravel does not fully comply with the requirements in respect of maximum size, after having been broken down as determined in Clause 1803 hereof, oversize material shall be removed as specified.

The engineering properties of the wearing course material after compaction on the road shall comply as per specification in 1207.

1803 CONSTRUCTION

(a) Breaking-down and Mixing

The wearing course shall be constructed on a properly prepared roadbed or fill layer as specified under Section 1700 hereof.

Before the gravel is compacted, it shall be broken down, if necessary, by grid rolling on the road. Material shall be cut from the gravel tipped on one side of the road, and spread towards the opposite side in thin layers to segregate the course material from the finer material. Watering shall only follow after adequate breaking-down of the course material. Thorough mixing of the wetted fine and course material shall follow by blade-rolling the material over into a windrow on the road, on the opposite side of the tipped gravel. Only then shall the process be repeated with more material cut from the tipped gravel, until all material is properly broken down and evenly mixed to the specified blading and specified uniform moisture content, and placed in a windrow on one side of the road. Any oversize material which cannot be broken down to the required size shall be removed from the road. The Contractor shall be required to do a nominal amount of hand knapping.

When mechanical modification of natural gravel is required to improve its engineering properties, it shall be done by mixing materials from different sources on the road. For this purpose the tipped gravel shall first be flattened and spread over the width of the road, the secondary material tipped on one side of the road and spread over the first material, before breaking-down. Mixing of the gravels shall commence as described above. Additional payment will be made for mixing material from different sources, as an extra-

over payment.

Where truck turning points for gravel hauling operations are required in thick sand conditions along the road, the Supervisor will instruct the dumping and spreading of twenty one cubic metres (21m³) of loose gravel at sixty metre (60m) intervals for such purpose.

Additional payment will be made only in respect of the cost of importing the gravel under pay items 17.03(a) and (b).

(b) Compaction

Compaction shall be carried out in a series of continuous operations covering the full width of the gravel layer, until the specified density is obtained, without causing damage to lower layers or structures.

During compaction the wearing course shall be formed to comply with the specified shape, thickness and cross-section of the road, and all holes, ruts and laminations removed. The Contractor will be required to fill up holes on the surface with moist material from the windrow during final compaction.

Payment for the transporting of water and gravel will be made separately.

(c) Side Drains

Side drains inside the road prism form part of the road cross-section and shall be formed, or re-formed if in existence, and finished before construction of the wearing course is commenced with. Other open drains, banks and dykes shall be formed under Dayworks.

Material excavated from side drains shall as far as practical be used in adjacent mitre drains and banks, or otherwise disposed of in the road reserve.

1804 MEASUREMENT AND PAYMENT

Item	Unit
18.01 Processing of gravel:	
(a) Fine gravel	[m³]
(b) Medium gravel	[m³]
(c) Coarse gravel	[m³]

The unit of measurement shall be the cubic metre (m³) of compacted wearing course. The quantity shall be calculated from the authorised dimensions of the completed layer, per class of material, reduced by 20% in cases of reduced payment in terms of Section 1207 hereof. The authorised dimension in respect of road width shall, unless otherwise instructed by the Supervisor, be taken as the distance between shoulder breakpoints plus 0,5 m along each side of the road to allow for shoulders, side-slopes and material for future blading maintenance operations.

The bidder rate shall include full compensation for ripping required in fine (soft), medium and

coarse (hard) borrow material respectively, stockpiling (as maybe required), selecting, removing oversize when loading, and loading of the borrow material onto trucks in the borrow pit, spreading, processing, purchasing of water, watering, mixing, compacting and finishing the wearing course as specified, and for removing and disposing of up to 5% oversize material.

Item		Unit
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18.02	Mechanical modification	
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	(Extra-over authorised layer)	[m³]
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The unit of measurement shall be the cubic metre (m³) of compacted wearing course. The quantity shall be calculated from the authorised dimensions of the completed wearing course.

The Bidder rate shall include full compensation *as extra-over item 18.01*, for all additional work involved to mix the materials over the full width and depth into a homogeneous material, ready for processing as specified.

Item		Unit
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18.03	(a) Hauling of gravel	[m³-km]
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The unit of measurement for item 18.03(a), the same volume so hauled multiplied by the hauling distance (m³- km). The quantity shall be calculated daily, based on the loose volume hauled and the average hauling distance between the centre of the borrow pit and the centre of the length of wearing course dumped on the road. The volume of material hauled shall be based on clock-printed data.

The Bidder rates shall include full compensation for transporting the gravel, including off-loading thereof at the point of use, and for the cost to provide and operate the specified dual-clock control system, including the production of printouts. The Bidder rate shall also allow for the effects the terrain may have on the rate of hauling.

Item		Unit
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18.04	(a) Hauling of water	[k/-km]
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The unit of measurement for item 18.03(a), the same volume so hauled multiplied by the hauling distance (k/-km). The quantity shall be calculated daily, based on the volume of construction water hauled and the distance between the water source and the centre of the completed and accepted processed gravel layer.

The Bidder rates for items (a) shall include full compensation for loading and transporting the water to the Works and for the spraying thereof on the road.

1810 SALT-GRAVEL ROAD CONSTRUCTION AND MAINTENANCE**1811 Scope of Work**

This section covers the construction and maintenance of the salt-gravel wearing course of roads in the mist belt along the west coast of Namibia.

1812 Materials

Although the salt-gravel road is in effect a gravel road constructed with brine, the success of the salt-gravel road wearing course depends on material qualities selected within limits which are much more strict than those applicable to a normal gravel road wearing course.

Materials required for roadbed and fill are no different from that used in normal gravel roads.

For the wearing course gravels with a high gypsum content shall be selected. Wearing course material performs better if not too coarse. Both the fineness of the gravel, as measured in terms of percentage passing the 0.075 mm sieve, and plasticity, as defined by the plasticity index are important determinants of gravel-salt wearing course performance. Soluble salt content, however is the single most important property. At least one of the two mentioned properties, the percentage passing 0,075 mm sieve and plasticity index, and the soluble salt content shall comply with the requirements specified below.

Sea water or fresh water may be used for the construction of the fill, but the wearing course shall be constructed with brine with a soluble salt content not less than that specified below.

1813 Standards

The quality standards which shall apply in the construction of a salt-gravel road are as follows:

QUALITY INDICATOR	SPECIFIED LIMIT	LIMIT AT * 80% PAYMENT
Gravel Quality** :		
- Plasticity Index	Min 4% if salt >2.0%	N/A
	Min 10% if salt <2,0%	N/A
- % passing 0,075 mm sieve	min 15%	N/A
- Soluble Salt Content %		
- In gravel	Min 1,5%	N/A
- In Brine : For top 50 mm	Min 18%	N/A
For lower 100 mm	Min 8%	N/A
- Gypsum Content	Min 10%	N/A
Blading and Compaction :		Unless otherwise approved:
- Maximum size	26,5 mm	37 mm

QUALITY INDICATOR	SPECIFIED LIMIT	LIMIT AT * 80% PAYMENT
- Density	minimum : 93% Mod AASHTO aim : 95% Mod AASHTO	minimum : 92% Mod AASHTO
- Moisture content	6% to 20% <i>(indicative)</i> ***	
Geometry:		
- Thickness	150 mm \pm 10 mm	150 mm - 20 mm
- Width	As specified \pm 75 mm	As specified - 200 mm
- Camber:	3% \pm 0,5%	3% - 1,0%

* 80% payment. ***The Contractor may alternatively correct the non-compliance.***

** Although the Supervisor will identify borrow pits, the Contractor shall endeavour to avoid material which does not comply with the gravel quality standard.

*** Will be defined by Employer

1814 Construction

Construction of the roadbed and fill shall be done as for normal gravel roads.

In the construction of the salt-gravel wearing course no oversize gypsum material shall be removed but broken down before watering. Watering shall only commence once the gypsum material has been properly mixed into the gravel layer. Brine shall be used throughout the compaction of the wearing course, but a lower soluble salt content will be required for the lower two-thirds of the layer, as specified. Brine shall not be used sparingly to ensure a maximum salt content in the wearing course layer, and especially in the top 50 mm layer.

The top 50 mm of the layer shall be compacted by ***using a four wheel pneumatic roller weighing at least 30 ton.*** The high salt content brine, as specified, shall be applied in a slushing (water-rolling) operation. The final cut to a maximum depth of 10 mm of the layer, to remove surplus clayey material, shall be done with a grader once the material has dried out enough to prevent the forming of wheel tracks on the surface.

1815 Maintenance

Annual ripping and re-compacting of the existing salt-gravel layer will be required, or in between when the surface is damaged by rains, at sections of the road where surface damages such as corrugations, raveling and potholing occurred. The Supervisor will determine which sections shall be ripped and re-compacted in accordance with the specifications described in Section 1854 above.

On the sections where little or no surface damage occur, as will be identified and instructed by the Supervisor, the road surface shall be treated as follows:

-
- (a) Apply enough brine, with a salt content as specified for the top 50 mm, in the late afternoon to saturate the top 20 mm of the existing wearing course.
 - (b) Remove the fines and sand from the surface the next morning, by cutting to a depth of between 10 mm to 20 mm from the surface and spoil this material at least two blade-widths outside the shoulder breakpoints lines.
 - (c) Complete the final cut on the surface, add one application of brine and compact with a heavy pneumatic roller as specified in Section 1854.
 - (d) Apply two applications of brine, as specified for the top 50 mm, during the following two days.

1816 Measurement and Payment

Measurement and payment for the preparation, construction or re-compaction of roadbed, fill or normal gravel wearing course shall be done under the pay items under Section 1700.

1900 FINISHING OF THE ROAD RESERVE

1901 SCOPE

This section covers the final finishing and cleaning up of the road and road verges after construction, re-gravelling or re-compaction of the road pavement.

This section does not include the clearing, trimming and finishing required under Section 1400: Clearing and Grubbing, Section 1500: Section 1600: Blading of Roads Borrow, Materials, Section 1700: Earthworks and Section 1800: Layerworks.

1902 FINISHING THE ROAD AND ROAD RESERVE

Finishing of the road reserve will commence after completion of all other activities specified in the Contract.

After completion of the wearing course, the road and road reserve shall be cleared of all excess earth, stones, boulders, debris and other waste material, which resulted from the construction of the Works.

Culvert barrels, inlets and outlets, and open drains shall be cleared from debris, soil, silt and other material. Construction of mitre drains, banks and dykes shall be done under Dayworks.

The road and road reserve, all junctions, intersections, rest places, busstops and other elements of the Works shall be neatly finished off. ***Unless otherwise instructed in writing by the Supervisor, finishing of the road reserve shall include a total of 12 grader blade passes of Heavy Blading.***

Existing road signs shall be cleaned and basic repairs carried out, which could otherwise become a safety hazard, and guide blocks, which were removed shall be replaced. The Supervisor shall be informed by the Contractor of elements outside the scope of the Works, which are in need of major repairs.

1903 TREATING OF OLD ROADS

All old roads, diversions, haul roads and construction roads shall, in so far as is practicable, be levelled with the original ground. Unless otherwise instructed by the Supervisor, compacted temporary surfaces shall be scarified over the full width thereof, to a depth of 150 mm, to promote re-growth of vegetation.

Where instructed by the Supervisor, in order to prevent soil erosion, mitre banks, mitre drains and other open drains and ditches shall be constructed over the old roads, as well as in and next to the road reserve, to the dimensions ordered by the Supervisor.

All temporary roads and diversions treated as above, shall be left in a neat and tidy state.

Work instructed under this Clause shall be paid for under Dayworks.

1904 MEASUREMENT AND PAYMENT

Item	Unit
19.01 Finishing the road reserve	[km]

The unit of measurement shall be the kilometre (km) of road measured to the nearest 0,1 km along the centreline. No separate payment shall be made for any ancillary finishing work in the road reserve.

The Bidder rate shall include full compensation for clearing, trimming, disposing of material in worked-out borrow pits, tidying and all other work to be done for finishing off the road and road reserve as specified.

2000 DAYWORKS

Work under Dayworks will be required for various activities which are difficult to measure or which are not frequently done, as specified in these Specifications. Only work ordered in writing by the Supervisor shall be carried out on a daywork basis.

Work carried out under Dayworks will typically comprise of any of the following:

- (i) All work to be done.

2001 MEASUREMENT AND PAYMENT

Item	Unit
20.01 Works under daywork rate (when instructed)	[prov. sum]

The unit of measurement of Dayworks shall be the hours worked or as authorised in writing by the Supervisor. No payment for unauthorised work shall be made.

2100 SEGMENTED PAVING

2101 SCOPE

This specification covers the paving of roads and other areas with precast concrete segmental blocks closely together, the joints between the units being filled with jointing sand.

2102 INTERPRETIONS

(a) Definitions and Abbreviations

For the purposes of this specification the definitions the following definitions shall apply:

Bedding

- (a) The layer of sand placed between the top of a subbase and the bottom of a block.
- (b) The operation of placing a block on top of a sand layer, including the compacting of the sand layer, including the compaction of the sand layer.

Block (unit).

A precast concrete paving block of such size that it can be lifted and laid with one hand (The approximate dimensions of a block are normally as follows: Length 200 mm; width 100 mm; Thick 50-120mm and there are normally 40 - 50 blocks per square meter of paved area.)

Chamfer. The levelled edge of the wearing face of a unit.

Class (of a block). A designation giving the nominal thickness in millimeters and by means of alphabetical code, the type or shape (see 3.1), e.g. 80/S-A.

Compaction pass (pass). In regard to compacting one movement of an approved compacting machine from end of the layer being compacted to the other end.

Stated dimensions. The nominal dimensions stated by the manufacturer.

Subbase. The foundation layer on which the bedding for block paving is laid.

Wet strength. The strength at 28 d of a test block saturated in water for 24 h and tested in accordance with the relevant method given in SABS 1058^a).

2103 MATERIALS

(a) Units

(i) General.

The units as supplied shall be free from cracks that detract from their general appearance. The point of manufacture no unit shall have any chip of dimension exceeding 15 mm or covering more 3% of the periphery of the surface that is intended to be exposed. So, unit shall have any protube: of height exceeding 3 mm.

The surface texture and colour of the units shall fall within the range of texture and colour represented by the manufacturer's approved samples. The colour shall penetrate to a depth of at least 5 mm below wearing surface of each Unit and the coloured layer shall be integrally bound to the body of the unit.

(ii) Class, Strength and Type.

Except when the blocks are

- Required for paying subject to wheel loads exceeding 30 kN (see 2106(b)); or
- Required in terms of the project specification to be of Class 35 and are so scheduled; or
- Required to comply with both (a) and (b) above, the blocks used shall be of class 25,

Class 25 blocks, when tested in accordance with 2110 (i), shall have an average wet strength of 35 MPa and individual blocks shall have a wet strength of at least 35 MPa. Blocks shall be of the (S-A, S-B or S- C) scheduled or given on the drawings or required in terms of the project specification. As applicable and shall comply with the relevant requirements of SABS 1058a).

(b) Kerbs and Channels

Kerbs and channels shall be of the sections shown on the drawings and shall comply with the relevant requirements of SABS 927 and, when applicable, SABS 1200 MK.

(c) Sand for Bedding and Jointing

Sand for bedding and jointing shall be free from substances that may be deleterious to blocks. In addition, the grading of the sand shall conform to that given in (a) or (b) below, as applicable, except that, where evidence satisfactory to the Engineer has been provided of the successful previous use of sand having another grading, sand of such other grading may be used.

(i) Bedding sand.

<u>Nominal sieve size (mm)</u>	<u>% passing</u>
9.52	100
4.75	95-100
2.36	80-100
1.18	50-85
0.600	25-60
0.300	10-30
0.150	5-15
0.075	0-10

- (ii) Jointing sand. - shall pass a 1,18 mm sieve and shall contain 10-50 %(m/m) of material that passes a 0,075 mm sieve.

2104 PLANT**(a) General.**

Plant that is operated on or over units that have been laid shall be such that it does not cause damage to or disturbance of the units (see 2106).

(b) Roller

A roller shall be subject to approval and shall be a light (2-4t) vibratory roller or, where so required (see 2106 (b)), a heavy pneumatic-tyred roller.

(c) Mechanical Compactor

A mechanical compactor such as a flat-plate vibrator of high frequency and low amplitude, will be acceptable provided that it produces

- (i) for Units of thickness exceeding 80 mm, a centrifugal force of 16-20 kN at a frequency of 65-100 Hz on a plate area of 0,35-0,5m² (i.e. sufficient to cover at least 12 units); or
- (ii) for units of thickness not exceeding 80 mm, a centrifugal force of 7-16 kN at a frequency of 65-100 Hz on a plate area of 0,2-0,4 m² (i.e. sufficient to cover at least 10 units).

2105 CONSTRUCTIONS**(a) New Work****(i) General.**

Where the paving is to be laid on newly constructed earthworks or on an existing subgrade that is too low, the subgrade and subbase shall be constructed in accordance with the requirements of SABS 1200 DM and SABS 1200 ME, respectively, and shall conform to the tolerance requirements of 2108.

(ii) Depressions.

Depressions shall be filled with material that lies the physical properties specified for subbase material in SABS 1200 ME, and the material shall be compacted to 98 % of Modified AASHTO maximum density. Bedding sand shall not, under any circumstances, be used for this purpose.

(iii) Fall and level.

The top of the subbase shall be so constructed that surface water cannot pond and shall have a longitudinal fall of at least 1% and a transverse fall of at least 2%. The level after compaction shall be the designated level of the top of the subbase + 10 mm (see 2108(b)).

(b) Existing Subbase Substandard or too High**(i) Substandard layers.**

Substandard layers and soft and unstable areas in the subbase (or subgrade or formation, as applicable) shall be replaced or strengthened as specified in 2105 (b) (i) or 2105 (b) (ii), as applicable.

(ii) Subbase not stabilized.

Any portion of an existing subbase that has not been stabilised and is too high shall be lowered, harrowed and reconstructed to such depth that, after compaction, the subbase layer is of the same standard and thickness throughout or it shall comply with the requirements of the project specification and, in addition, the fall and level shall comply with 2105 (a) (iii).

(iii) Stabilized subbase.

Any portion of an existing stabilized subbase that is too high shall be lowered, harrowed and reconstructed to such depth that, after compaction, the subbase layer is of the same standard and thickness throughout or it shall comply with the requirements of the project specification and, In addition, the fall and level shall comply with 2105 (a) (iii) Depressions created in the course of lowering a stabilized subbase shall be filled with stabilized subbase material and compacted to form a subbase of at least the same standard as that of the existing stabilized subbase.

Alternatively, in the case of depressions of depth greater than 50 mm, concrete having a 7 d cube strength of at least 5 MPa shall be used, the fall and level after compaction shall comply with 2105 (a) (iii).

(c) Edge Restraints

Edge restraints consisting of kerbs or channels (see 3.2) or other approved edge strips, as scheduled or given on the drawings, shall be constructed, on the subbase (or other specified formation) before any units are laid.

(d) Placing and Compacting of Sand Bed

Bedding sand shall be spread over the subbase and evenly screeded in the loose condition so as to achieve a compacted thickness of 25 - 10 mm. When the sand is spread, its moisture content shall be 6 - 2 %. The sand bed shall be laid slightly in advance of the placement of the units but only to the extent that the particular area of pavement can be completed on the same day. Where the sand bed is accidentally compacted before the units are laid, it shall be raked and evenly rescreened in a loose condition.

(e) Laying of Units

The principal lines of the paving unit pattern as laid shall be as specified in the project specification or given on the drawings, and as agreed with the Engineer before laying commences. If the said principal lines are not so specified, given or agreed, the units shall be laid in a herringbone pattern if the block shape permits and, where units cannot be so laid, they shall be laid with the long axis at right angles to the line of traffic. Except where curved patterns are required, the lines of the unit pattern shall be visually straight and parallel to major kerbs or buildings or other structures, as most appropriate and as approved.

Where appropriate, lines shall be set up at right angles to each other to control the alignment of the units. Joint widths shall be between 2 mm and 6 mm.

Whole units shall be laid first. Full depth closure units of special size or cut or part units split from whole units, shall be fitted into gaps around the perimeter and around service installations such as manholes.

Where plant has to be moved over an uncompacted newly laid pavement, boards shall be laid to prevent disturbance of the units.

(f) Filling Gaps in Unit Pattern

Each gap where a closure unit cannot be used, shall be filled, after thorough pre-wetting of all units bounding the gap, with concrete that has a 24 h cube strength of at least 15 MPa and contains aggregate of maximum nominal size 9.5 mm. Filling shall be kept to an absolute minimum and shall be to full unit depth in all cases. The concrete shall be cured for at least 24 h by covering it with moist sand or approved plastics sheeting or hessian firmly held down at the edges. Where concrete is used for filling gaps, no compaction shall be carried out within 1 m of such filling until 24 h after the filling has been completed or until the specified cube strength of 15 MPa has been attained, whichever occurs first.

2106 COMPACTION OF UNITS**(a) General**

The manner of compaction of units shall be such that damage to the units is prevented. At least two compaction passes shall be made over the paving as soon as practicable after laying, before the introduction of any jointing sand. By the end of each day, compaction shall be completed not closer than 1 m from any free edge* A uniform even surface shall be obtained over the paved area.

(b) Paving Subject to Wheel Loads Exceeding 30 kN

Paving that is likely, in terms of the project specification, to be subjected regularly to wheel loads exceeding 30 kN shall, after joint filling (see 2107) be finally locked up with at least five passes of a heavy pneumatic-tyred roller over the entire area of paving. The manner of compaction shall be as specified in 2106 (a).

(c) Damaged units

Damaged units shall be replaced and compacted before joint filling is carried out.

(d) No Traffic until Joints Filled

No Vehicular traffic shall be allowed over the paving until all joints have been filled with sand (see 2107).

2107 JOINT FILLING.

The joints shall not be filled until all closure units have been inserted all necessary adjustments to line and level have been made and the pavement has been subjected to at least two passes of the compactor. Sand that complies with 3.3 (b) shall be broomed into the joints until they are full, and sufficient passes of a plate compactor shall be made to settle the joint filling. The procedure shall be repeated until the joints remain full after compaction. On completion of compaction, all excess sand shall be broomed off and disposed of. Damage caused during compaction shall be made good by the Contractor at his own expense.

2108 TOLERANCES**(a) General****(i) Paving as Laid.**

In addition to compliance with 2108, the finished surface of the paving shall, in opinion of the engineer, present a regular and smooth appearance to the eye.

(ii) Method of Measurement of Deviations.

Any deviation from flatness of a plane surface will be measured the maximum deviation of the surface from any straight line of length 3m joining two points on the surface, determined by means of a straight-edge the ends of which are supported on identical blocks suitable thickness placed over each of the points.

(iii) Frequency of Checks on Smoothness.

The frequency of checks on smoothness carried out by Contractor shall, in the case of roads, conform to the relevant requirements of Sub-clause 6.3 of SABS 1200 M and where an area other than a road is being paved, a check shall be carried out on every 300m² (max.) of area paved.

(b) Permissible Deviations

The permissible deviations shall be as given below:

Item	Permissible deviation, mm Degree of accuracy		
	III	II	I
a) Units as manufactured			
1) Deviation of length from nominal length	*	*	±2
2) Deviation of width from nominal width	*	*	±2
3) Deviation of depth (or thickness) from nominal depth (or thickness)	*	*	±3
4) Deviation from squareness (measured as specified in SAPS 1058a)	*	*	±2
b) Foundation layers			
1) Deviation top of subbase layer from designated level	*	*	±10
2) Smoothness of top of subbase layer measured on a 3 m straight line in any direction	*	*	±10
3) Thickness of 25 mm compacted sand bedding layer	*	*	±10
c) Finished paving.			
The finished surface of the paving shall, 3 months after opening to traffic, be accurate to within the following limits:			
1) Line of pattern			
i) deviation from any 3 m straight line, maximum	*	*	10
ii) deviation from any 20 m straight line, maximum	*	*	20
2) Vertical deviation from 3 m straight line			
i) at kerbs, channels, gullies, manholes and other edge restraints ...	*	*	+3, -0
ii) elsewhere (subject to adjustment as necessary for vertical curve)	*	*	+10 -15
3) Surface levels of adjacent units, difference not to exceed	*	*	3
4) Deviation of finished surface level from designated level, subject to compliance with 6.1.1 and 7.6	*	*	+10 -15

* As stated in the project specification, if required.

2109 TESTING**(a) General****(i) Checking**

The contractor shall carry out sufficient checks to satisfy himself that the materials used and the workmanship (construction, tolerance and strength) attained comply consistently with specified requirements. Checks will be carried out by the Engineer and the results made available to contractor.

(ii) Standard of Finished Work not to Specification

The Engineer may carry out such checks as he deems necessary at any point or at any depth or on any layer. Where the engineer's checks reveal that the material used or that the construction or tolerance standard achieved does not comply with applicable requirements of the specification, or that the compaction specified has not been attained, the contractor shall so rectify the work that the materials, construction and tolerance comply with the said requirements and the compaction specified is attained.

2110 SUBBASE, FORMATION AND OTHER FOUNDATION LAYERS

The subbase, formation and other foundation layers shall be subjected to testing as per the Engineer.

2111 BLOCKS**(i) Wet Strength Test**

The relevant test given in SABS 1058a) shall be used to determine whether blocks comply with the requirements for wet strength given in 2103 (a).

(ii) Other Tests

Blocks shall be subjected to such other tests as are given in SABS 1058a) and in Pre-cast concrete paving blocks: Specification1).

2112 CONCRETE FOR GAP FILLING

The concrete used for gap filling shall be subjected to testing in accordance with SABS 1200 G or SABS 1200 GA, as applicable.

2113 KERBS, CHANNELS AND OTHER DEVICES

Kerbs, channels and other devices used for edge restraints shall be subjected to testing in accordance with SABS 1200 MK.

2114 PONDING

Where the Engineer is of the opinion that, notwithstanding compliance by the Contractor with the requirements of 2105 (a) (iii) ponding may occur on the finished surface, the Engineer may order the whole or any part(s) of the surface to be flooded with water to determine whether ponding will occur. Rectification of areas where ponding is found to occur shall be carried out by the Contractor at his own expense. If ponding does not occur the Employer shall bear the cost of the test.

2115 MEASUREMENT AND PAYMENT

Item	Unit
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21.01 Provisions of Edge Restraints	[m]
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The length measured will be that of the outside perimeter of the paving units as shown on the drawings. Separate items as specified in Clause 8 of SABS 1200 MK will be scheduled, and the terms of SABS 1200 MK shall apply.

21.02 Construction of Paving Complete	[m²]
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Separate items will be scheduled for each type of material, class and shape of unit, depth of paving, type of laying bond and, if applicable, colour (or mixture of colours). The area measured will be that to be paved as shown on the drawings. The rate shall cover the cost of supplying units and sand, placing the bedding layer, laying the units, compacting the pavement, filling gaps, filling joints, locking up the pavement (when relevant) and removing excess sand.

21.03 Cutting Units to fit Edge Restraints	[m]
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Separate items will be scheduled for straight, raking and circular cutting. The length measured will be the length of that part of the edge restraint where it is necessary to cut the units to fit. The rate shall cover the cost of cutting, waste of material, delays and disruption of the program.

2200 PREAMBLE TO THE STANDARD SPECIFICATIONS**2201 SCOPE**

This section covers all the work involved in the routine maintenance of bitumen surfaced roads and includes:

a) Bitumen Surface Maintenance

- including base course and bitumen surface repair work.

b) Shoulder Maintenance

- including gravelling, blading and mowing.

c) Drainage Maintenance

- including clearing and cleaning the water courses and openings of bridges, culverts, drains and waterways, and reshaping of banks and eroded areas.

d) Road Access Maintenance**e) Road Signs and Markings, Guide Blocks and Guardrail Maintenance**

- including the cleaning, re-painting and replacement thereof (road signs and guardrail replacement are dealt with under Section 5000).

f) Roadside Maintenance

- including bush clearing, grass cutting, erosion control, litter control, rest area cleaning, painting and replacement. Reshaping of road verge, and planting and watering of trees in the road reserve.

g) Structure Maintenance

- including the cleaning, clearing and repairing (minor) thereof, as well as painting work on bridges and culverts and repairing gabion walls.

h) Emergency and Miscellaneous Repairs**2202 DEFINITIONS**

Definitions of words or phrases in the General Conditions of Contract are not repeated in the Standard Specifications.

Unless inconsistent with the context used in these Standard Specifications, the following terms, words or expressions shall have the meanings assigned to them in other parts of the document.

Throughout this document:

- the term 'Supervisor' means 'Project Manager' and vice versa
- the term 'Supervisor's Representative' means 'Project Manager's Representative' and vice versa

2203 BITUMEN ROAD MAINTENANCE MANUAL (BRMM)

The Bitumen Road Maintenance Manual (BRMM) of the Roads Authority (Second Revision: March 2003) with instructions related to bitumen road routine maintenance may be acquired separately for referral.

2300 GENERAL**2301 PRIORITY OF ACTIVITIES**

Save for emergencies such as accidents or flooding caused by rainwater runoff, the activities required for bitumen road routine maintenance tend to be cyclic and thus predictable. Preventative maintenance required between rain seasons will generally be followed by activities necessary to repair or reinstate defects caused by rain, both on the road and in the road verges, after a rain season. Maintenance activities which are not sensitive to the effects of rain may be attended to at any time of year, as agreed with the Project Manager.

The priority of maintenance activities shall in general be as follows, and any deviation therefrom shall require the prior approval of the Project Manager:

- a) emergencies and safety hazards
- b) road pavement and surfacing
- c) road shoulders
- d) road signs, markings and guardrails
- e) drainage
- f) structures
- g) roadside maintenance

2302 SERVICES

The positions of underground services in the road reserve of bitumen roads are marked. The Contractor shall be held responsible for damage to such known services, ducts or markers in the road reserve, which may be caused by his actions.

2303 ROAD INTERSECTIONS AND JUNCTIONS

Except where otherwise specified, no additional payment over and above payment under the pay items included in the Contract will be made for the maintenance of intersections, junctions or other facilities such as rest areas or bus-stops in the road reserve.

2304 WATER AND GRAVEL ARRANGEMENTS

Where the availability of water has not been assessed by the Employer, the Contractor shall do so before submitting his bid for the Works. Arrangements for and procuring of water, within the ambit of the Roads Ordinance, shall be the responsibility of the Contractor.

The Employer shall locate all borrowpits for use by the Contractor.

Arrangement for and procuring of road construction material shall, as for water, be the responsibility of the Contractor. The Contractor shall conform to the requirements of the Minister in respect of borrowpits in cultivated land.

2305 WORKMANSHIP AND QUALITY CONTROL

The onus rests with the Contractor to produce work which conforms in quality and accuracy of detail to all the requirements of the Specifications and Drawings. The Contractor shall, at his own expense, institute a quality control system and ensure adequate supervision and control of his work at all times. In cases where less personnel than that offered in the Contract is made available on Site, including supervisory staff, the Employer may reduce payment under the appropriate bided rates.

it is not required to establish a materials laboratory on Site, but the Site Agent or his Representative shall conduct basic measurements and tests, to ensure that the moisture content of pavement gravels is close enough to optimum moisture content to enable compaction thereof to specified minimum density, and to ensure that the actual application rates and mix ratios of all materials used in the maintenance operations comply to specified minimum standards. He shall submit the results of his measurements and tests to the Supervisor for approval in the format specified in the Contract, or as agreed upon.

2306 STANDARDS

The quality standards which shall apply to bitumen road maintenance activities are the methods, procedures and restored conditions adopted in the Bitumen Road Maintenance Manual (BRMM) of the Roads Authority. The quality standard for each maintenance activity is specified separately in these Specifications.

2307 ENVIRONMENT

The Contractor shall be conscious of the impacts road maintenance activities can, and normally do, have on the natural environment and shall at all times arrange his operations so that these impacts are reduced to a minimum.

No tree in the road reserve, especially big ones, shall be cut down unless approved by the Project Manager. A penalty to the amount determined in Clause PS 1208 of the Project Specifications shall be imposed for the unauthorised removal of any tree.

No oil, batteries, filters or any other toxic substances shall be buried in the road reserves, borrowpits or at camp sites. Bituminous waste must be covered with at least 1 metre thick soil or gravel when buried. Unless otherwise approved for a specific operation, the Contractor shall remove all waste materials from the work front on a daily basis, to a place approved by the Supervisor, and he shall leave the section where work was carried out in a restored condition, free of any waste products. The cost of this requirement shall be included in the rates bid for the pay items included in the Schedule of Quantities under this Section.

Camp layouts shall be small and compact. Tents shall be not be scattered around and all tents shall be neat and erected in straight rows. Ablution facilities should be available and should be emptied regularly at an approved sewage site. The Contractor shall comply with the Health and Safety requirements as well as with the Environmental requirements at the camp sites on an

ongoing basis and any failure on his part to do so will entitle the Project Manager to impose a penalty of N\$1000.00 per incident.

2400 BITUMEN SURFACE MAINTENANCE**2401 SCOPE**

This section covers all repair work on asphalt and bitumen seals and improvements of the surface of bitumen roads, including the repair of potholes in the base course.

2410 BASE REPAIR**2411 Scope of Work**

This section covers the repair deformation of the road surface of base and subbase layer failures, causing localised crocodile cracking and the development of potholes. Part V of the Bitumen Road Maintenance Manual (BRMM) describes the cause and type of defects, and trigger and restored conditions under the Activity: Base repair. Works shall be carried out in accordance with the BRMM.

2412 Material Requirements**a) Base Course Material**

All base course material must be obtained from commercial sources. The material must comply with the following minimum specification, **G4, 80 CBR at 98% Mod AASHTO density; PI less than 8**. Material from commercial sources shall be sampled in accordance with TMH5 and tested in accordance with TMH1 by an approved laboratory and the results submitted to the Project Manager for approval.

For base repairs of less than 80 mm in thickness, measured from the top of the surfacing, the Project Manager may instruct the use of emulsion treated base (ETB) material. The material to be stabilised shall be at least of subbase quality (45 CBR at 95% Mod AASHTO density; PI less than 10; GM more than 1,5). All subbase material must be taken from stockpiles identified and approved by the Project Manager.

When mixing the ETB, up to 50% crushed aggregate could be added to the subbase gravel to improve its properties. The ETB shall further consist of '4% bitumen anionic stable grade 60 Emulsion' and 1% Portland cement filler, mixed by weight and compacted close to optimum moisture content.

b) Bitumen Emulsion Prime, MSP 1

BRMM Materials Procurement, page 5.

c) Bitumen Anionic Stable Grade 60 Emulsion

BRMM Materials Procurement, page 4.

d) Bitumen Pre-packed or Cold Premix

BRMM Materials Procurement, page 5. Cold premix shall be prepared in accordance with the specifications of the BRMM, Materials Procurement: Cold mix preparation pages 10 and 11. Stable Grade 60 emulsion may also be used.

e) Crusher Dust

BRMM Materials Procurement, page 5.

f) Slurry Mix

The slurry mix shall be prepared in accordance with the specifications given in the BRMM, Materials procurement. Slurry mix preparation, pages 12 and 13. The method of applying the slurry seal is described in the BRMM from page 49 to page 51.

g) Road Marking Paint

BRMM Materials Procurement, page 6. (Separate Pay Item).

h) Spray and Chip Seal

BRMM from page 52 to page 55 gives a detailed description of the method of constructing a spray and chip seal.

2413 Plant and Equipment

A list of suitable items are specified in the BRMM, Activity: Base repair, page 2.

The typical plant and equipment include the following main items:

- a) 5 ton 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.

2414 Methodology

The standard method and procedure is described in the BRMM, Activity: Base repair. Unless otherwise agreed, the method and procedure shall be followed by 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 base course with approved material (use cement stabilisation, if specified)
- e) Sweep compacted areas

- f) Mark border around patch and apply prime
- g) Place pre-packed or cold premix and compact / or construct chip and spray
- h) Tidy up work area, load equipment and remove traffic control
- i) Apply crusher dust blinding to premix, or slurry, if required.

In cases where the existing surfacing consists of a single seal, the base repair shall be constructed to the same level of the original base course, followed by a spray and chip seal plus slurry, except if the patches are smaller than 0.5 square metre in which case premix may be used.

2415 Quality Standard

a) Restored Condition

The BRMM provides the following criteria:

- (i) Surface of patch to be smooth and level with the surrounding road surface.
- (ii) Patch to be rectangular in shape and parallel and perpendicular to edge of road.

b) 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.

Where potholes have developed 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.

c) Tolerances

- (i) 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.
- (ii) The thickness of the asphalt surfacing at any point shall not be less than 30 mm.
- (iii) When tested with a 3 m straight edge laid parallel or at right angles to the road centreline, the surface of the area shall not deviate from the bottom of the straight-edge by more than 7 mm.

d) Quality of Work

Although the standard method and procedure described in the BRMM for this activity has proved to be satisfactory, the Contractor shall ensure that the base repair will show no sign of failure, when inspected by the Supervisor within six months 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.

2416 Measurement and Payment

Item	Unit
24.01	
Base Repair	
(a) 0 m ² up to 0.5 m ²	[m ²]
(b) Exceeding 0.5 m ² and up to 2.0 m ²	[m ²]
(c) Exceeding 2.0 m ²	[m ²]
(d) Extra-over for using ETB in Repair	[m ²]

The unit of measurement shall be the square metre (m²) of base repaired in accordance with these Specifications. In the case of sub-item (d) the unit of measurement shall be percentage (%).

The bid rate for sub-items (a), (b) and (c) shall include full compensation for all labour, material and equipment, transport, traffic control, and for excavating, backfilling and mixing with cement if so approved, compacting, priming, surfacing, disposal of surplus materials and cleaning of the area.

The bid rate for sub-item (d) shall be the additional cost to excavate to 80 mm depth add bitumen emulsion and cement to the existing excavated material and for the additional bitumen emulsion and cement to the existing excavated material and for additional thorough mixing to produce an ETB material, as on extra-over to sub-items (a), (b) and (c).

No additional payment will be made for procuring and transporting crushed base course material (or any other crushed aggregates) from commercial sources to site. The bid rates for sub-items (a), (b), (c) and (d) shall include full compensation for procuring and transporting the specified crushed aggregates to site.

Payment for the pre-stockpiling of subbase quality gravel (specified for ETB) in the borrow pits, loading, transporting and off-loading of gravel (if required) will be made under Dayworks or Extra Work rates.

2420 SURFACE PATCHING**2421 Scope of Work**

This section covers the surface patching of potholes in the road seal or localised surface failures caused by ravelling, stripping or rutting on paved roads, where the exposed base or underlying bitumen layer shows no evidence of base failure. The Bitumen Road Maintenance Manual (BRMM) describes the cause and type of defects, and trigger and restored conditions under the Activity: Surface patching. Work shall be carried out in accordance with the BRMM.

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

2422 Material Requirements**(a) Bitumen Anionic Spray Grade 60 or Stable Grade 60 Emulsion**

BRMM Materials Procurement, pages 1 and 4.

(b) Bitumen Pre-packed Premix (compliant with the BRMM Specification)

BRMM Materials Procurement, page 5. Cold premix shall be prepared in accordance with the specifications of the BRMM, Materials Procurement: Cold mix preparation pages 10 and 11. Stable Grade 60 emulsion may also be used.

(c) Crusher Dust and Stone

BRMM Materials Procurement. pages 5 and 6.

(d) Slurry Mix

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

(e) Road Marking Paint

BRMM Materials Procurement, page 6.

(f) Chip and Spray Seal

BRMM from page 52 to page 55 gives a detailed description of the method of constructing a chip and spray seal.

2423 Plant and Equipment

Guidelines are provided in the BRMM, Activity: Surface patching, page 2.

The typical plant and equipment include the following main items:

- (a) 5 ton 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.

2424 Methodology

The standard method and procedure is described in BRMM, Activity: Surface patching. Unless otherwise agreed, the method and procedure shall be followed by 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 or cold premix in pothole and compact, or apply bitumen tack coat and stone layer, followed by slurry seal
- (e) On deep potholes compact premix in layers
- (f) Blanket patch (crusher dust blinding) if necessary
- (g) Tidy up work area, load equipment and remove traffic control

In cases where the existing surfacing consists of a single seal, the surface patching shall be done by a spray and chip seal plus slurry, except if the patches are smaller than 0.5 square metre in which case premix may be used.

2425 Quality Standard

(a) Restored Condition

The BRMM provides the following criteria:

- (i) The pothole patch must look neat with a flat surface, flush with the surrounding road surface
- (ii) Pothole patches greater than 500 mm to be rectangular in shape; parallel and perpendicular to road edge

(b) 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. The Contractor shall immediately upon detection set up appropriate danger warning signs, depending on the location and character of the surface pothole.

(c) Tolerances

- (i) 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.
- (ii) When tested with a 3 m straight edge laid parallel or at right angles to the road centreline, the surface of the area shall not deviate from the bottom of the straight-edge by more than 7 mm.

(d) Quality of Work

Although the standard method and procedure described in the BRMM for this activity has proved to be satisfactory, the Contractor shall ensure that the surface patching will show no sign of failure, when inspected by the Project Manager within six months 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 Project Manager.

2426 Measurement and Payment

Item	Unit
24.02 Surface Patching	
(a) 0 m ² up to 0,5m ²	[m ²]
(b) Exceeding 0,5 m ²	[m ²]

The unit of measurement shall be the square metre (m²) area of road, measured to the nearest 0.1 m², patched in accordance with these Specifications.

The bid rate shall include full compensation for all labour, material, equipment, transport, traffic control, surfacing operation, disposal of surplus material and cleaning of the area.

No additional payment will be made for procuring and transporting crushed aggregates from commercial sources to site. The bid rates for sub-items (a) and shall include full compensation for procuring and transporting the specified crushed aggregates to site.

2430 CRACK SEALING

2431 Scope of Work

This section includes sealing of cracks on paved roads using a rubber-bitumen or bitumen crack sealing emulsion. The Bitumen Road Maintenance Manual (BRMM) describes the cause and type of defects, and trigger and restored conditions under the Activity: Crack sealing. Work shall be carried out in accordance with the BRMM.

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.

2432 Material Requirements

(a) Bitumen Emulsion Prime, MSP 1

BRMM Materials Procurement, page 5.

(b) Rubber-bitumen Emulsion ('Colseal' or Similar approved)

BRMM Materials Procurement, page 2.

(c) Crusher Dust

BRMM Materials Procurement, page 5.

(d) Slurry Mix

The slurry mix shall be prepared in accordance with specifications given in the BRMM, Materials procurement, 4. Slurry mix preparation, pages 12 and 13. ***The method of applying the slurry seal is described in the BRMM from page 49 to page 51.***

(e) Road marking paint

BRMM Materials Procurement, page 6.

(f) Geotextile

'Sealmac' or approved equivalent; 1,4 mm thickness under 2kPa, minimum tensile strength of 8 kN/m width.

(g) Bitumen Anionic Stable Grade 60 Emulsion

BRMM Materials Procurement, page 4.

2433 Plant and Equipment

Guidelines are provided in the BRMM. Activity: Crack sealing, page 2.

The typical plant and equipment include the following main items:

- (a) 5 ton Truck with amber flashing light
- (b) Various tools: wheel barrows, picks, shovels, bass brooms, straight edge, watering can, paint roller etc.

2434 Methodology

The standard method and procedure is described in the BRMM, Activity: Crack sealing. Unless otherwise agreed, the method and procedure shall be followed by 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 and apply prime to large cracks
- (c) Apply crack sealant to the crack. A crusher dust blinding is required only where the immediate opening to traffic is necessary. Where the use of a geotextile is instructed to seal cracks, lay fabric on tack coat of stable grade or rubber-bitumen emulsion, and saturate the fabric with a penetration coat of the same emulsion using a paint roller, followed by a crusher dust blinding layer, the latter also only where the immediate opening to traffic is necessary.
- (d) Clean the equipment
- (e) Tidy up work area and load equipment, and remove traffic control

2435 Quality Standard

(a) Restored Condition

The BRMM provides the following criteria:

- (i) Sealed cracks to be watertight
- (ii) Sealed cracks to look neat
- (iii) Sealant to be level with the road surface, within allowed tolerance
- (iv) Unless sealed with slurry, sealant to be covered with crusher dust (but only if immediate opening to traffic is necessary, otherwise avoid crusher dust on crack sealant because this may form mini rumble strips and may advance noise pollution).

(b) 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 rain season.

Cracks 3 mm and wider: 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.

(c) Tolerances

The works shall be executed and finished strictly in accordance with the prescribed requirements

The sealed cracks shall be watertight, look neat and the sealant shall not project above the road surface by more than 3 mm.

(d) Quality of Work

Although the standard method and procedure described in the BRMM for this activity has proved to be satisfactory, the Contractor shall ensure that the crack sealing will show no sign of failure, when inspected by the Project Manager within six months 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.

2436 Measurement and Payment

Item	Unit
24.03 Crack Sealing	
(a) Block Cracks	
i. Light	[m ²]
ii. Medium	[m ²]
iii. Heavy	
	[m ²]
(b) Single cracks	[m]
(c) Geotextile	[m ²]
(d) Geotextile 200 mm wide	[m]

The unit of measurement for Item 44.03(a) shall be the square metre (m²) of road crack-sealed, and that for Item 44.03 (b) shall be the metre (m) of linear crack, to the nearest 1,0 m, designated by the Supervisor and sealed in accordance with these Specifications.

The bid rate for item 44.03(a) and (b) shall include full compensation for labour, material, equipment, transport, traffic control, cleaning of the road surface and cracks, applying of prime, sealant and crusher dust, disposal of surplus material and cleaning of the area.

No additional payment will be made for procuring and transporting crushed aggregates from commercial sources to site. The bid rates for sub-items (a), (b), and (d) shall include full compensation for procuring and transporting the specified crushed aggregates (if any) to site.

The bid rates for (c) and (d) shall include full compensation for the supply and application of geotextile material saturated in-place, with the specified sealant. For single cracks the width of the textile shall be 200 mm. Sub-items (a) and (b) are defined as follows:

- (a) Block cracks:
 - (i) ***Light Block Cracks: Equal to or more than 1,8 m, but less than 2,3 m, of linear cracks per Square metre of bitumen road surface.***

(ii) Medium Block Cracks: Equal to or more than 2.3 m, but less than 3.2 m, of linear cracks per square metre of bitumen road surface.

(iii) Heavy Block Cracks: Equal to or more than 3.2 m of linear cracks per square metre of bitumen road surface.

(b) Single cracks: Less than 1,8 m of linear cracks per square metre of bitumen road surface.

For classification purposes with regard to pay items 44.03 (a)(i), (ii), (iii) and 44.03 (b), the total length of actual linear cracks (measured in metres) occurring on a typical full-road-width test area twenty metres long, measured on any given section of road, shall be accurately determined and expressed as the 'actual metres of crack per square metre of road'. This classification shall apply as long as there is no change in the overall occurrence of cracks in any given section of road.

The classification procedure is repeated whenever there is a change in the overall occurrence of cracks in any given section of road, or on written request by either of the contracting parties.

2440 SURFACE SEALING : SLURRY SEALING

2441 Scope of Work

This section covers 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 the cause and type of defects, and trigger and restored conditions under the Activity: Surface sealing: Slurry sealing. Work shall be carried out in accordance with the BRMM.

2442 Material Requirements

(a) Slurry Mix

The slurry mix shall be prepared in accordance with specifications given in the BRMM, Materials Procurement: Slurry mix preparation, pages 12 and 13. The method of applying the slurry seal is described in the BRMM from page 49 to page 51.

(b) Elastomer Modified Anionic Bitumen Emulsion or similar products

Where the application of an Elastomer Modified Anionic Bitumen emulsion ('Rub-binder'), or SP2000 or equal and similar product, is instructed it shall be applied with squeegees as specified for a slurry application, to the manufacturer's specifications or as may be instructed by the Project Manager

(c) Road Marking Paint

BRMM Materials Procurement, page 6
'Solvent Base' road marking paint shall be used.

2443 Plant and Equipment

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

- (a) 5 ton Truck with amber flashing light
- (b) As required for the preparation of slurry
- (c) Various tools: wheel barrows, shovels, bass brooms, straight edge, etc.

2444 Methodology

The standard method and procedure is described In the BRMM, Activity: Surface sealing: Slurry sealing. Unless otherwise agreed, the method and procedure shall be followed by 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

2445 Quality Standard

(a) Restored Condition

The BRMM provides the following criteria:

- (i) Cracked surface fully and evenly covered with slurry patch neatly finished.
- (ii) Slurry patch rectangular with straight edges, parallel and perpendicular to edge of road.

(b) 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.

(c) Tolerances

- (i) The works shall be executed and finished strictly in accordance with the prescribed requirements and fulfil the criteria specified under (a) above.
- (ii) The slurry patch shall not be thinner than 3 mm.

(d) Quality of Work

Although the standard method and procedure described in the BRMM for this activity has proved to be satisfactory, the Contractor shall ensure that the slurry sealing will show no sign of failure, when inspected by the Project Manager within six months 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 Project Manager.

2446 Measurement and Payment

Item		Unit
24.04	Surface Sealing: (a) Slurry Sealing	[m ²]

**(b) Sealing with SP 2000, Elastomer Mod.
Anionic Emulsion or similar**

[I]

The unit of measurement for sub-item (a) shall be the square metre (m²) area of road, measured to the nearest 0.5 m², slurry-sealed in accordance with these Specifications.

The unit of measurement for sub-item (b) shall be the litre (l) of SP 2000, or Elastomer Modified Anionic Bitumen Emulsion ('Rub-binder') or equal and similar polymer modified bitumen product, applied as specified by the manufacturer, at an application rate as may be instructed by the Supervisor.

The bid rate shall include full compensation for labour, material, equipment, transport, traffic control, cleaning of the road surface, mixing and applying of slurry or specified modified bitumen product, disposal of surplus material and cleaning of the area.

No additional payment will be made for procuring and transporting crushed aggregates from commercial sources to site. The bid rates for sub-items (a) and shall include full compensation for procuring and transporting the specified crushed aggregates to site.

2450 SURFACE SEALING: SPRAY AND CHIP SEAL

2451 Scope of Work

This section covers 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 basecourse as a surface treatment. The Bitumen Road Maintenance Manual (BRMM) describes the cause and type of defects, and trigger and restored conditions under the Activity: Surface sealing: Spray and chip seal. Work shall be carried out in accordance with the BRMM.

2452 Material Requirements

(a) Bitumen-rubber Cationic Rubspray 65 Emulsion

BRMM Materials Procurement, page 2.

(b) Bitumen Cationic Spray Grade 60 Emulsion

BRMM Materials Procurement, page 1.

(c) Stone (13 mm, 9.5 mm or 6.7 mm)

BRMM Materials Procurement, page 6.

(d) Crusher Dust

BRMM Materials Procurement, page 5.

(e) Road Marking Paint

BRMM Materials Procurement, page 6.

2453 Plant and Equipment

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

2454 Methodology

The standard method and procedure is described in the BRMM, Activity: Surface sealing: Spray and chip seal. Unless otherwise agreed, the method and procedure shall be followed by 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

2455 Quality Standard**(a) Restored Condition**

The BRMM provides the following criteria:

- i. New seal closely spaced chippings in single layer
- ii. Even surface
- iii. No excessive bleeding
- iv. Cracked surface fully and evenly covered with spray, chip and crusher dust seal patch
- v. Sealing patch rectangular with straight edges, parallel and perpendicular to road edge

(b) 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.

(c) Tolerances

The edges of the completed surfacing shall not be above the existing surface by more than 10 mm. Nowhere shall the edges be below the surrounding road surface.

When tested with a 3 m straight-edge laid parallel or at right angle to the road centreline the surface of the area shall not deviate from the bottom of the straight-edge by more than 7 mm.

(d) Quality of Work

Although the standard method and procedure described in the BRMM for this activity has proved to be satisfactory, the Contractor shall ensure that the seal work will show no sign of failure, when inspected by the Project Manager within six months 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 Project Manager.

2456 Measurement and Payment

Item	Unit
24.05 Spray and Chip Sealing	[m²]

The unit of measurement shall be the square metre (m²) area of road, measured to the nearest 0.5 m, spray-and-chip-sealed in accordance with these Specifications.

The bid rate shall include full compensation for labour, material, equipment, transport, traffic control, cleaning of the road surface, applying of the spray and chip seal, applying of crusher dust blinding, disposal of surplus material and cleaning of the area.

No additional payment will be made for procuring and transporting crushed aggregates from commercial sources to site. The bid rate shall include full compensation for procuring and transporting the specified crushed aggregates to site.

2460 SURFACE SEALING: SPRAY AND DUST SEAL**2461 Scope of Work**

This section covers 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 the cause and type of defects, and trigger and restored conditions under the Activity: Surface sealing: Spray and dust seal. Work shall be carried out in accordance with the BRMM.

2462 Material Requirements**(a) Bitumen Anionic Stable Grade 60 Emulsion**

BRMM Materials Procurement, page 2.

(b) Crusher Dust

BRMM Materials Procurement, page 5.

(c) Road Marking Paint

BRMM Materials Procurement, page 6.

2463 Plant and Equipment

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

- (a) 5 ton Truck with amber flashing light
- (b) Various tools: wheel barrow, hand spraying equipment or watering cans, shovels, bass brooms, straight edge. etc.

2464 Methodology

The standard method and procedure is described in BRMM, Activity: Surface sealing: Spray and dust seal, page 9. Unless otherwise agreed, the method and procedure shall be followed by 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

2465 Quality Standard

(a) Restored Condition

The BRMM provides the following criteria:

- (i) Cracked surface fully and evenly covered with spray and crusher dust seal patch
- (ii) Sealing patch rectangular with straight-edges, parallel and perpendicular to road edge

(b) 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.

(c) Tolerances

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

(d) Quality of Work

Although the standard method and procedure described in the BRMM for this activity has proved to be satisfactory, the Contractor shall ensure that the seal work will show no sign of failure, when inspected by the Project Manager within six months 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 Project Manager.

2466 Measurement and Payment

Item	Unit
24.06 Spray and Dust Sealing	[m²]

The unit of measurement shall be the square metre (m²) area of road, measured to the nearest 0.5 m², area of spray-and-dust-sealed to the Supervisor's approval.

The bid rate shall include full compensation for labour, material, equipment, transport, traffic control, cleaning of the road surface, applying of bitumen and crusher dust blinding, disposal of surplus material and cleaning of the area.

No additional payment will be made for procuring and transporting crushed aggregates from commercial sources to site. The bid rate shall include full compensation for procuring and transporting the specified crushed aggregates to site.

2470 BLEEDING REMOVAL

2471 Scope of Work

This section covers the restoration of the bitumen seal on spots and in wheel tracks where the binder has migrated to the riding surface. The Bitumen Road Maintenance Manual (BRMM) describes the cause and type of defects, and trigger and restored conditions under the Activity: Bleeding removal. Work shall be carried out in accordance with the BRMM.

2472 Material Requirements

(a) Power Paraffin

Commercial quality.

(b) Stone Chipping

BRMM Materials Procurement, page 6.

(c) Road Marking Paint

BRMM Materials Procurement, page 6.

2473 Plant and Equipment

Guidelines are provided in the BRMM, Activity: Surface sealing: 1. Slurry sealing, page 2.

The typical plant and equipment include the follow-virus; main items:

- (a) 5 ton Truck with amber flashing light
- (b) Water trailer
- (c) Twin drum roller
- (d) Various tools: watering cans with roseheads, shovels and bass brooms

2474 Methodology

The standard method and procedure is described in BRMM, Activity: Bleeding removal, page 3. Unless otherwise agreed, the method and procedure shall be followed by 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) Prepare bleeding spots for aggregate application
- (d) Scatter and spread aggregate over affected surface
- (e) Roll aggregate well into bitumen seal
- (f) Tidy up work area and load equipment, and remove traffic control

2475 Quality Standard

(a) Restored Condition

The BRMM provides the following criteria:

- (i) Surfacing aggregate exposed to restore skid resistance of seal
- (ii) Treated surface flush with surrounding sound surface, aggregate slightly exposed

(b) 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.

(c) Tolerances

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

(d) Quality of Work

Although the standard method and procedure described in the BRMM for this activity has proved to be satisfactory, the Contractor shall ensure that the bleeding removal will show no sign of failure, when inspected by the Project Manager within six months 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 Project Manager.

2476 Measurement and Payment

Item	Unit
24.07 Bleeding Removal	[m²]

The unit of measurement shall be the square metre (m²) area of road, measured to the nearest 0.5 m², of bleeding removal in accordance with these Specifications.

The bid rate shall include full compensation for labour, material, equipment, transport, traffic control, cleaning and preparing of the road surface, applying of the aggregate, disposal of surplus material and cleaning of the area.

No additional payment will be made for procuring and transporting crushed aggregates from commercial sources to site. The bid rate shall include full compensation for procuring and transporting the specified crushed aggregates to site.

2480 DEPRESSION LEVELLING**2481 Scope of Work**

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

The Bitumen Road Maintenance Manual (BRMM) describes the cause and type of defects, and trigger and restored conditions under the Activity: Depression levelling. Work shall be carried out in accordance with the BRMM.

2482 Material Requirements**(a) Bitumen Pre-packed or Cold Premix**

BRMM Materials Procurement, page 5. Cold premix shall be prepared in accordance with the specifications of the BRMM, Materials Procurement: Cold mix preparation pages 10 and 11. Stable Grade 60 emulsion may also be used.

(b) Bitumen Cationic Spray Grade 60 Emulsion

BRMM Materials Procurement, page 5.

(c) Coarse Slurry Mix

The slurry mix shall be prepared in accordance with the specifications of the BRMM, pages 12 and 13.

(d) Road Marking Paint

BRMM Materials Procurement, page 6.

2483 Plant and Equipment

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

- (a) 5 ton 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.

2484 Methodology

The standard method and procedure is described in the BRMM, Activity : Depression levelling. Unless otherwise agreed, the method and procedure shall be followed by 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 or cold premix in combination with course slurry, depending on depth, 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

2485 Quality Standard

(a) Restored Condition

The BRMM provides the following criteria:

- (i) Final surface to be smooth and level with the surrounding road surface level.
- (ii) 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.

(b) 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.

(c) Tolerances

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

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.

(d) Quality of Work

Although the standard method and procedure described in the BRMM for this activity has proved to be satisfactory, the Contractor shall ensure that the depression levelling will show no sign of failure, when inspected by the Project Manager within six months 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 substandard workmanship shall be carried out within the time period specified by the Project Manager.

2486 Measurement and Payment

Item	Unit
24.08 Depression Levelling	[m²]

The unit of measurement shall be the square metre (m²) area of road, measured to the nearest 1.0 m², of depression levelled in accordance with these Specifications. Where the thickness of the premix exceeds 30 mm, the area shall be measured separately for each layer.

The bid rate shall include full compensation for labour, material, equipment, transport, traffic control, cleaning and preparing of the road surface, mixing, placing and compacting premix, levelling out of the depression, disposal of surplus material and cleaning of the area.

No additional payment will be made for procuring and transporting crushed aggregates from commercial sources to site. The bid rate shall include full compensation for procuring and transporting the specified crushed aggregates to site.

2490 EDGE REPAIRS

2491 Scope of Works

2492 Material Requirements

(a) Bitumen Pre-packed or Cold Premix

BRMM Materials Procurement page 5. Cold premix shall be prepared in accordance with the specifications of the BRMM, Materials Procurement : Cold mix preparation pages 10 and 11. Stable Grade 60 emulsion may also be used.

(b) Bitumen Cationic Spray Grade 60 Emulsion

BRMM Materials Procurement, page 5.

(c) Road Marking Paint

BRMM Materials Procurement, page 6.

2493 Plant and Equipment

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

- (a) 5 ton 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.

2494 Methodology

The standard method and procedure is described in the BRMM, Activity : Edge repairs. Unless otherwise agreed, the method and procedure shall be followed by 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 or cold premix and compact in layers, maximum 30 mm per layer
- (f) Build up edge support (200 mm wide Sealmac to be included to limit cracking on the joint)
- (g) Tidy up work area and load equipment, and remove traffic control.

2495 Quality Standard

(a) Restored Condition

The BRMM provides the following criteria:

- (i) The road edge reinstated to its original position and not, widened or narrowed
- (ii) The surface of the repaired area to be a continuation of the existing road **crossfall (200 mm wide Sealmac to be included to limit cracking on the joint)**
- (iii) Sufficient side support along edge of paved road
- (iv) Earth shoulder correctly shaped to allow water to drain away from the road surface.

(b) 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:

- (i) 72 hours for edge failures exceeding 250 mm in width, and
- (ii) as per annual programme for failures less than 250 mm in width.

Unless otherwise specified in the Project Specifications for the particular road, 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.

(c) Tolerances

- (i) The works shall be executed and finished strictly in accordance with the prescribed requirements and fulfil the criteria specified under (a) above.
- (ii) Restored road width within 20 mm of that specified.

(d) Quality of Work

Although the standard method and procedure described in the BRMM for this activity has proved to be satisfactory, the Contractor shall ensure that the edge repair work will show no sign of failure, when inspected by the Project Manager within six months 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 Project Manager.

2496 Measurement and Payment

Item	Unit
24.09 (a) Edge Repair	[m]
(b) Extra-over for using ETB in Repair	[m]

The unit of measurement shall be the linear metre (m) of road side, measured to the nearest 1.0 m, of edge repaired in accordance with these Specifications. Where the thickness of the premix exceeds 35 mm, the length shall be measured separately for each layer, or the Supervisor may instruct the use of bitumen emulsion treated base material to limit the premix to 30 mm thickness.

The bid rate for sub-item (a) shall include full compensation for labour, material, equipment, transport, traffic control, cleaning and preparing of the road surface, mixing, placing and compacting premix, levelling out of the depression, disposal of surplus material and cleaning of the area.

The bid rate for sub-item (b) shall be the additional cost to add bitumen emulsion, cement and crushed stone to the excavated material to produce an ETB material as specified in Section 4412, and for the cost to excavate, water, mix and compact the ETB, ready to apply a 35 mm thick premix layer under sub-item (a), as an extra-over to sub-item (a).

No additional payment will be made for procuring and transporting crushed aggregates from commercial sources to site. The bid rates for sub-items (a) and shall include full compensation for procuring and transporting the specified crushed aggregates to site.

The construction of the 'edge support' or 'sufficient side support along edge of the paved road' (if required) shall be instructed and paid for separately by the Project Manager under item 45.03 'Shoulder Gravelling'. Payment for pre-stockpiling of quality gravel in borrow pits, loading, transporting and off-loading of gravel (both for the Base Course and for the Edge Support, if required) will be made under Dayworks or Extra Work rates.

Item	Unit
25.10 300mm wide Edge Protection	[m]
25.11 500mm wide Asphalt Widening	[m]

The unit of measurement for items 44.10 and 44.11 shall be the linear metre (m) of road side, measured to the nearest 1.0 m, of edge protected or widened in accordance with these Specifications. Where the thickness of the premix exceeds 35 mm, the length shall be measured separately for each layer, or the Supervisor may instruct the use of bitumen emulsion treated base material to limit the premix to 30 mm thickness.

The bid rate for items 44.10 and 44.11 shall include full compensation for labour, material, equipment, transport, traffic control, cleaning and preparing of the shoulder and the road surface, mixing, placing and compacting premix, disposal of surplus material and cleaning of the area.

No additional payment will be made for procuring and transporting crushed aggregates from commercial sources to site. The bid rates for items 44.10 and 44.11 shall include full compensation for procuring and transporting the specified crushed aggregates to site.

The repair or construction of the shoulder (if required) shall be instructed and paid for separately by the Project Manager under item 45.03 'Shoulder Gravelling'. Payment for pre-stockpiling of quality gravel in borrowpits, loading, transporting and off-loading of gravel (for the Shoulder, if required) will be made under Dayworks or Extra Work rates.

2500 SHOULDER MAINTENANCE**2501 SCOPE**

This section covers the blading, mowing and gravelling of road shoulders.

2510 SHOULDER BLADING**2511 Scope of Work**

This section covers the trimming of shoulder build-up and reshaping, with or without re-compaction 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 hand-operated twin-drum vibratory roller of at least 500kg. The Bitumen Road Maintenance Manual (BRMM) describes cause and type of defects, trigger and restored conditions under Activity: Shoulder blading. Work shall be carried out in accordance with the BRMM.

2512 Plant and Equipment

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

- (a) 5 ton Truck with amber flashing light
- (b) Shoulder grader
- (c) Hand-operated twin-drum roller of at least 500kg
- (d) Various tools: shovels, brooms, rakes, etc.

2513 Methodology

The standard method and procedure is described in the BRMM, Shoulder blading. Unless otherwise agreed, the method and procedure shall be followed by 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

2514 Quality Standard**(a) Restored Condition**

The BRMM provides the following criteria:

- (i) Shoulder crossfall from pavement edge to shoulder breakpoint of minimum 3% and maximum 4%.
- (ii) Shoulder level at pavement edge flush with pavement.

(b) 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.

(c) Tolerances

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

2596 Measurement and Payment

Item	Unit
25.01 Shoulder Blading (a) Without compaction (b) With compaction	 [km] [km]

The unit of measurement shall be the kilometre (km) of shoulder bladed, each shoulder measured separately to the nearest 0,1 km, sub-divided into three categories, carried out in accordance with these Specifications.

The bid rate shall include full compensation for blading of a single shoulder with a towed shoulder grader, and compacting thereof (b) when so instructed by the Supervisor, including all labour, equipment, transport, traffic control and cleaning of the road surface. including cleaning and removal of windrows around guide blocks. ***The cleaning of grass around guardrails and road signs shall be done on a Dayworks basis.***

2520 SHOULDER MOWING**2521 Scope of Work**

This section covers the mowing of shoulders, and 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 mowing 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. Work shall be carried out in accordance with the BRMM.

2522 Plant and Equipment

Guidelines are provided in the 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.

2523 Methodology

The standard methods and procedures are described in the BRMM, Shoulder mowing, pages 3 and 6. Unless otherwise agreed, the method and procedure shall be followed by 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.
Bushes and shrubs that are higher than 500mm shall be removed before shoulder mowing is done to prevent tyre punctures.
- (c) Cut vegetation
- (d) Where necessary, arrange for removal of cut vegetation
- (e) Tidy up work area and load equipment and remove traffic control.

2524 Quality Standard

(a) Restored Condition

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

- (i) Vegetation mowed to a height of less than 100 mm on the shoulders to the full shoulder width.
- (ii) No road sign shall be obstructed by vegetation.
- (iii) The area shall be left neat and tidy.

(b) 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, or as instructed by the Supervisor.

2525 Measurement and Payment

Item	Unit
25.02 Shoulder Moving	
(a) 2,5 m wide	[km]
(b) 5,0 wide	[km]

The unit of measurement shall be the kilometre '(km) of shoulder mowed to the specified width, each shoulder measured separately to the nearest 0.1 km, in accordance with these Specifications.

The bid rate shall include full compensation for mowing of a single shoulder and/or side slope to the width specified in (a) or (b), as applicable, with a tractor-towed grass mower and by hand slashing on instruction of the Supervisor, including all labour, equipment, transport, traffic control and cleaning of the road surface on completion of the work.

Bushes and shrubs that are higher than 500mm shall be removed on Dayworks before shoulder mowing is done to prevent tyre punctures.

2530 SHOULDER GRAVELLING

2531 Scope of Work

This section covers the dumping, shaping and compacting of material along the edge of a paved road where the shoulder has been eroded away to 50 mm below the edge level of the surfacing, over a distance not exceeding 1000 m. The Bitumen Road Maintenance Manual (BRMM) describes the cause and type of defects, and trigger and restored conditions under the Activity: Shoulder gravelling. Work shall be carried out in accordance with the BRMM.

2532 Material Requirements

(a) Shoulder Gravel Material

Shoulder gravel material shall consist of shoulder quality material. The material must be taken from stockpiles identified by the Supervisor.

2533 Plant and Equipment

Guidelines are provided in the 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 of at least 500kg
- (d) Various tools: picks, shovels, mass brooms, rakes, picks, shovels, etc.

2534 Methodology

The standard method and procedure is described in BRMM, Activity: Shoulder gravelling, page 3. Unless otherwise agreed, the method and procedure shall be followed by 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

2535 Quality Standard**(a) Restored Condition**

- (i) Shoulder rebuilt to the level of the pavement edge.
- (ii) Shoulder crossfall from pavement edge to shoulder breakpoint of minimum 3% and maximum 4%.

(b) Response Time

Unless otherwise specified in the Project Specifications for the particular road or project, 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 low shoulder is 30 days.

(c) Tolerances

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

2536 Measurement and Payment

Item	Unit
25.03 Shoulder gravelling	
(a) Over lengths not exceeding 100 m	[m]
(b) Over lengths exceeding 100 m but not 1,0 km	[m]

The unit of measurement shall be the metre (m) of shoulder gravelled, each shoulder measured separately to the nearest 100 m, in accordance with these Specifications. The completed gravel layer shall have a cross-sectional dimension of 500 mm x 50 mm, or other dimension with the same cross-sectional area where so approved by the Supervisor.

The bid rate shall include full compensation for, loading and transporting of gravel and water, for off-loading, watering, spreading, mixing and compacting of gravel, removing of oversize material and cleaning of the road surface on completion of the work. Distinction shall be made between lengths shorter than 100 m and lengths longer than 100 m, but not exceeding 1,0 km.

Payment for pre-stockpiling of quality gravel in borrowpits will be made under Dayworks or Extra Work rates.

2600 ROAD SIGNS AND MARKINGS MAINTENANCE**2601 SCOPE**

This section covers the work involved in the routine maintenance of road signs, road markings, road feature markers, road studs and guardrails, but excludes replacement or erection of road signs and guardrails.

2610 ROAD SIGN CLEANING AND PAINTING**2611 Scope of Work**

This section covers the cleaning of dirty or faded road signs. The Bitumen Road Maintenance Manual (BRMM) describes the cause and type of defects, and trigger and restored conditions under the Activity: Road sign cleaning. When so instructed the Contractor shall also clean and paint the support structure and reverse side of road signs. Work shall be carried out in accordance with the BRMM.

2612 Material Requirements

Ammonium based detergent and cleaning cloth and pads for "Doodle Bug" (or similar approved hand tool)

Undercoat paint SABS 681 (Type II)

High gloss enamel paint SABS 684 (Type A)

(The colour and shades of paint shall conform to that specified in the Drawings).

2613 Plant and Equipment

Guidelines are provided in the BRMM, Activity: Sign cleaning, page 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 or similar approved, 20 litre drums for water and detergent solutions respectively
- (d) Ladder (for large signs)
- (e) For painting: 50 mm paint brushes, scrapers, wire brushes, etc.

2614 Methodology

The standard method and procedure is described in the BRMM, Activity: Sign cleaning. Unless otherwise agreed, the method and procedure shall be followed by 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) Clean reverse of road sign and support structure and paint
- (e) Tidy up work area and remove traffic control.

2615 Quality Standard

(a) Restored Condition

- (i) Cleaning of sign face: The sign face shall be clean and its reflectivity restored.
- (ii) Cleaning and painting of reverse side and support structure:

The works shall be executed in accordance with the requirements of the BRMM. Surfaces which are to be painted shall be prepared by steel brushing, scraping or rubbing with steel wool to remove oxidation and scale and scrubbing with clean water with a bristle brush prior to applying the undercoat paint. No paint shall be applied to surfaces containing oil or grease, water or salts. Neither the undercoat nor the finishing coat shall be diluted and shall be applied in accordance with the manufacturer's specifications.

(b) Response Time

The Contractor shall wash all signs at least once annually after the wet season. In addition, the Contractor shall wash signs which are subject to frequent mud or grime spray, to keep it clearly legible. Repainting shall latest be done when corrosion of steel becomes visible.

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 specified in the Project Specifications for the particular road.

Painting of road signs shall be done on instruction of the Supervisor.

2616 Measurement and Payment

No separate payment will be made for road sign cleaning and painting. The rate bid under Pay Item 26.01 shall include full compensation for this activity.

2620 ROAD SIGN ERECTION AND REPAIR

The removing and repairing or replacing of existing road signs, and the erection of new road signs shall comply with the requirements.

2630 ROAD MARKING

2631 Scope of Work

This section covers the restoration of worn or obliterated road markings and the repainting of road markings after repairs were carried out on the existing road surfacing, over distances not exceeding 100 m, as and when instructed by the Supervisor. The Bitumen Road Maintenance

Manual (BRMM) describes the cause and type of defects, and trigger and restored conditions under the Activity: Road marking repairs. Work shall be carried out in accordance with the BRMM.

2632 Material Requirements

BRMM Materials Procurement, page 6.
Solvent Base Road Marking Paint to be used.

2633 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.

2634 Methodology

The standard method and procedure is described in BRMM, Activity: Road marking repair, page 3. Unless otherwise agreed, the method and procedure shall be followed by 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

2635 Quality Standard

(a) Restored Condition

The works shall be executed in accordance with the requirements of the BRMM.

(b) Response Time

Unless otherwise specified in the Project Specifications or instructed by the Supervisor, 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.

2636 Measurement and Payment

Item	Unit
26.01 Paint road marking 100 mm wide	[m]

The unit of measurement shall be the cumulative length of 100 mm wide solid white or yellow line, gaps excluded, painted over bituminous repair work _on the existing surfacing.

The bid rate shall include full compensation for all required labour, material, equipment, transport, traffic control and cleaning of the work area after completion of the paint work. Where the application of glass beads is instructed, payment for the beads shall be made under Dayworks.

No separate payment will be made for the restoration of worn or obliterated markings. The rate bid under Pay Item 26.01 shall include full compensation for this activity.

2660 ROAD STUDS INSTALLATION

2661 Scope of Work

This section covers the installation of surface type road studs bonded to the surface of paved roads using an epoxy adhesive. The Supervisor will identify the locations and the need of road studs. The Bitumen Road Maintenance Manual (BRMM) describes the cause and type of defects, and trigger and restored conditions under Activity: Road stud installation. Work shall be carried out in accordance with the BRMM.

2662 Material Requirements

Typical materials are listed under the relevant sections in the BRMM, Materials Procurement and under Activity: Road stud installation (surface type), page 2.

2663 Plant and Equipment

Guidelines may be found in the BRMM, Activity: Road stud installation (surface type), page 2. 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.

2664 Methodology

The standard method and procedure is described in the BRMM, Activity: Road stud installation (surface type), page 3. Unless otherwise agreed, the method and procedure shall be followed by the Contractor in his planning and execution of the works. The outlined procedure in brief is:

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

2665 Quality Standard

(a) Restored Condition

- (i) The road studs placed at correct intervals and positions as shown in the Road Traffic Signs Policy

- (ii) The entire base of the road stud bonded to the road surface
- (iii) No adhesive on reflective faces of road studs.

(b) Response Time

Unless otherwise specified in the Project Specifications, 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 30 days.

(c) Quality of Work

The works shall be executed in accordance with the requirements conditions above.

2666 Measurement and Payment

Item	Unit
26.02 Install road studs	[number]

The unit of measurement shall be the number of road studs installed in accordance with these Specifications.

The bid rate shall include full compensation for all labour, material, equipment, transport, traffic control, and cleaning of the road surface at completion of the work.

2700 DRAINAGE, STRUCTURES AND ROADSIDE MAINTENANCE

2710 SCOPE

This section covers the routine maintenance in the road verges.

2710 DRAINAGE MAINTENANCE

2711 Scope of Work

This section includes the cleaning of Catchwater channels, reshaping of banks, repairing of minor erosion damage, cleaning and clearing of culvert and bridge openings and surface drains from vegetation, debris, and silt and sand deposits. The Bitumen Road Maintenance Manual (BRMM) describes cause and type defects, trigger and restored conditions in Part VII under the Activities: Catchwater bank maintenance, small culverts clearing, large culverts clearing, surface drain clearing and waterway clearing. Work shall be carried out in accordance with the BRMM. Concrete repair work and major erosion damage, which requires the use of heavy equipment are excluded from these activities. The replacement of concrete chutes and gabion walls and mattresses are also excluded from this section.

2712 Material Requirements, Plant and Equipment

No material, except for in-situ gravels, is required. Plant and equipment requirements are listed in the BRMM. Typical plant and equipment include the following:

- (a) Truck with amber flashing light
- (b) Hand tools: Picks, shovels, slashers, hand rammers, wheel barrows, axes, etc.

2713 Methodology

Unless otherwise agreed, the standard methods and procedures described in the BRMM under the relevant activities shall be followed by the Contractor in his planning and execution of the works.

2714 Quality standard

(a) Restored Condition

The completed work shall conform to the restored conditions specified in the BRMM.

(b) Response Time

All drainage openings, channels, waterways, drains and banks shall be inspected and deficiencies corrected to the restored conditions every year before the end of October and at the end of the rain season.

2715 Measurement and Payment

Item

Unit

27.01 Clean, clear and reshape drainage facilities

The above work shall be carried out on instruction of the Supervisor under Dayworks rates.

SECTION III: STATEMENT OF REQUIREMENTS

PART B: PROJECT SPECIFICATION

The Contractor should take note that the General Description of the Works serves to outline the extent of the works, but does not limit the amount of work which may be required of the Contractor under this contract. Reference must be made to the Project Specifications, the Schedule of Quantities, and the Construction Drawings for a more detail description of the works

PART B.1 PREFACE TO PROJECT SPECIFICATIONS

The clauses of the Project Specifications below are amending, clarifying or adding to the clauses of the Standard Specifications and are not replacing the said clauses unless otherwise indicated.

The Project Specifications form an integral part of the Specifications and have priority over the Standard Specifications.

In numbering the clauses of the Project Specifications the prefix “PSA” is used with the clause number to indicate the general part (Part A) of the Project Specification. In Part B of the Project Specifications the prefix “PSB” is used with the clause number of the Standard Specifications, while retaining the relevant heading. Where new or unrelated specifications are introduced the prefix “PSB” is followed by a number following the last number of a section or sub-section of the Standard Specifications and appropriate headings.

PART B.2 PROJECT DESCRIPTION

PSA1. GENERAL DESCRIPTION OF THE WORKS

The work comprises mainly blading, re-gravelling, segmented paving and kerbing of a street in Okakarara, as will be specified by the Supervisor.

The specifications and drawings form part of, and shall be read in conjunction with all contract documents and drawings; bills of quantities and standard specifications. The project will be executed over a month's period.

Bidders shall study the contract and ensure they are fully aware of, and allow for all conditions and requirements as the Employer will accept any responsibility for any dispute after submission of the quotation.

The contractor shall, as specified in all the relevant sections of this document, take full responsibility for the following:

- Regravelling
- Surface patching
- Slurry sealing
- Base repair
- Road signs and markings
- Action plan on how you will successfully implement the project (Works programme).
- Ensuring that all parts of the Works are at all times safe to the public and to his personnel and those of the Employer.
- Ensuring that all sort of rubbish/debris generated during the work is cleared from the operation site and transported to the designated dumping site.
- The contractor is encouraged to recruit local laborers.

The contractor shall ensure that his personnel are equipped with proper tools and equipment as well as PPE's.

PSA2. MATERIALS

Bidders shall familiarise themselves to what extent the Employer has located borrow-pits in respect of each and every road on a Site and to what extent the Contractor would be required to provide a track dozer or back-actor with operator for prospection purposes before commencement of the works or during the Contract Period.

When borrow-pits are opened, the Contractor shall isolate pockets of material that are visually of lower quality than anticipated, as well as similar poor-quality material found in the case of extensions to a pit, and he shall not transport such material to the road unless specifically so instructed by the Supervisor.

Bidders shall also familiarise themselves with the extent to which construction water is available or not, and all risks related thereto. The Contractor shall make every effort to obtain construction water at reasonable cost, if not already determined by the Supervisor, and he shall adhere to the instructions of the Supervisor in respect of the method to be followed to extract, pump, contain and or transport water to the point of use, to reduce overall cost.

PSA3. DESCRIPTION OF THE SITE

Bidders will not be required to attend arranged pre-bid Site inspections, to familiarise themselves with general site conditions, the environment, climate, geology, soils, property owners, facilities, services, restrictions and the like. Please refer to the google image in Section III Part C. The site will be shown to the successful bidder upon award.

Item	Action	Comments / Description (List of streets)	Unit	Estimated quantity
1	Heavy Blading	Various Streets	bl-km	8
2	Re-gravelling	Various Streets	m ³	1200

PART B.2 PROJECT AMENDMENTS AND ADDITIONS TO THE STANDARD SPECIFICATIONS**PSB 1201 SERVICES**

It is not the intention to move or reinstate any service in, through, or over the road reserve during the regravelling of an existing road. Where new gravel roads are constructed and the Contractor is instructed to move or re-align existing services, it shall be done under Dayworks.

The Contractor and the Supervisor shall agree on the position of all known services at the start of the Contract, and on how to avoid damage to these services. The Contractor shall be held responsible for damage caused by him to services pointed out to him.

PSB 1204 WATER AND GRAVEL ARRANGEMENTS

The locality of gravel borrow-pits shall be shown to the successful bidder. All borrow-pits are within 15km radius from the site.

PSB 1205 SETTING-OUT

Setting-out of the horizontal road alignment of a new gravel road shall be done by the Contractor between the points of intersection (PI's) determined by the Employer. No setting-out will be required for regravelling operations, unless so specified in the Project Specifications or by the Supervisor.

The Contractor shall set out and control the width of the road, which shall be centered around the road centre line, as well as the bellmouths of all accesses, intersections, rest areas and busstops, in accordance with the Drawings or instructions of the Supervisor.

PSB1208 ENVIRONMENT

The penalty amount shall be N\$ 1000.00

PSB 1302 ACCOMMODATION OF TRAFFIC

The display of temporary road traffic signs shall conform to the layouts referred to in the drawings, as may be appropriate.

PSB 1206 WORKMANSHIP AND QUALITY CONTROL

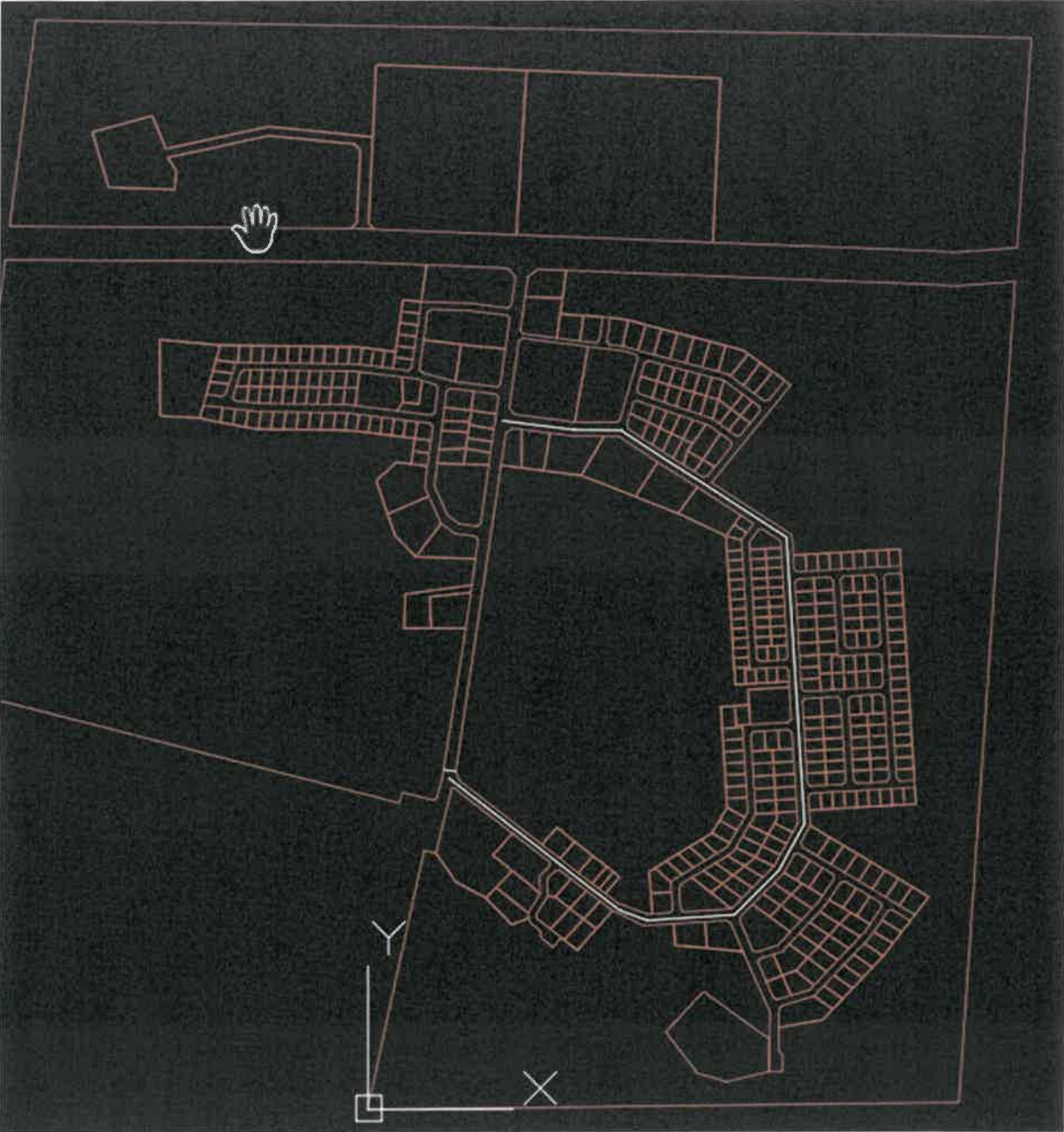
The basic measurements and tests which will be required on Site will be made known at the pre-bid Site inspections.

PSB 1703 CONSTRUCTION

The compaction for the roads' wearing course should be 95% MOD AASHTO, and for fill material it should be 93 % MOD AASHTO.

SECTION III PART C-DRAWING LIST

- Road Plan View
- Google earth image



Google earth image Tsumkwe



SECTION IV: PRICED ACTIVITY SCHEDULE

SCHEDULES OF QUANTITIES

PREAMBLE TO THE SCHEDULE OF QUANTITIES

1. For the purposes of this Schedule of Quantities, the following words shall have the meanings hereby assigned to 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 Bidder bids to do the work.

Amount : The product of the quantity and the rate bid for an item.

Lump Sum : An amount bid for an item, the extent of which is described in the Schedule of Quantities, the Specifications or elsewhere but the quantity of work of which is not measured in any units.

Prime Cost Sum: A sum included in the Contract and so designated in the Schedule of Quantities for covering the prime cost of goods or materials to be supplied under the Contract and for delivery of such items to storage on site. The amount to be paid to the Contractor shall be the actual price paid by him.

2. This preamble and the Schedules of Quantities form an integral part of the Contract Documents. The quantities set out in the Schedule 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, shall be used for determining payments to the Contractor.

The validity of the Contract shall in no way be affected by differences between the quantities in the Schedule of Quantities and the quantities finally certified for payment. Work shall be valued at the rates or lump sums bided, subject only to the provisions of the Conditions of Contract.

3. The Bidder shall fill in a rate or a lump sum for each item where provision has been made for it, even where no quantities are given. Items against which no rate or lump sum has been entered in the bid will not be paid for when the work is executed, as it is assumed that the contractor does not wish to receive payment for any such work.

The bid lump sums and rates shall be valid irrespective of any change in the quantities during the execution of the Contract.

4. The Works as executed will be measured for payment in accordance with the methods described in the Contract Documents under the various Payment Items, notwithstanding any custom to the contrary.

The amount of work or the quantities of material stated in the Schedule of Quantities shall not be considered as restricting or extending the amount of work to be done or quantity of material

1. to be supplied by the Contractor.
2. The stating of quantities of material or amounts of work in the Schedule of Quantities shall not be regarded as authorization for the Contractor to order material or to execute work. The Contractor shall obtain the Engineer's detailed instructions for all work before ordering any materials for or executing work or making arrangements in this regard.
3. The short descriptions of the Payment Items given in the Schedule of Quantities are only for the purposes of identifying the items and providing specific details. Reference shall be made, inter alia, to the Drawings, Standard Specifications for Labour-Based Construction, Project Specifications, General Conditions of Contract and Special Conditions for more detailed information regarding the extent of the work entailed under each item.
4. The units of measurement indicated in the Schedule of Quantities are metric units. The following abbreviations are used in the schedule of quantities:

ha	hectare	m	metre
h	hour	mm	millimetre
kg	kilogram	m ²	square metre
kl	kilolitre	m ² .ps	square metre-pass
km	kilometre	m ³	cubic metre
km.ps	kilometre-pass	m ³ .km	cubic metre-kilometre
kN	kilonewton	mth	month
kW	kilowatt	No	number
l	litre	%	percentage
L/sum	lump sum	PC sum	prime cost sum
MN	meganewton	P/sum	provisional sum
MN.m	meganewton-metre	t	ton of 1000 kg

5. All rates and sums of money quoted in the Schedules of Quantities shall be in Namibia Dollars and whole cents. Fractions of a cent shall be discarded.
6. Pay item numbers are listed in the Schedule of Quantities. These numbers refer to the corresponding item numbers in the "Specifications for Construction Work". Certain pay item numbers appearing in the Schedule of Quantities are prefixed by the letter PSB. This letter signifies that either:

ITEM No	PAY ITEM	SECTION NUMBER AND DESCRIPTION	UNIT	QTY	RATE N\$	AMOUNT N\$
1		1300 Establishment on Site and General Obligation				
1.1	13.01	(a) Establishment / de-establishment	lump sum	1.00		
2		1400 Clearing And Grubbing				
2.1	14.01	Clearing and grubbing	ha	2.00		
3		1600 Blading of Roads				
3.1	16.01	(a) (i) Light blading	bl-km	0.00		
3.2		(b) (i) Heavy blading	bl-km	8.00		
3.3		(c) Wet Blading with Compaction	bl-km	0.00		
4		1700 Earthworks				
4.1	17.01	Roadbed preparation				
4.2		(a) Road width of 8m				
4.3		(i) Light blading	bl-km	0.00		
4.4		(ii) Heavy blading only	bl-km	0.00		
4.5		(iii) Light roadbed preparation	km	0.00		
4.6		(iv) Heavy roadbed preparation	km	2.00		
4.7	17.02	Processing of fill	m³	0.00		
4.8	17.03	(a) Hauling of material	m³-km	0.00		
4.9	17.04	(a) Hauling of water	kl-km	0.00		
5		1800 Layerworks				
5.1	18.01	Processing of gravel				
5.2		(a) Fine gravel	m³	0.00		
5.3		(b) Medium gravel (make up deficiency)	m³	2400.00		
5.4		(c) Coarse gravel	m³	0.00		
5.5	18.02	Mechanical modification (extra-over)	m³	2400.00		
5.6	18.03	(a) Hauling of gravel	m³-km	24000.00		
5.7	18.04	(a) Hauling of water	kl-km	2400.00		
6		1900 Finishing of Road Reserve				
6.1	19.01	Finishing the road reserve	km	2.00		
7		2000 Dayworks				
7.1	20.01	Work under daywork rates (when instructed)	Prov. sum	1.00		80,000.00
8		2100 Segmented Paving				
8.1	21.01	Provisions of Edge Restraints (Kerbs)	m	0.00		
8.2	21.02	Construction of 80mm thick 35MPa concrete Type SA grey paving on 20mm (uncompacted thickness) clean river sand.	m²	0.00		
8.3	21.03	Cutting Units to Fit Edge Restraints	m	0.00		
TOTAL SCHEDULE OF QUANTITIES						
10% Contingencies						
Sub-Total Excluding VAT						
VAT (15%)						
TOTAL OF BID SUMS						

Priced Activity Schedule Authorised By:

Name:		Signature:	
Position:		Date:	
Authorised for and on behalf of:	Company		

SECTION V – GENERAL CONDITION OF CONTRACT

General Conditions of Contract

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A. General

1. Definitions

1.1 Boldface type is used to identify defined terms.

(a) The Accepted Contract Amount means the amount accepted in the Letter of Acceptance for the execution and completion of the Works and the remedying of any defects.

(b) The Activity Schedule is a schedule of the activities comprising the construction, installation, testing, and commissioning of the Works in a lump sum contract. It includes a lump sum price for each activity.

(c) The Adjudicator is the person appointed jointly by the Employer and the Contractor to resolve disputes in the first instance, as provided for in GCC 23.

(d) Bill of Quantities means the priced and completed Bill of Quantities forming part of the Bid.

(e) Compensation Events are those defined in GCC Clause 41 hereunder.

(f) The Completion Date is the date of completion of the Works as certified by the Project Manager, in accordance with GCC Sub-Clause 53.1.

(g) The Contract is the Contract between the Employer and the Contractor to execute, complete, and maintain the Works. It consists of the documents listed in GCC Sub-Clause 2.3 below.

(h) The Contractor is the party whose Bid to carry out the Works has been accepted by the Employer.

(i) The Contractor's Bid is the completed bidding document submitted by the Contractor to the Employer.

(j) The Contract Price is the Accepted Contract Amount stated in the Letter of Acceptance and thereafter as adjusted in accordance with the Contract.

(k) Days are calendar days; months are calendar months.

(l) Dayworks are varied work inputs subject to payment on a time basis for the Contractor's employees and Equipment, in addition to payments for associated Materials and Plant.

m) A Defect is any part of the Works not completed in accordance with the Contract.

(n) The Defects Liability Certificate is the certificate issued by Project Manager upon correction of defects by the Contractor.

(o) The Defects Liability Period is the period named in the SCC pursuant to Sub-Clause 33.1 and calculated from the Completion Date.

(p) Adjudicator means the single person appointed under Clause 23.

(q) Drawings means the drawings of the Works, as included in the Contract, and any additional and modified drawings issued by (or on behalf of) the Employer in accordance with the Contract, include calculations and other information provided or approved by the Project Manager for the execution of the Contract.

(r) The Employer is the party who employs the Contractor to carry out the Works, as specified in the SCC.

(s) Equipment is the Contractor's machinery and vehicles brought temporarily to the Site to construct the Works.

(t) "In writing" or "written" means hand-written, type-written, printed or electronically made, and resulting in a permanent record;

(u) The Initial Contract Price is the Contract Price listed in the Employer's Letter of Acceptance.

(v) The Intended Completion Date is the date on which it is intended that the Contractor shall complete the Works. The Intended Completion Date is specified in the SCC. The Intended Completion Date may be revised only by the Project Manager by issuing an extension of time or an acceleration order.

(w) Materials are all supplies, including consumables, used by the Contractor for incorporation in the Works.

(x) Plant is any integral part of the Works that shall have a mechanical, electrical, chemical, or biological function.

(y) The Project Manager is the person named in the SCC (or any other competent person appointed by the Employer and notified to the Contractor, to act in replacement of the Project Manager) who is responsible for supervising the execution of the Works and administering the Contract.

(z) SCC means Special Conditions of Contract

(aa) The Site is the area defined as such in the SCC.

(bb) Site Investigation Reports are those that were included in the bidding documents and are factual and interpretative reports about the surface and subsurface conditions at the Site.

(cc) Specification means the Specification of the Works included in the Contract and any modification or addition made or approved by the Project Manager.

(dd) The Start Date is given in the SCC. It is the latest date when the Contractor shall commence execution of the Works. It does not necessarily coincide with any of the Site Possession Dates.

(ee) A Subcontractor is a person or corporate body who has a Contract with the Contractor to carry out a part of the work in the Contract, which includes work on the Site.

(ff) Temporary Works are works designed, constructed, installed, and removed by the Contractor that are needed for construction or installation of the Works.

(gg) A Variation is an instruction given by the Project Manager which varies the Works.

(hh) The Works are what the Contract requires the Contractor to construct, install, and turn over to the Employer, as defined in the SCC.

2. Interpretation

2.1 In interpreting these GCC, words indicating one gender include all genders. Words indicating the singular also include the plural and words indicating the plural also include the singular. Headings have no significance. Words have their normal meaning under the language of the Contract unless specifically defined. The Project Manager shall provide instructions clarifying queries about these GCC.

2.2 If sectional completion is specified in the SCC, references in the GCC to the Works, the Completion Date, and the Intended Completion Date apply to any Section of the Works (other than references to the Completion Date and Intended Completion Date for the whole of the Works).

2.3 The documents forming the Contract shall be interpreted in the following order of priority:

- (a) Agreement,
- (b) Letter of Acceptance,
- (c) Contractor's Bid,
- (d) Particular Conditions of Contract,
- (e) General Conditions of Contract,
- (f) Specifications,
- (g) Drawings,
- (h) Bill of Quantities,¹ and
- (i) any other document listed in the SCC as forming part of the Contract.

-
- | | |
|--|--|
| 3. Language and Law | 3.1 The language of the Contract and the law governing the Contract are stated in the SCC. |
| 4. Project Manager's Decisions | 4.1 Except where otherwise specifically stated, the Project Manager shall decide contractual matters between the Employer and the Contractor in the role representing the Employer. |
| 5. Delegation | 5.1 Otherwise specified in the SCC, the Project Manager may delegate any of his duties and responsibilities to other people, except to the Adjudicator, after notifying the Contractor, and may revoke any delegation after notifying the Contractor. |
| 6. Communications | 6.1 Communications between parties that are referred to in the Conditions shall be effective only when in writing. A notice shall be effective only when it is delivered. |
| 7. Subcontracting | 7.1 The Contractor may subcontract with the approval of the Project Manager, but may not assign the Contract without the approval of the Employer in writing. Subcontracting shall not alter the Contractor's obligations. |
| 8. Other Contractors | 8.1 The Contractor shall cooperate and share the Site with other contractors, public authorities, utilities, and the Employer between the dates given in the Schedule of Other Contractors, as referred to in the SCC. The Contractor shall also provide facilities and services for them as described in the Schedule. The Employer may modify the Schedule of Other Contractors, and shall notify the Contractor of any such modification. |
| 9. Personnel and Equipment | <p>9.1 The Contractor shall employ the key personnel and use the equipment identified in its Bid, to carry out the Works or other personnel and equipment approved by the Project Manager. The Project Manager shall approve any proposed replacement of key personnel and equipment only if their relevant qualifications or characteristics are substantially equal to or better than those proposed in the Bid.</p> <p>9.2 If the Project Manager asks the Contractor to remove a person who is a member of the Contractor's staff or work force, stating the reasons, the Contractor shall ensure that the person leaves the Site within seven days and has no further connection with the work in the Contract.</p> |
| 10. Employer's and Contractor's Risks | 10.1 The Employer carries the risks which this Contract states are Employer's risks, and the Contractor carries the risks which this Contract states are Contractor's risks. |
| 11. Employer's Risks | <p>11.1 From the Start Date until the Defects Liability Certificate has been issued, the following are Employer's risks:</p> <p>(a) The risk of personal injury, death, or loss of or damage to property (excluding the Works, Plant, Materials, and Equipment), which are due to</p> |

(i) use or occupation of the Site by the Works or for the purpose of the Works, which is the unavoidable result of the Works or

(ii) negligence, breach of statutory duty, or interference with any legal right by the Employer or by any person employed by or contracted to him except the Contractor.

(b) The risk of damage to the Works, Plant, Materials, and Equipment to the extent that it is due to a fault of the Employer or in the Employer's design, or due to war or radioactive contamination directly affecting the country where the Works are to be executed.

11.2 From the Completion Date until the Defects Liability Certificate has been issued, the risk of loss of or damage to the Works, Plant, and Materials is an Employer's risk except loss or damage due to

(a) a Defect which existed on the Completion Date,

(b) an event occurring before the Completion Date, which was not itself an Employer's risk, or

(c) the activities of the Contractor on the Site after the Completion Date.

12. Contractor's Risks

12.1 From the Starting Date until the Defects Liability Certificate has been issued, the risks of personal injury, death, and loss of or damage to property (including, without limitation, the Works, Plant, Materials, and Equipment) which are not Employer's risks are Contractor's risks.

13. Insurance

13.1 The Contractor shall provide, in the joint names of the Employer and the Contractor, insurance cover from the Start Date to the end of the Defects Liability Period, in the amounts and deductibles stated in the SCC for the following events which are due to the Contractor's risks:

(a) loss of or damage to the Works, Plant, and Materials;

(b) loss of or damage to Equipment;

(c) loss of or damage to property (except the Works, Plant, Materials, and Equipment) in connection with the Contract; and

(d) personal injury or death.

13.2 Policies and certificates for insurance shall be delivered by the Contractor to the Project Manager for the Project Manager's approval within 21 days after issue of letter of Acceptance. All such insurance shall provide for compensation to be payable in the types and proportions of currencies required to rectify the loss or damage incurred.

13.3 If the Contractor does not provide any of the policies and certificates required, the Employer may effect the insurance which the Contractor

should have provided and recover the premiums the Employer has paid from payments otherwise due to the Contractor or, if no payment is due, the payment of the premiums shall be a debt due.

13.4 Alterations to the terms of an insurance shall not be made without the approval of the Project Manager.

13.5 Both parties shall comply with any conditions of the insurance policies.

13.6 The policies which are in the joint names of the Contractor and the Employer shall contain a clause to include a waiver of subrogation of the Contractor's rights to the insurance carrier against the Employer.

14. Site Data

14.1 The Contractor shall be deemed to have examined any Site Data referred to in the SCC, supplemented by any information available to the Contractor.

15. Contractor to Construct the Works

15.1 The Contractor shall construct and install the Works in accordance with the Specifications and Drawings.

16. The Works to Be Completed by the Intended Completion Date

16.1 The Contractor may commence execution of the Works on the Start Date and shall carry out the Works in accordance with the Program submitted by the Contractor, as updated with the approval of the Project Manager, and complete them by the Intended Completion Date.

17. Approval by the Project Manager

17.1 The Contractor shall submit Specifications and Drawings showing the proposed Temporary Works to the Project Manager, for his approval.

17.2 The Contractor shall be responsible for design of Temporary Works.

17.3 The Project Manager's approval shall not alter the Contractor's responsibility for design of the Temporary Works.

17.4 The Contractor shall obtain approval of third parties to the design of the Temporary Works, where required.

17.5 All Drawings prepared by the Contractor for the execution of the temporary or permanent Works, are subject to prior approval by the Project Manager before this use.

18. Safety

18.1 The Contractor shall be responsible for the safety of all activities on the Site.

19. Discoveries

19.1 Anything of historical or other interest or of significant value unexpectedly discovered on the Site shall be the property of the Employer. The Contractor shall notify the Project Manager of such discoveries and carry out the Project Manager's instructions for dealing with them.

-
- 20. Possession of the Site** 20.1 The Employer shall, after receiving the Performance security, the insurance covers and the Program for the Works all as per requirements, give possession of all parts of the Site to the Contractor within seven days for execution of works in accordance to the Program for the Works. If possession of a part is not given by the date stated in the SCC or as thereafter reviewed and agreed by the parties, the Employer shall be deemed to have delayed the start of the relevant activities, and this shall be a Compensation Event.
- 21. Access to the Site** 21.1 The Contractor shall allow the Project Manager and any person authorized by the Project Manager access to the Site and to any place where work in connection with the Contract is being carried out or is intended to be carried out.
- 22. Instructions** 22.1 The Contractor shall carry out all instructions of the Project Manager which comply with the applicable laws where the Site is located.
- 22.2 The Contractor shall permit persons appointed by the Employer to inspect the Site and/or the accounts and records of the Contractor and its sub-contractors relating to the performance of the Contract, and to have such accounts and records audited by auditors appointed by the Employer if required by the Employer. The Contractor's attention is drawn to Sub-Clause 57.1 which provides, inter alia, that acts intended to materially impede the exercise of the inspection and audit rights provided for under Sub-Clause 22.2 constitute a prohibited practice subject to contract termination.
- 23. Appointment of the Adjudicator** 23.1 The Adjudicator shall be appointed jointly by the Employer and the Contractor, at the time of the Employer's issuance of the Letter of Acceptance. If, in the Letter of Acceptance, the Employer does not agree on the appointment of the Adjudicator, the Employer will request the Appointing Authority designated in the SCC, to appoint the Adjudicator within 14 days of receipt of such request.
- 23.2 Should the Adjudicator resign or die, or should the Employer and the Contractor agree that the Adjudicator is not functioning in accordance with the provisions of the Contract, a new Adjudicator shall be jointly appointed by the Employer and the Contractor. In case of disagreement between the Employer and the Contractor, within 30 days, the Adjudicator shall be designated by the Appointing Authority designated in the SCC at the request of either party, within 14 days of receipt of such request.
- 24. Procedure for Disputes** 24.1 If the Contractor believes that a decision taken by the Project Manager was either outside the authority given to the Project Manager by the Contract or that the decision was wrongly taken, the decision shall be referred to the Adjudicator within 14 days of the notification of the Project Manager's decision.

24.2 The Adjudicator shall give a decision in writing within 28 days of receipt of a notification of a dispute.

24.3 The Adjudicator shall be paid by the hour at the rate specified in the SCC, together with reimbursable expenses of the types specified in the SCC, and the cost shall be divided equally between the Employer and the Contractor, whatever decision is reached by the Adjudicator. Either party may refer a decision of the Adjudicator to an Arbitrator within 28 days of the Adjudicator's written decision. If neither party refers the dispute to arbitration within the above 28 days, the Adjudicator's decision shall be final and binding.

24.4 The arbitration shall be conducted in accordance with the arbitration procedures published by the institution named and, in the place, specified in the SCC.

B. Time Control

25. Program

25.1 Within the time stated in the SCC, after the date of the Letter of Acceptance, the Contractor shall submit to the Project Manager for approval a Program showing the general methods, arrangements, order, and timing for all the activities in the Works. In the case of a lump sum contract, the activities in the Program shall be consistent with those in the Activity Schedule.

25.2 An update of the Program shall be a program showing the actual progress achieved on each activity and the effect of the progress achieved on the timing of the remaining work, including any changes to the sequence of the activities.

25.3 The Contractor shall submit to the Project Manager for approval an updated Program at intervals no longer than the period stated in the SCC. If the Contractor does not submit an updated Program within this period, the Project Manager may withhold the amount stated in the SCC from the next payment certificate and continue to withhold this amount until the next payment after the date on which the overdue Program has been submitted. In the case of a lump sum contract, the Contractor shall provide an updated Activity Schedule within 14 days of being instructed to by the Project Manager.

25.4 The Project Manager's approval of the Program shall not alter the Contractor's obligations. The Contractor may revise the Program and submit it to the Project Manager again at any time. A revised Program shall show the effect of Variations and Compensation Events.

26. Extension of the Intended Completion Date

26.1 The Project Manager shall extend the Intended Completion Date if a Compensation Event(as defined in GCC 41) occurs or a Variation is issued which makes it impossible for Completion to be achieved by the Intended Completion Date without the Contractor taking steps to accelerate the remaining work, which would cause the Contractor to incur additional cost.

26.2 The Project Manager shall decide whether and by how much to extend the Intended Completion Date within 21 days of the Contractor asking the Project Manager for a decision upon the effect of a Compensation Event or Variation and submitting full supporting information. If the Contractor has failed to give early warning of a delay or has failed to cooperate in dealing with a delay, the delay by this failure shall not be considered in assessing the new Intended Completion Date.

27. Acceleration

27.1 When the Employer wants the Contractor to finish before the Intended Completion Date, the Project Manager shall obtain priced proposals for achieving the necessary acceleration from the Contractor. If the Employer accepts these proposals, the Intended Completion Date shall be adjusted accordingly and confirmed by both the Employer and the Contractor.

27.2 If the Contractor's priced proposals for an acceleration are accepted by the Employer, they are incorporated in the Contract Price and treated as a Variation.

28. Delays Ordered by the Project Manager

28.1 The Project Manager may instruct the Contractor to delay the start or progress of any activity within the Works.

29. Management Meetings

29.1 Either the Project Manager or the Contractor may require the other to attend a management meeting. The business of a management meeting shall be to review the plans for remaining work and to deal with matters raised in accordance with the early warning procedure.

29.2 The Project Manager shall record the business of management meetings and provide copies of the record to those attending the meeting and to the Employer. The responsibility of the parties for actions to be taken shall be decided by the Project Manager either at the management meeting or after the management meeting and stated in writing to all who attended the meeting.

30. Early Warning

30.1 The Contractor shall warn the Project Manager at the earliest opportunity of specific likely future events or circumstances that may adversely affect the quality of the work, increase the Contract Price, or delay the execution of the Works. The Project Manager may require the Contractor to provide an estimate of the expected effect of the future event or circumstance on the Contract Price and Completion Date. The estimate shall be provided by the Contractor as soon as reasonably possible.

30.2 The Contractor shall cooperate with the Project Manager in making and considering proposals for how the effect of such an event or circumstance can be avoided or reduced by anyone involved in the work and in carrying out any resulting instruction of the Project Manager.

C. Quality Control

31. Identifying Defects

31.1 The Project Manager shall check the Contractor's work and notify the Contractor of any Defects that are found. Such checking shall not affect the Contractor's responsibilities. The Project Manager may instruct the Contractor to search for a Defect and to uncover and test any work that the Project Manager considers may have a Defect.

32. Tests

32.1 If the Project Manager instructs the Contractor to carry out a test not specified in the Specification to check whether any work has a Defect and the test shows that it does, the Contractor shall pay for the test and any samples. If there is no Defect, the test shall be a Compensation Event.

33. Correction of Defects

33.1 The Project Manager shall give notice to the Contractor of any Defects before the end of the Defects Liability Period, which begins at Completion, and is defined in the SCC. The Defects Liability Period shall be extended for as long as Defects remain to be corrected.

33.2 Every time notice of a Defect is given, the Contractor shall correct the notified Defect within the length of time specified by the Project Manager's notice.

34. Uncorrected Defects

34.1 If the Contractor has not corrected a Defect within the time specified in the Project Manager's notice, the Project Manager shall assess the cost of having the Defect corrected, and the Contractor shall pay this amount.

D. Cost Control**35. Contract Price**

35.1 In the case of an admeasurement contract, the Bill of Quantities shall contain priced items for the Works to be performed by the Contractor. The Bill of Quantities is used to calculate the Contract Price. The Contractor will be paid for the quantity of the work accomplished at the rate in the Bill of Quantities for each item.

35.2 In the case of a lump sum contract, the Activity Schedule shall contain the priced activities for the Works to be performed by the Contractor. The Activity Schedule is used to prepare interim valuations of works done.

Any errors or inconsistencies including front loading detected in the Activity Schedule at any time during the execution of the project shall be resolved as directed as by the Project Manager.

36. Changes in the Contract Price

36.1 In the case of an admeasurement contract:

(a) If the final quantity of the work done differs from the quantity in the Bill of Quantities for the particular item by more than 25 percent, provided the change exceeds 1 percent of the Initial Contract Price, the Project Manager shall adjust the rate to allow for the change.

(b) The Project Manager shall not adjust rates from changes in quantities if thereby the Initial Contract Price is exceeded by more than 15 percent, except with the prior approval of the Employer.

(c) If requested by the Project Manager, the Contractor shall provide the Project Manager with a detailed cost breakdown of any rate in the Bill of Quantities.

36.2 In the case of a lump sum contract, the Activity Schedule shall be amended by the Contractor to accommodate changes of Program or method of working made at the Contractor's own discretion. Prices in the Activity Schedule shall not be altered when the Contractor makes such changes to the Activity Schedule.

37. Variations

37.1 All Variations shall be included in updated Programs, and, in the case of a lump sum contract, also in the Activity Schedule, produced by the Contractor.

37.2 The Contractor shall provide the Project Manager with a quotation for carrying out the Variation when requested to do so by the Project Manager. The Project Manager shall assess the quotation, which shall be given within seven (7) days of the request or within any longer period stated by the Project Manager and before the Variation is ordered.

37.3 If the Contractor's quotation is unreasonable, the Project Manager may order the Variation and make a change to the Contract Price, which shall be based on the Project Manager's own forecast of the effects of the Variation on the Contractor's costs.

37.4 If the Project Manager decides that the urgency of varying the work would prevent a quotation being given and considered without delaying the work, no quotation shall be given and the Variation shall be treated as a Compensation Event.

37.5 The Contractor shall not be entitled to additional payment for costs that could have been avoided by giving early warning.

37.6 In the case of an admeasurement contract, if the work in the Variation corresponds to an item description in the Bill of Quantities and if, in the opinion of the Project Manager, the quantity of work above the limit stated in Sub-Clause 38.1 or the timing of its execution do not cause the cost per unit of quantity to change, the rate in the Bill of Quantities shall be used to calculate the value of the Variation. If the cost per unit of quantity changes, or if the nature or timing of the work in the Variation does not correspond with items in the Bill of Quantities, the quotation by the Contractor shall be in the form of new rates for the relevant items of work.

38. Cash Flow Forecasts

38.1 When the Program, or, in the case of a lump sum contract, the Activity Schedule, is updated, the Contractor shall provide the Project Manager with an updated cash flow forecast. The cash flow forecast shall include different

**39. Payment
Certificates**

currencies, as defined in the Contract, converted as necessary using the Contract exchange rates.

39.1 The Contractor shall submit to the Project Manager monthly statements of the estimated value of the work executed less the cumulative amount certified previously.

39.2 The Project Manager shall check the Contractor's monthly statement and certify the amount to be paid to the Contractor.

39.3 The value of work executed shall be determined by the Project Manager.

39.4 The value of work executed shall comprise:

(a) In the case of an admeasurement contract, the value of the quantities of work in the Bill of Quantities that have been completed; or

(b) In the case of a lump sum contract, the value of work executed shall comprise the value of completed activities in the Activity Schedule.

39.5 The value of work executed shall include the valuation of Variations and Compensation Events.

39.6 The Project Manager may exclude any item certified in a previous certificate or reduce the proportion of any item previously certified in any certificate in the light of later information.

39.7 Unless otherwise specified in the SCC Interim Payment may be made for Plant and Material delivered on site ready for incorporation within reasonable period of time in the permanent works, subject to the Contractor transferring ownership to the Employer and providing, where applicable, the right of the transfer of ownership vested upon the Contractor by its supplier.

Notwithstanding the transfer of ownership the responsibility for care and custody thereof together with the risk of loss or damage thereto shall remain with the Contractor until taking over of the works or part thereof in which such Plant and Materials are incorporated and shall make good at its own cost any loss or damage that may occur to the works or part thereof from any cause whatsoever during such period prior to the taking over.

40. Payments

40.1 Payments shall be adjusted for deductions for advance payments and retention. The Employer shall pay the Contractor the amounts certified by the Project Manager within 30 days of the date of each certificate. If the Employer makes a late payment, the Contractor shall be paid interest on the late payment in the next payment. Interest shall be calculated from the date by which the payment should have been made up to the date when the late payment is made at the prevailing rate of interest at the legal rate for each of the currencies in which payments are made.

40.2 If an amount certified is increased in a later certificate or as a result of an award by the Adjudicator or an Arbitrator, the Contractor shall be paid interest upon the delayed payment as set out in this clause. Interest shall be calculated from the date upon which the increased amount would have been certified in the absence of dispute.

40.3 Unless otherwise stated, all payments and deductions shall be paid or charged in the proportions of currencies comprising the Contract Price.

40.4 Items of the Works for which no rate or price has been entered in shall not be paid for by the Employer and shall be deemed covered by other rates and prices in the Contract.

41. Compensation Events

41.1 The following shall be Compensation Events:

(a) The Employer does not give access to a part of the Site by the Site Possession Date pursuant to GCC Sub-Clause 20.1.

(b) The Employer modifies the Schedule of Other Contractors in a way that affects the work of the Contractor under the Contract.

(c) The Project Manager orders a delay or does not issue Drawings, Specifications, or instructions required for execution of the Works on time.

(d) The Project Manager instructs the Contractor to uncover or to carry out additional tests upon work, which is then found to have no Defects.

(e) The Project Manager unreasonably does not approve a subcontract to be let.

(f) Ground conditions are substantially more adverse than could reasonably have been assumed before issuance of the Letter of Acceptance from the information issued to bidders (including the Site Investigation Reports), from information available publicly and from a visual inspection of the Site.

(g) The Project Manager gives an instruction for dealing with an unforeseen condition, caused by the Employer, or additional work required for safety or other reasons.

(h) Other contractors, public authorities, utilities, or the Employer does not work within the dates and other constraints stated in the Contract, and they cause delay or extra cost to the Contractor.

(i) The advance payment is delayed.

(j) The effects on the Contractor of any of the Employer's Risks.

(k) The Project Manager unreasonably delays issuing a Certificate of Completion.

(l) In situations of Force Majeure which makes the contractor's performance of its obligations under the Contract impossible or so impractical as to be considered impossible under the circumstances. Such events shall be limited to:

(a) reason of any exceptionally adverse weather conditions (as specified in the BDS) and

(b) reason of civil commotion, strike or lockout affecting any of the trades employed upon the Works or any of the trades engaged in the preparation, manufacture or transportation of any of the goods or materials required for the Works.

41.2 If a Compensation Event would cause additional cost or would prevent the work being completed before the Intended Completion Date, the Contract Price shall be increased and/or the Intended Completion Date shall be extended. The Project Manager shall decide whether and by how much the Contract Price shall be increased and whether and by how much the Intended Completion Date shall be extended.

41.3 As soon as information demonstrating the effect of each Compensation Event upon the Contractor's forecast cost has been provided by the Contractor, it shall be assessed by the Project Manager, and the Contract Price shall be adjusted accordingly. If the Contractor's forecast is deemed unreasonable, the Project Manager shall adjust the Contract Price based on the Project Manager's own forecast. The Project Manager shall assume that the Contractor shall react competently and promptly to the event.

41.4 The Contractor shall not be entitled to compensation to the extent that the Employer's interests are adversely affected by the Contractor's not having given early warning or not having cooperated with the Project Manager.

42. Tax

42.1 The Project Manager shall adjust the Contract Price if taxes, duties, and other levies are changed between the date 28 days before the submission of bids for the Contract and the date of the last Completion certificate. The adjustment shall be the change in the amount of tax payable by the Contractor, provided such changes are not already reflected in the Contract Price or are a result of GCC Clause 44.

43. Currencies

43.1 Where payments are made in currencies other than the currency of the Employer's country, the exchange rates used for calculating the amounts to be paid shall be the exchange rates stated in the Contractor's Bid.

44. Price Adjustment

44.1 Prices shall be adjusted for fluctuations in the cost of inputs only if provided for in the SCC. If so provided, the amounts certified in each

payment certificate, before deducting for Advance Payment, shall be adjusted by applying the respective price adjustment factor to the payment amounts due in each currency. A separate formula of the type indicated below applies to each Contract currency:

$$P_c = A_c + B_c I_{mc}/I_{oc}$$

where:

P_c is the adjustment factor for the portion of the Contract Price payable in a specific currency "c."

A_c and B_c are coefficients² specified in the SCC, representing the nonadjustable and adjustable portions, respectively, of the Contract Price payable in that specific currency "c;" and

I_{mc} is the index prevailing at the end of the month being invoiced and I_{oc} is the index prevailing 28 days before Bid opening for inputs payable; both in the specific currency "c."

44.2 If the value of the index is changed after it has been used in a calculation, the calculation shall be corrected and an adjustment made in the next payment certificate. The index value shall be deemed to take account of all changes in cost due to fluctuations in costs.

45. Retention

45.1 The Employer shall retain from each payment due to the Contractor the proportion stated in the SCC until Completion of the whole of the Works.

45.2 Upon the issue of a Certificate of Completion of the Works by the Project Manager, in accordance with GCC 53.1, half the total amount retained shall be repaid to the Contractor and half when The sum of the two coefficients A_c and B_c should be 1 (one) in the formula for each currency. Normally, both coefficients shall be the same in the formulae for all currencies, since coefficient A_c , for the nonadjustable portion of the payments, is a very approximate figure (usually 0.15) to take account of fixed cost elements or other nonadjustable components. The sum of the adjustments for each currency are added to the Contract Price. [To be transferred to the User Guide] the Defects Liability Period has passed and the Project Manager has certified that all Defects notified by the Project Manager to the Contractor before the end of this period have been corrected. The Contractor may substitute retention money with an "on demand" Bank guarantee.

46. Liquidated Damages

46.1 The Contractor shall pay liquidated damages to the Employer at the rate per day stated in the SCC for each day that the Completion Date is later than the Intended Completion Date. The total amount of liquidated damages shall not exceed the amount defined in the SCC. The Employer may deduct liquidated damages from payments due to the Contractor. Payment of liquidated damages shall not affect the Contractor's liabilities.

47. Bonus

46.2 If the Intended Completion Date is extended after liquidated damages have been paid, the Project Manager shall correct any overpayment of liquidated damages by the Contractor by adjusting the next payment certificate. The Contractor shall be paid interest on the overpayment, calculated from the date of payment to the date of repayment, at the rates specified in GCC Sub-Clause 40.1.

47.1 The Contractor shall be paid a Bonus calculated at the rate per calendar day stated in the SCC for each day (less any days for which the Contractor is paid for acceleration) that the Completion is earlier than the Intended Completion Date. The Project Manager shall certify that the Works are complete, although they may not be due to be complete.

48. Advance Payment

48.1 No advance payments will be provided

49. Securities

49.1 The Performance Security shall be provided to the Employer no later than the date specified in the Letter of Acceptance and shall be issued in an amount specified in the SCC, by a bank and denominated in the types and proportions of the currencies in which the Contract Price is payable. The Performance Security shall be valid until a date 28 days from the date of issue of the Certificate of Completion in the case of a Bank Guarantee.

49.2 (a) Where the contractor has benefitted from the application of the Margin of Preference for employment of local manpower, it shall:

(i) in the execution of the contract, fulfill its obligation of maintaining local manpower force for 80 % or more of the man-days deployed in the execution of the Works with which it satisfied the criteria of eligibility for being awarded the contract in application of the Margin of Preference; and

(ii) concurrently with the above performance security, provide a preference security to guarantee it will fulfill its obligation in that respect.

(b) For contracts above N\$ 5 M, the preference security shall be in the form of an "on demand" bank guarantee for an amount in a convertible currency equivalent to the difference between its bid price and the bid price of the lowest bid if the Margin of Preference was not applicable. It shall be issued by a commercial bank located in the Republic of [Insert name of country].

(c) For contracts up to N\$ 5 M, an amount equal to the value of the preference security shall be retained from progressive payments to the contractor, to constitute the guarantee for the preference security.

(d) The preference security shall be valid until the Contractor has completed the Works and a Completion Certificate has been issued by the Employer's Representative as per GCC 53.

(e) The cost of providing the security shall be borne by the Contractor.

49.3 Where a Preference Security is applicable:

(i) the Employer's Representative shall monitor the employment of local manpower throughout the execution of the contract and shall from time to time request a report from the contractor on the percentage of total men-days deployed using local manpower.

(ii) the Contractor shall submit the local manpower employment reports as often as it is reasonably requested by the Employer's Representative.

(iii) the Employer's and Contractor's representatives shall consult each other to ensure that the Contractor's obligation towards local manpower employment is met during the Works execution.

(iv) At the time of works completion, the Contractor shall submit a certified audited report to the Employer to substantiate the actual percentage of local manpower employed throughout the execution of the works.

(v) The preference security shall be forfeited by the employer in case of failure on the part of the contractor to employ at least 80% of the local manpower in the execution of the Works.

50. Dayworks

50.1 If applicable, the Dayworks rates in the Contractor's Bid shall be used only when the Project Manager has given written instructions in advance for additional work to be paid for in that way.

50.2 All work to be paid for as Dayworks shall be recorded by the Contractor on forms approved by the Project Manager. Each completed form shall be verified and signed by the Project Manager within two days of the work being done.

50.3 The Contractor shall be paid for Dayworks subject to obtaining signed Dayworks forms.

51. Cost of Repairs

51.1 Loss or damage to the Works or Materials to be incorporated in the Works between the Start Date and the end of the Defects Correction periods shall be remedied by the Contractor at the Contractor's cost if the loss or damage arises from the Contractor's acts or omissions.

52. Labour Clause

52.1 (a) The rates of remuneration and other conditions of work of the employees of the Contractor shall not be less favourable than those established for work of the same character in the trade concerned-

(i) by collective agreement applying to a substantial proportion of the workers and employers in the trade concerned;

(ii) by arbitration awards; or

(iii) by submitting a written undertaking as contemplated in section 138(2) of the Labour Act, 2007

(b) Where remuneration and conditions of work are not regulated in a manner referred to at (a) above, the rates of the remuneration and other conditions of work shall be not less favourable than the general level observed in the trade in which the contractor is engaged by employers whose general circumstances are similar.

52.2 No Contractor shall be entitled to any payment in respect of work performed in the execution of the contract unless he has, together with his claim for payment, filed a certificate:

(a) stating the rates of remuneration and hours of work of the various categories of employees employed in the execution of the contracts;

(b) stating whether any remuneration payable in respect of work done is due;

(c) containing such other information as the Chief Executive Officer of the Public Entity administering the contract may require to satisfy himself that the provisions under this clause have been complied with.

52.3 Where the Chief Executive Officer of the Public Entity administering the contract is satisfied that remuneration is still due to an employee employed under this contract at the time the claim for payment is filed under subsection [Insert number], he may, unless the remuneration is sooner paid by the Contractor, arrange for the payment of the remuneration out of the money payable under this contract.

52.4 Every Contractor shall display a copy of this clause of the contract at the place at which the work required by the contract is performed.

E. Finishing the Contract

53. Completion

53.1 The Contractor shall request the Project Manager to issue a Certificate of Completion of the Works, and the Project Manager shall do so upon deciding that the whole of the Works is completed.

54. Taking Over

54.1 The Employer shall take over the Site and the Works within seven days of the Project Manager's issuing a certificate of Completion.

55. Final Account

55.1 The Contractor shall supply the Project Manager with a detailed account of the total amount that the Contractor considers payable under the Contract before the end of the Defects Liability Period. The Project Manager shall issue a Defects Liability Certificate and certify any final payment that is due to the Contractor within 56 days of receiving the Contractor's account if it is correct and complete. If it is not, the Project Manager shall issue within 56 days a schedule that states the scope of the corrections or additions that are necessary. If the Final Account is still unsatisfactory after it has been

56. Operating and Maintenance Manuals

resubmitted, the Project Manager shall decide on the amount payable to the Contractor and issue a payment certificate.

56.1 If “as built” Drawings and/or operating and maintenance manuals are required, the Contractor shall supply them by the dates stated in the SCC.

56.2 If the Contractor does not supply the Drawings and/or manuals by the dates stated in the SCC pursuant to GCC Sub-Clause 55.1, or they do not receive the Project Manager’s approval, the Project Manager shall withhold the amount stated in the SCC from payments due to the Contractor.

57. Termination

57.1 The Employer or the Contractor may terminate the Contract if the other party causes a fundamental breach of the Contract.

57.2 Fundamental breaches of Contract shall include, but shall not be limited to, the following:

(a) the Contractor stops work for 28 days when no stoppage of work is shown on the current Program and the stoppage has not been authorized by the Project Manager;

(b) the Project Manager instructs the Contractor to delay the progress of the Works, and the instruction is not withdrawn within 28 days;

(c) the Employer or the Contractor is made bankrupt or goes into liquidation other than for a reconstruction or amalgamation;

(d) a payment certified by the Project Manager is not paid by the Employer to the Contractor within 84 days of the date of the Project Manager’s certificate;

(e) the Project Manager gives Notice that failure to correct a particular Defect is a fundamental breach of Contract and the Contractor fails to correct it within a reasonable period of time determined by the Project Manager;

(f) the Contractor does not maintain a Security, which is required;

(g) the Contractor has delayed the completion of the Works by the number of days for which the maximum amount of liquidated damages can be paid, as defined in the SCC; or

(h) if the Contractor, in the judgment of the Employer, has engaged in corrupt or fraudulent practices in competing for or in executing the Contract, pursuant to GCC Clause 57.1.

57.3 When either party to the Contract gives notice of a breach of Contract to the Project Manager for a cause other than those listed under GCC Sub-Clause 56.2 above, the Project Manager shall decide whether the breach is fundamental or not.

**58. Fraud and
Corruption**

57.4 Notwithstanding the above, the Employer may terminate the Contract for convenience.

57.5 If the Contract is terminated, the Contractor shall stop work immediately, make the Site safe and secure, and leave the Site as soon as reasonably possible.

58.1 If the Employer determines that the Contractor has engaged in corrupt, fraudulent, collusive, coercive or obstructive practices, in competing for or in executing the Contract, then the Employer may, after giving 14 days' notice to the Contractor, terminate the Contractor's employment under the Contract and expel him from the Site, and the provisions of Clause 57 shall apply as if such expulsion had been made under Sub-Clause 57.5 [Termination by Employer].

58.2 Should any employee of the Contractor be determined to have engaged in corrupt, fraudulent, collusive, coercive, or obstructive practice during the execution of the Works, then that employee shall be removed in accordance with Clause 9.

58.3 For the purposes of this Sub-Clause:

(i) "corrupt practice" is the offering, giving, receiving or soliciting, directly or indirectly, of anything of value to influence improperly the actions of another party;

(ii) "fraudulent practice" is any act or omission, including a misrepresentation, that knowingly or recklessly misleads, or attempts to mislead, a party to obtain a financial or other benefit or to avoid an obligation;

(iii) "collusive practice" is an arrangement between two or more parties designed to achieve an improper purpose, including to influence improperly the actions of another party;

(iv) "coercive practice" is impairing or harming, or threatening to impair or harm, directly or indirectly, any party or the property of the party to influence improperly the actions of a party;

(v) "obstructive practice" is

(a) deliberately destroying, falsifying, altering or concealing of evidence material to the investigation or making false statements to investigators in order to materially impede an investigation into allegations of a corrupt, fraudulent, coercive or collusive practice; and/or threatening, harassing or intimidating any party to prevent it from disclosing its knowledge of matters relevant to the investigation or from pursuing the investigation; or

(b) acts intended to materially impede the exercise of an inspection and audit rights provided for under Sub-Clause 22.2.

59. Payment upon Termination

59.1 If the Contract is terminated because of a fundamental breach of Contract by the Contractor, the Project Manager shall issue a certificate for the value of the work done and Materials ordered less advance payments received up to the date of the issue of the certificate and less the percentage to apply to the value of the work not completed, as indicated in the SCC. Additional Liquidated Damages shall not apply. If the total amount due to the Employer exceeds any payment due to the Contractor, the difference shall be a debt payable to the Employer.

59.2 If the Contract is terminated for the Employer's convenience or because of a fundamental breach of Contract by the Employer, the Project Manager shall issue a certificate for the value of the work done, Materials ordered, the reasonable cost of removal of Equipment, repatriation of the Contractor's personnel employed solely on the Works, and the Contractor's costs of protecting and securing the Works, and less advance payments received up to the date of the certificate.

60. Property

60.1 All Materials on the Site, Plant, Equipment, Temporary Works, and Works shall be deemed to be the property of the Employer if the Contract is terminated because of the Contractor's default.

61. Release from Performance

61.1 If the Contract is frustrated by the outbreak of war or by any other event entirely outside the control of either the Employer or the Contractor, the Project Manager shall certify that the Contract has been frustrated. The Contractor shall make the Site safe and stop work as quickly as possible after receiving this certificate and shall be paid for all work carried out before receiving it and for any work carried out afterwards to which a commitment was made.

SECTION VI: SPECIAL CONDITIONS OF CONTRACT

SECTION VII SPECIAL CONDITIONS OF CONTRACT

These clauses should be read in conjunction with the General Conditions of Contract. The Special Conditions of Contract have priority over the General Conditions of Contract.

In the clauses of the Special Conditions of Contract only the prefix “GCC” used in the numbering of the clauses or Sub-Clauses of the General Conditions of Contracts is replaced with “SCC”, while retaining the relevant heading. Where new and unrelated conditions of contract are introduced the prefix “SCC” is followed by a number following the last number in the General Conditions of Contract and appropriate heading.

GCC Clause Reference	Special Conditions
A. General	
Employer GCC 1.1(r)	Otjozondjupa Regional Council
Intended Completion Date GCC	The intended completion date is: Will be stipulated in the contract agreement.
Project Manager GCC 1.1(y)	The Project Manager is: Mr. Donald P. Kaihiva, Ms L. Mwazi
Site SCC 1.1(aa)	The Site is in Tsumkwe Settlement (Otjozondjupa Region) and is defined in Drawings.
Start Date SCC 1.1(dd)	The Start Date shall be the date on which the Contract Agreement is signed.
The Works SCC 1.1(hh)	Re-graveling and Blading of Gravel Roads in Tsumkwe Settlement
Interpretation SCC 2.2	The project will be completed in the following sections: As a whole once off project. NB! Contingencies must be approved by the Employer, before the work is done, which will be verified and certified correct by the Project Manager with a Quotation before it is approved.
Interpretation SCC 2.3	The following additional documents shall form part of the contract: 1) COLTO
Language and Law SCC 3.1	The language of the contract is English The law that applies to the Contract is the law of Namibia.

GCC Clause Reference	Special Conditions
Project Manager's Decisions SCC 4.1	The Project Manager shall obtain specific approval from the Employer before carrying out any duty under the Contract which in the Project Manager's opinion will cause the amount finally due under the Contract to exceed the Contract Price or will give entitlement to extension of time. This requirement shall be waived in an emergency affecting safety of personnel or the Works or adjacent property.
Delegation SCC 5.1	The Project Manager may delegate his/her duties.
Notices SCC 6.1	<p>Any notice shall be sent to the following addresses:</p> <p>For the Employer, Chief Regional Officer, Otjozondjupa Regional Council PO Box 1682, Otjiwarongo Namibia</p> <p>For the Contractor, the address shall be as given on the first page of the Purchase Order/Letter of Acceptance and the contact name shall be:</p>
Other Contractors SCC 8.1	Schedule of other contractor: Not applicable
Insurance SCC 13.1	<p>Except for the cover mentioned in (d)(i) hereunder, the other insurance covers shall be in the joint names of the Contractor and the Employer and the minimum insurance amounts shall be:</p> <ul style="list-style-type: none"> (a) for the Works, Plant and Materials: <i>(for the full amount of the works including removal of debris, professional fee etc...)</i> (b) for loss or damage to Equipment: <i>(for the replacement value of the equipment that the contractor intends to use on site until the taking over by the Employer.</i> (c) for loss or damage to property (except the Works, Plant, Materials, and Equipment) in connection with Contract <i>for an amount representing the value of the properties that are exposed to the action of the contractor in the execution of the works. It will extend to the property of the Procuring Entity as well).</i> (d) for personal injury or death:

GCC Clause Reference	Special Conditions
	<p>(i) of the Contractor's employees: <i>[The Contractor shall take an adequate insurance cover for its employees for any claim arising in the execution of the works].</i></p> <p>(ii) of other people: <i>[This cover shall be for an adequate amount for Third Party extended to the Employer and its representatives].</i></p> <p>(e) for loss or damage to materials on-site and for which payment have been included in the Interim Payment Certificate, where applicable.</p> <p>The Contractor shall choose to take the insurance covers indicated above as separate covers or a combination of the Contractor's All Risks coupled with the Employer's liability and First Loss Burglary, after approval of the Employer. All insurance covers shall be of nil or the minimum possible deductibles at sole expense of the contractor.</p>
Site Date SCC 14.1	The Site Date shall be discussed: After signing of Contract Agreement
Possession of the Site SCC 20.1	The Site Possession Date shall be the same date as the 'Start Date' defined in SCC 1.1 (dd).
Appointment of the Adjudicator SCC 23.1 & 23.2	No standing Adjudicator shall be appointed for this Contract. However, if the need arises to appoint an Adjudicator, the Appointing Authority for the Adjudicator shall be the Engineering Professions Association (EPA) who shall appoint and manage an Adjudicator on the National Adjudicator's List.
Procedure for Disputes SCC 24.1	<p>In case a dispute of any kind arises between the Employer and the Contractor in connection with, or arising out of, the contract or the execution of works or after completion of works and whether before or after repudiation or other termination of Contract, including any dispute as to any opinion, instruction, determination, certificate or valuation of the Employer's Representative, the matter in dispute shall, in the first place, be referred in writing to the employer's representative, with a copy to the other party.</p> <p>The Employer and the Contractor shall make every effort to resolve the dispute amicably by direct informal negotiation. If, after thirty (30) days, the parties have failed to resolve their dispute or difference by such mutual consultation, then either the Roads Authority or the Contractor may give notice to the other party of its intention to refer the matter to :</p>

GCC Clause Reference	Special Conditions
	<p>The Dispute Adjudication Board (DAB) for a decision. The DAB shall comprise of one (1) suitably qualified person, nominated from the National Adjudicator's List (NAL), managed by the Engineering Professions Association.</p> <p>If either Party is dissatisfied with the decision of the DAB, then either Party may, within 28 days after receiving the decision, give notice of its dissatisfaction. The notice must be given under this sub-clause. Thereafter the Parties will:</p> <p>Commence arbitration, as hereinafter provided, as to the matter in dispute, and no arbitration in respect of this matter may be commenced unless such notice is given.</p>
Procedure for Disputes SCC 24.3	<p>Hourly rate and types of reimbursable expenses to be paid to the Adjudicator: As per the National Adjudicator List (NAL).</p>
Procedure for Disputes SCC 24.4	<p>Any dispute or difference in respect of which a notice of intention to commence arbitration has been given shall be finally settle by arbitration in accordance with Namibian Laws by an Arbitrator to be appointed by the aggrieved party in consultation with the other party to the dispute or in case of disagreement, by an Arbitrator to be appointed by a judge in Chambers of Namibia. The Arbitrator fees will be borne by the losing party. Any decision of the Arbitrator shall be final and binding to both parties.</p>
B. Time Control	
Program SCC 25.1	<p>The Contractor shall submit for approval a Program for the Works within 7days from the date of the Letter of Acceptance or issue of Purchase Order Agreement.</p>
Program SCC 25.3	<p>The period between Program updates is: Not applicable. The Project Manager may request an interim programme to be submitted by the Contractor.</p> <p>Program updates shall be required.</p>
Extension of the Intended Completion Date SCC 26.1	<p>In addition to GCC 26.1 the following shall apply:</p> <p>The Contract Completion Date may only be extended by the number of days of approved extension of time (EOT) due to inclement weather or due to an increase in workload as instructed in writing by the Project Manager. Such approved (EOT) may be dealt with in terms of SCC41 (1) (a).</p> <p>The Contractor shall make provision in his bid and program, for an expected annual delay of "n" non-production days caused by the effects of rain. Where the agreed delays due to the effects of rain exceed the value of "n", the Contractor shall be granted extension of</p>

GCC Clause Reference	Special Conditions
	<p>time for the additional delay. The number of days lost due to inclement weather (such as rain) and the subsequent payment for standing time (for affected activities only, reduced by verifiable cost incurred, e.g. fuel, etc.) should be based on the current monthly program approved by the Project Manager.</p> <p>The Contractor shall take the following values of “n” to be 6 into account in his bid.</p>
C. Quality Control	
Defects Liability Period SCC 33.1	The Defects Liability Period is: 6 months after completion date.
D. Cost Control	
Payment Certificates SCC 39.7	Interim Payment certificate progress of the contractor
Payments SCC 40	<p>The amount certified by the Project Manager shall be paid in full within 30 days of receipt by the Employer of an invoice, supported by:</p> <ul style="list-style-type: none"> (a) the payment certificate; and (b) a certificate of Completion of the Works.
Adverse weather Conditions SCC 41.1 (I)(a)	<p>The Contract Completion Date shall be extended by the number of approved extension of time due to inclement weather according to SCC26.1 (or due to an increase in workload as instructed in writing by the Project Manager).</p> <p>(Acts of God will on be define as adverse weather that is floods, lightning strikes and heavy storms)</p>
Currencies SCC 43.1	The currency of the Employer's country is: Namibian Dollars (N\$).
Price Adjustment SCC 44.1	The Contract is not subject to price adjustment.
Retention SCC 45.1	(ii) 5% of Contract amount shall be retained as Retention for a period of Six Months after Completion of project, to be released after the Defect Liability Period has lapsed subject to the Contractor making good all defects.
Liquidated Damages SCC 46.1	<p>The Contractor shall pay liquidated damages to the Employer as follows:</p> <p>Monies that may become due to the Employer as result of any default by the Contractor shall be recovered from monies due to, or which</p>

GCC Clause Reference	Special Conditions
	<p>may become due to the Contractor. The conditions is as following paragraphs will furthermore apply:</p> <p>The maximum amount of liquidated damages for the whole of the Works is 15% of the Contract Price</p> <p>The liquidated damages for the whole of the Works are N\$5,000 per day.</p>
Bonus SCC 47.1	The Bonus for the whole of the Works is: Not applicable.
Advance Payment SCC 48.1	The Advance Payments: Not applicable.
Performance Security SCC 49.1	<p>The Performance Security amount is:</p> <p>(a) Bank Guarantee: 10% of the final contract price shall be required.</p>
E. Finishing the Contract	
Operation and Maintenance Manuals GCC 56.1	<p>The date by which operating and maintenance manuals are required is: Not applicable.</p> <p>The date by which "as built" drawing are required is: 2 weeks after the issuing of the practical completion.</p>
Operation and Maintenance Manuals SCC 56.2	The amount to be withheld for failing to produce "as built" drawings by the date required in SCC is: Not applicable.
Termination SCC 57.2 (g)	As per GCC 57
SCC 59.1	The percentage to apply to the value of the work not completed, representing the Employer's additional cost for completing the Works, is: Applicable

SECTION VII: CONTRACT FORMS

Contract Agreement

THIS AGREEMENT made theday of....., between (hereinafter "the Employer"), of the one part, and (hereinafter "the Contractor), of the other part:

WHEREAS the Employer desires that the Works known as should be executed by the Contractor, and has accepted a Bid by the Contractor for the execution and completion of these Works and the remedying of any defects therein,

The Employer and the Contractor agree as follows:

1. In this Agreement words and expressions shall have the same meanings as are respectively assigned to them in the Contract documents referred to.

2. The following documents shall be deemed to form and be read and construed as part of this Agreement. This agreement shall prevail over all other Contract documents.

- (a) the Notification of Award
- (b) the Bid
- (c) the Addenda No.....(**insert addenda numbers if any**).....
- (d) the Special Conditions
- (e) the General Conditions;
- (f) the Specification
- (g) the Drawings; and
- (h) the completed Schedules,

3. In consideration of the payments to be made by the Employer to the Contractor as indicated in this Agreement, the Contractor hereby covenants with the Employer to execute the Works and to remedy defects therein in conformity in all respects with the provisions of the Contract.

4. The Employer hereby covenants to pay the Contractor in consideration of the execution and completion of the Works and the remedying of defects therein, the Contract Price or such other sum as may become payable under the provisions of the Contract at the times and in the manner prescribed by the Contract.

IN WITNESS whereof the parties hereto have caused this Agreement to be executed in accordance with the laws of Namibia on the day, month and year indicated above.

Signed by:
for and on behalf of the Employer

Signed by:
for and on behalf of the Contractor

in the
presence of:
Witness, Name, Signature, Address, Date

in the
presence of:
Witness, Name, Signature, Address, Date

QUOTATION CHECKLIST SCHEDULE

[Public Entity to update this Checklist to ensure that it contains the documents required from Bidders for the specific procurement]

Procurement Reference No.: W/RFQ/OTRC-06/2024/2025

Description	Attached	Not Attached
Quotation letter		
Priced Activity Schedules		
Specification and Compliance Sheet		
Bid Securing Declaration		
have a valid certified copy of company Registration Certificate		
have a valid original or certified good Standing Tax Certificate		
have a valid original or certified good Standing Social Security Certificate		
have a valid certified copy of Affirmative Action Compliance Certificate, proof from Employment Equity Commissioner that bidder is not a relevant employer, or exemption issued in terms of Section 42 of the Affirmative Action Act, 1998		
have a certificate indicating SME Status (for Bids reserved for SMEs)		
Owner/Owners Identification document attached		

Disclaimer: *The list defined above is meant to assist the Bidder in submitting the relevant documents and shall not be a ground for the bidder to justify its non-submission of major documents for its quotation to be responsive. The onus remains on the Bidder to ascertain that it has submitted all the documents that have been requested and are needed for its submission to be complete and responsive*