MAKHADO LOCAL MUNICIPALITY

CONTRACT NO: 65 OF 2023 UPGRADING OF LUVHALANI TO DZANANWA ACCESS ROAD

CIDB GRADING: 7CE OR HIGHER

Name of Tenderer	
Tender Amount (vat incl.)	
CSD Number	
Contact Person	
Email Address	
Contact Numbers	
CIDB CRS Number	

PREPARED BY

Tshino Consulting Engineers.
19 General Joubert street
Polokwane
0699

Tel: 015 291 4769
Fax: 015 291 3440
Email: info@tshino.co.za

ISSUED BY

Makhado Local Municipality
83 Krohg Street
Private Bag x 2596
Makhado

0920

Tel: (015) 501 0243
Fax: (015) 501 0419

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MAKHADO LOCAL MUNICIPALITY

PART: A: INVITATION TO BID: MBD1

YOU ARE HEREBY INVITED TO BID FOR REQUIREMENTS OF THE (*MAKHADO MUNICIPALITY*)					
BID NUMBER:	**65 OF 2023**	CLOSING	**03 JULY 2023**	CLOSING TIME:	**12:00**
BID DESCRIPTION	**UPGRADING OF LUVHALANI TO DZANANWA ACCESS ROAD FROM GRAVELTO PAVED ROAD**				
THE SUCCESSFUL BIDDER WILL BE REQUIRED TO FILL IN AND SIGN A WRITTEN CONTRACT FORM (MBD7) or SERVICE LEVEL AGREEMENT OF MAKHADO MUNICIPALITY.					

BID RESPONSE DOCUMENTS MAY BE DEPOSITED IN THE BID BOX SITUATED AT (MAKHADO Municipality, Civic Centre, 86 Krogh street not later than **12H00** on **03 July 2023.**

An official and compulsory site inspection will be held on **12 June 2023 at 14H00**. Bidders are requested to meet at **Tshakhuma fruit market,Along R524 road**
The Bid box is generally open 24 hours, 7 days a week.
Tenderers who can demonstrate that they will have in their employ staff which satisfy EPWP requirements during the contract validity are eligible to submit tenders The Minimum number of EPWP Work Opportunities expected from this project is **65**
Completed Bid document, fully priced and signed must be sealed in an envelope marked: **"65 OF 2023: UPGRADING OF LUVHALANI TO DZANANWA ACCESS ROAD**
Bidders should ensure that bids are delivered timeously to the correct address. If the bid is late, it will not be accepted for consideration.
Bids documents containing the Conditions of Bid and other requirements in terms of the Supply Chain Management Policy will be downloaded from e-tender Publication Portal at www.etenders.gov.za at no fee.

SUPPLIER INFORMATION						
NAME OF BIDDER						
POSTAL ADDRESS						
STREET ADDRESS						
TELEPHONE NUMBER	CODE			NUMBER		
CELLPHONE NUMBER						
FACSIMILE NUMBER	CODE			NUMBER		
E-MAIL ADDRESS						
VAT REGISTRATION NUMBER						
TAX COMPLIANCE STATUS	TCS PIN:		**OR**	CSD No:		
B-BBEE STATUS LEVEL NUMBER	----------		**TOTAL BID PRICE**		**R**	

B-BBEE STATUS LEVEL VERIFICATION CERTIFICATE [TICK APPLICABLE BOX]	☐ Yes ☐ No	B-BBEE STATUS LEVEL SWORN AFFIDAVIT	☐ Yes ☐ No
[A B-BBEE STATUS LEVEL VERIFICATION CERTIFICATE/ SWORN AFFIDAVIT (FOR EMES & QSEs) MUST BE SUBMITTED IN ORDER TO QUALIFY FOR PREFERENCE POINTS FOR B-BBEE]			
ARE YOU THE ACCREDITED REPRESENTATIVE **IN SOUTH AFRICA FOR THE GOODS /SERVICES /WORKS OFFERED?**	☐Yes ☐No [IF YES ENCLOSE PROOF]	ARE YOU A FOREIGN BASED SUPPLIER FOR **THE GOODS /SERVICES /WORKS OFFERED?**	☐Yes ☐No [IF YES, ANSWER PART B:3]
MINIMUM WORK OPPORTUNITIES TO BE CREATED	**65**	**CIDB GRADING**	**7 CE OR HIGHER**
SIGNATURE OF BIDDER	.....	**DATE**	
CAPACITY UNDER WHICH THIS BID IS SIGNED			

BIDDING PROCEDURE ENQUIRIES MAY BE DIRECTED TO:		**TECHNICAL INFORMATION MAY BE DIRECTED TO:**	
MUNICIPALITY	MAKHADO	MUNICIPALITY	MAKHADO
CONTACT PERSON	Ms P Mudau	CONTACT PERSON	LTHULARE & DG SIBOIBOI
TELEPHONE NUMBER	(015) 519 3044	TELEPHONE NUMBER	(015) 519 3000
FACSIMILE NUMBER	(015) 519 6145	FACSIMILE NUMBER	(015) 519 6145
E-MAIL ADDRESS	phophimu@makhado.gov.za	E-MAIL ADDRESS:	livhuwanit@makhado.gov.za & dengas@makhado.gov.za
		PRINCIPAL AGENT	TSHINO CONSULTING ENGINEERS
		CONTACT PERSON	MR M.P. MUDAU
		TELEPHONE NUMBER	(015) 291 4769
		E-MAIL ADDRESS:	Info@tshino.co.za

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PART B

TERMS AND CONDITIONS FOR BIDDING

1. BID SUBMISSION:

1.1. BIDS MUST BE DELIVERED BY THE STIPULATED TIME TO THE CORRECT ADDRESS. LATE BIDS WILL NOT BE ACCEPTED FOR CONSIDERATION.

1.2. **ALL BIDS MUST BE SUBMITTED ON THE OFFICIAL FORMS PROVIDED– (NOT TO BE RE-TYPED) OR ONLINE**

1.3. THIS BID IS SUBJECT TO THE PREFERENTIAL PROCUREMENT POLICY FRAMEWORK ACT AND THE PREFERENTIAL PROCUREMENT REGULATIONS, 2017, THE GENERAL CONDITIONS OF CONTRACT (GCC) AND, IF APPLICABLE, ANY OTHER SPECIAL CONDITIONS OF CONTRACT.

2. TAX COMPLIANCE REQUIREMENTS

2.1 BIDDERS MUST ENSURE COMPLIANCE WITH THEIR TAX OBLIGATIONS.

2.2 BIDDERS ARE REQUIRED TO SUBMIT THEIR UNIQUE PERSONAL IDENTIFICATION NUMBER (PIN) ISSUED BY SARS TO ENABLE THE ORGAN OF STATE TO VIEW THE TAXPAYER'S PROFILE AND TAX STATUS.

2.3 APPLICATION FOR THE TAX COMPLIANCE STATUS (TCS) CERTIFICATE OR PIN MAY ALSO BE MADE VIA E-FILING. IN ORDER TO USE THIS PROVISION, TAXPAYERS WILL NEED TO REGISTER WITH SARS AS E-FILERS THROUGH THE WEBSITE WWW.SARS.GOV.ZA.

2.4 FOREIGN SUPPLIERS MUST COMPLETE THE PRE-AWARD QUESTIONNAIRE IN PART B:3.

2.5 BIDDERS MAY ALSO SUBMIT A PRINTED TCS CERTIFICATE TOGETHER WITH THE BID.

2.6 IN BIDS WHERE CONSORTIA / JOINT VENTURES / SUB-CONTRACTORS ARE INVOLVED, EACH PARTY MUST SUBMIT A SEPARATE TCS CERTIFICATE / PIN / CSD NUMBER.

2.7 WHERE NO TCS IS AVAILABLE BUT THE BIDDER IS REGISTERED ON THE CENTRAL SUPPLIER DATABASE (CSD), A CSD NUMBER MUST BE PROVIDED.

3. QUESTIONNAIRE TO BIDDING FOREIGN SUPPLIERS

3.1. IS THE ENTITY A RESIDENT OF THE REPUBLIC OF SOUTH AFRICA (RSA)?
☐ YES ☐ NO

3.2. DOES THE ENTITY HAVE A BRANCH IN THE RSA?
☐ YES ☐ NO

3.3. DOES THE ENTITY HAVE A PERMANENT ESTABLISHMENT IN THE RSA?
☐ YES ☐ NO

3.4. DOES THE ENTITY HAVE ANY SOURCE OF INCOME IN THE RSA?
☐ YES ☐ NO

3.5. IS THE ENTITY LIABLE IN THE RSA FOR ANY FORM OF TAXATION?
☐ YES ☐ NO

IF THE ANSWER IS "NO" TO ALL OF THE ABOVE, THEN IT IS NOT A REQUIREMENT TO REGISTER FOR A TAX COMPLIANCE STATUS SYSTEM PIN CODE FROM THE SOUTH AFRICAN REVENUE SERVICE (SARS) AND IF NOT REGISTER AS PER 2.3 ABOVE.

NB: FAILURE TO PROVIDE ANY OF THE ABOVE PARTICULARS MAY RENDER THE BID INVALID.

NO BIDS WILL BE CONSIDERED FROM PERSONS IN THE SERVICE OF THE STATE.

SIGNATURE OF BIDDER: .....

CAPACITY UNDER WHICH THIS BID IS SIGNED: .....

DATE: .....

MAKHADO MUNICIPALITY

CONTENTS OF TENDER DOCUMENTATION

Volume 1: Tender requirements, Contract and Pricing Data		
Number	**Heading**	**Colour**
Part T1: Tendering procedures		
T1.1	Tender Notice and Invitation to Tender	White
T1.2	Tender Data	Pink
T1.3	Standard and Particular Conditions of Tender	Pink
Part T2: Returnable Documents		
T2.1	List of Returnable Documents	Yellow
T2.2	Returnable Schedules	Yellow
Part C1: Agreements and Contract Data		
C1.1	Form of Offer and Acceptance	White
C1.2	Contract Data	White
C1.3	Demand Guarantee and Retention Money Guarantee	White
C1.4	Occupational Health and Safety Agreement	White
C1.5	Agreement with adjudicators	White
Part C2: Pricing data		
C2.1	Pricing Instructions	Yellow
C2.2	Bill of Quantities	Yellow
Part C3: Scope of Work		
C3.1	Description of the Works	Blue
C3.2	Engineering	Blue
C3.3	Procurement	Blue
C3.4	Sub-Contracting	Blue
C3.5	**Construction**	Blue
C3.6	**Management**	Blue
C3.7	Health and Safety Specifications	Blue
C3.8	Project Specifications	Blue
Part C4: Site information		
C4	Site Information	Green

MAKHADO
LOCAL MUNICIPALITY

TENDER NOTICE

All suitable service providers are hereby invited to bid for the below mentioned projects. Bidders are requested to bid as per specification attached to the bid documents that will be obtainable **05 June 2023 at non –refundable amount of R600.00** per document at the Procurement Office No. B043 Ground Floor, 83 Krogh Street, Civic Center, Makhado or can be downloaded from e-tender portal for free https://etenders.treasury.gov.za/content/advertised-tender or www.makhado.gov.za.

BID NO:	DESCRIPTION	EVALUATION CRITERIA	COMPULSORY BRIEFING SESSION	SPECIAL REQUIREMENT	TECHNICAL ENQUIRIES	REFERENCE AND NOTICE NO.	CLOSING DATE AND TIME
62 of 2023	Upgrading of Midoroni Clinic Ring Road	90/10 preferential points with functionality	08 June 2023 at 11:00 am at Midoroni Village next Railway line along R522	• CIDB Grading 07CE or higher. • Attach three years audited financial statement (only those that are required by law to be audited)	Director Technical services: MS DG Siboiboi or Ms L Thulari at 0155193000	Ref: 8/3/2/1994 Notice no: 101/2023	03 July 2023 at 12H00 pm
63 of 2023	Construction of Tshuvhuyuni Sport Facility	80/20 preferential points with functionality	09 June 2023 at 11:00 at Tshivhuyuni Primary school at Tshivhuyuni Village	• CIDB Grading 06CE or higher. • Attach three years audited financial statement (only those that are required by law to be audited)	Director Technical services: MS DG Siboiboi or Ms L Thulari at 0155193000	Ref: 8/3/2/1995 Notice no: 102/2023	03 July 2023 at 12H00 pm
64 of 2023	Upgrading of Access Roads in Tsianda (Marundu)	90/10 preferential points with functionality criteria	12 June 2023 at 11:00 am U-Save Supermarket Ha-Mutsha Village along R524 road	• CIDB Grading 07CE or higher. • Attach three years audited financial statement (only those that are required by law to be audited)	Director Technical services: MS DG Siboiboi or Ms L Thulari at 0155193000	Ref: 8/3/2/1996 Notice no: 103/2023	03 July 2023 at 12H00 pm
65 of 2023	Upgrading of Luvhalani to Dzananwa access road	80/20 preferential points with functionality	12 June 2023 at 14:00 pm at Tshakhuma fruit market along R524 Road	• CIDB Grading 07CE or higher. • Attach three years audited financial statement (only those that are required by law to be audited)	Director Technical services: MS DG Siboiboi or Ms L Thulari at 0155193000	Ref: 8/3/2/1997 Notice no: 104/62/2023	03 July 2023 at 12H00 pm

AD232(1)(k3)

Completed bid documents signed by a duly authorized person, sealed in an envelope clearly marked *"As mentioned above"* must reach the undersigned by depositing it into the tender box at the foyer of the main entrance to the Civic Centre by not later than *"As mentioned above"* when all tenders received will be opened in public in the Council Chamber, Ground Floor, Civic Centre, No.83 Krogh Street, Makhado.

The Municipality is not bound to accept the lowest or any bid and reserves the right to accept any part of a bid. Bids must remain valid for a period of ninety (90) days after closing date of submission thereof. Submitted tenders will be evaluated as per above mentioned table.

Bids which are late, incomplete, unsigned, or submitted in pencil or by telegraph or facsimile or electronically by e-mail, or not having the following documents attached for evaluation or not complying with the tender specifications, will not be evaluated, and will be disqualified:

- Valid Tax compliance status pin issued by SARS
- A copy of company registration documents (CK)
- Certified copy/copies of company owner(s) ID book(s), not older than three (03) months certification.
- Attach proof of payment for municipal rates not owing for more than (03) months or formal lease agreement for rental premises or letter from the traditional authority in cases of non-ratable areas. (Attach for both entity and directors of the company)
- Copy of central supplier database (CSD) report.

NB:

- **All Service Provider doing business with Makhado municipality are required to register on the CSD (Central Supplier Database).**
- **A copy of a certified copy will not be accepted.**

All procurement enquiries should be directed to Ms. P Mudau or Mr. M Ramabulana at Tel no. (015) 519 3044/3024

Civic Centre
83 Krogh Street
MAKHADO

MR KM NEMANAME
MUNICIPAL MANAGER

RESPONSIVENESS AND EVALUATION CRITERIA

1. RESPONSIVENESS CRITERIA

The Makhado Municipality will consider no Bid unless it meets the following responsiveness criteria:

- The bid must be properly received in a sealed envelope clearly indicating the description of the service and the bid number for which the bid is submitted.
- The bid must be deposited in the relevant bid box as indicated on the notice of the bid on or before the closing date and time of the bid.
- A valid CSD number must be submitted with the bid on or before the closing time and date of the bid.
- Copy of the company registration certificate must be submitted with the bid on or before the closing time and date of the bid.
- Submission of a Joint Venture Agreement, where applicable, which has been properly signed by all parties.
- Proof of payment of Municipal Rates and Taxes or letter for Tribal Authority or lease agreement must be attached.
- Complies with the requirements of the bid and technical specifications.
- Registered in the relevant contractor category in the Construction Industry Development Board Register of Contractors (CIDB).
- Adheres to Pricing Instructions.
- Financial ability to execute the contract.
- Comply in full and observe the requirements of the Notice to Bidders.
- Experience with similar work – demonstrate a track record of a similar scope and size

2. EVALUATION OF BIDS

a) All bids received shall be evaluated in terms of the Supply Chain Management Regulations, Makhado Municipality Supply Chain Management Policy (on request from Municipality), the preferential procurement regulation 2011, and other applicable legislations.

b) The Council reserves the right to accept all, some, or none of the bids submitted – either wholly or in part – and it is not obliged to accept the lowest bid.

By submitting this bid, bidder authorizes the Council or its delegate(s) to carry out any investigation deemed necessary to verify the correctness of the statements and documents submitted and that such documents reasonably reflect the ability of the Bidder to provide the goods and services required by the Council.

PLEASE NOTE

1. **The Municipal Manager may cancel a contract awarded to a person if:**

    - The person committed a corrupt or fraudulent act during the procurement process or in the execution of the contract, or

        i. An official or other role player committed any corrupt or fraudulent act during the procurement process or in the execution of the contract that benefited that person.

2. **The Municipal Manager may reject the bid or quote of any person if that person or any of its directors has:**

    - Failed to pay municipal rates and taxes or municipal service charges and such rates, taxes and charges are in arrears for more than three months;
    - Failed, during the last five years, to perform satisfactorily on a previous contract with the Makhado Municipality or any other organ of State after written notice was given to that bidder that performance was unsatisfactory;
    - Abused the supply chain management system of the Municipality or have committed any improper conduct in relation to this system;
    - Been convicted of fraud or corruption during the past five years;
    - Willfully neglected, reneged on or failed to comply with any government, municipal or other public sector contract during the past five years; or
    - Been listed in the Register for Tender Defaulters in terms of section 29 of the Prevention and Combating of Corrupt Activities Act (No. 12 of 2004) or has been listed on National Treasury's database as a person prohibited from doing business with public sector.

MAKHADO MUNICIPALITY

T1.2 Tender Data

1. CONDITIONS OF TENDER

The conditions of tender are the Standard Conditions of Tender as contained in Annex F of the CIDB Standard for Uniformity in Construction Procurement (SFU) of May 2010, as published in Government Gazette No 33239, Board Notice 86 of 2010 of 28 May 2010. Those Standard Conditions of Tender remained the same as those published in the previous edition of the SFU as published in Government Gazette No 31823, Board Notice 12 of 2009 of 30 January 2009 - See www.cidb.org.za.

Each Tenderer shall obtain its own copy of the Standard Conditions of Tender.

The Standard Conditions of Tender make several references to the Tender Data for details that apply specifically to this tender. In the interpretation of any ambiguity or inconsistency between the Tender Data and the Standard Conditions of Tender, the Tender Data shall have precedence.

Each item of data given below is cross-referenced to the clause in the Standard Conditions of Tender to which it mainly applies.

Clause number	Tender Data
2. EMPLOYER **Cl. F1.1**	The "Employer" is "Makhado Municipality" The Employer's permanent physical business address is: Makhado Municipality, Civic Centre, 83 Krogh Street, Makhado The Employer's address for communication relating to this project is: Private Bag x 2596, Makhado, 0920
3. TENDER DOCUMENTS **Cl. F.1.2**	"The following documents form part of this tender: **VOLUME 1** **Part T1 Tendering procedures** T1.1 Tender notice and invitation to tender T1.2 Tender data T1.3 Standard and Particular conditions to tender **Part T2 Returnable Documents** T2.1 List of Returnable Documents T2.2 Returnable Schedules that will be incorporated into the Contract **Part C1 Agreements and Contract Data** C1.1 Form of offer and acceptance C1.2 Contract data C1.3 Demand Guarantee and Retention Money Guarantee C1.4 Agreement in terms of Occupational Health and Safety **Part C2 Pricing Data** C2.1 Pricing Instructions C2.2 Bill of Quantities **Part C3 Scope of Work** C3.1 Description of the Works C3.2 List of Drawings C3.3 Procurement C3.4 Construction

Clause number	Tender Data
	C3.5 Variations and Additions to **SABS 1200** Standardized Specifications C3.6 Particular Specifications C3.7 Health and Safety Specifications C3.8 Environmental Management during Construction C3.9 Management of the Works **Part C4 Site information** **VOLUME 2** Tender Drawings incorporated into the tender document.
4. EMPLOYER'S AGENT **Cl. F.1.4**	The Employer's agent is: Patrick Mudau (Pr Tech Eng) of Tshino Consulting Engineers Physical Address: 19 General Joubert street. Polokwane 0699 Tel.: (015) 291 4769 E-mail: info@tshino.co.za Postal Address: 19 General Joubert street Polokwane 0700 Fax: (015) 291 3440
5. TENDERER'S OBLIGATIONS	
5.1. Eligibility **Cl. F.2.1**	Only those tenderers who can demonstrate that they will have in their employ management and supervisory staff satisfying the requirement of the scope of work for labour-intensive competencies for supervisory and management staff during the validity of the contract are eligible to submit tenders
5.2. F2.18	The tenderer must submit to the Employer, names of all management and supervisory staff that will be employed to supervise the labour-intensive portion of the works together with satisfactory evidence that such staff members satisfy the eligibility requirements.
5.3. Site Visit and Clarification Meeting **Cl. F.2.7**	The arrangements for a compulsory pre-tender meeting are: **Location: Tshakhuma Fruit Market** **Date: 12 June 2023 at 14H00**
5.4. Insurance **Cl. F.2.9**	No insurance cover will be provided by the Employer.
5.5. Alternative Tender Offers **Cl. F. 2.12**	Unless anything to the contrary has been determined in the Contract Data, a Tenderer may, together with his tender for the original designs contained in the contract documents, submit alternative designs and tender offers for consideration. All designs, calculations, drawings and Operation and Maintenance manuals shall be fully endorsed by a third party registered engineer, accomplished in such specific field of practice and the cost thereof shall be borne solely by the Contractor. Such alternative designs and offers shall be subject to the following conditions and requirements:

Clause number	Tender Data
	5.4.1. Tenders An alternative offer or design will be considered only if the tender for the original items has been fully priced and completed. The alternative tender offer is to be submitted in **the same envelope as the main tender offer**, together with a schedule that compares the requirements of the tender documents with the alternative requirements the Tenderer proposes. No alternative tender will be considered unless a tender free from qualifications is also submitted. Unless the alternative offer stipulates to the contrary, it shall be assumed that the period for completion of the Works shall be the same as for the original design. Designs, calculations, drawings and a modified schedule of quantities (as determined hereafter) in respect of each alternative offer or design shall accompany the alternative tender offer and shall be endorsed fully by a third party registered engineer, accomplished in such specific field of practice. 5.4.2. Preliminary calculations Preliminary calculations for an alternative design shall be submitted with the tender. Such calculations shall give adequate details so as to enable an assessment to be made of the general efficacy of the design and of its principal elements, also of the degree to which the design prescriptions and codes of the Employer are being complied with. The calculations shall be clear and in a logical sequence and shall clearly reflect all the design assumptions. 5.4.3. Preliminary drawings Preliminary drawings of the alternative designs shall also be submitted with the tender. These drawings shall comprise adequate layout plans, elevations and sections and shall clearly illustrate the general efficacy of the design and its principal elements. 5.4.4. Quantities Each alternative offer shall be accompanied by a modified priced schedule of quantities compiled in accordance with the specifications, in so far as it is applicable, which clearly shows the manner in which the price for the alternative offer has been determined and the items in the original schedule of quantities which fall away or are being changed. In addition to the schedule of quantities, a set of calculations shall be supplied to show how the quantities have been determined. All assumptions in regard to factors which will determine quantities shall be clearly and conspicuously marked by underlining or colouring, and shall indicate whether or not the assumptions have been based on information furnished in the Contract Data (with the necessary references). 5.4.5. Further details Should the Employer's Agent find that the calculations and drawings submitted for alternative designs are not complete enough for proper adjudication of the alternative designs, the Employer reserves to itself the right to call on the Tenderer to submit such further calculations and drawings as may be required. If such further details are not submitted within ten days of having been requested, the alternative designs will not be given further consideration.

Clause number	Tender Data
	5.4.6. Preliminary adjudication of alternative designs The Employer's Agent will undertake a preliminary scrutiny of any alternative designs for compliance with the specified requirements of the Employer. Should he find any mistakes or unsatisfactory aspects, he may afford the Bidder the opportunity to rectify them within a period to be determined by the Employer's Agent. However, it is emphasized that the preliminary scrutiny of the design and tender by the Employer's Agent, by its very nature, cannot be comprehensive, and no guarantee can be given in this regard that all the mistakes made by the Bidder will in fact be detected. Any correction of such mistakes shall be made with the tender price of the bidder being retained, and, wherever necessary, the priced schedule of quantities for the alternative design shall be adjusted accordingly. 5.4.7. Acceptance of alternative design The Bidder shall note that the acceptance of a tender which includes alternative designs shall mean that the alternative designs have been approved in principle only. If the final calculations, drawings and details do not comply with the specified requirements, such alternative designs may be rejected, unless they are suitably amended by the Bidder so as to be acceptable to the Employer. 5.4.8. Final drawings and calculations and the priced schedule of quantities Where a tender with an alternative design has been accepted, the Contractor shall, not less than two months before he intends starting with the construction of such design, submit to the Employer's Agent a complete set of working drawings, detailed calculations and a complete schedule of quantities, for approval. The schedule of quantities shall be based on the preliminary schedule of quantities, but with the necessary adjustments in quantities and prices and with the tendered price for the alternative design being retained. Within three weeks of having received the above, the Employer's Agent will indicate which drawings, calculations, quantities, prices and other particulars are acceptable to him and which not, with reasons furnished. The Contractor shall then submit to the Employer's Agent in good time any modified drawings and other particulars for approval, for which he will require two weeks. Any delay arising from the fact that the amended particulars do not meet the requirements shall be the responsibility of the Contractor. No work which will be affected by an alternative design may be commenced, unless the drawings, schedule of quantities and prices for such alternative design have been approved. Should the Contractor fail to modify any drawings, calculations, quantities, prices or any other particulars to the satisfaction of the Employer's Agent, the alternative design will be rejected and the original design shall be constructed for the same amount as has been tendered for the alternative design. 5.4.9. Responsibility for alternative design The approval of a design by the Employer's Agent shall not in any way relieve the Bidder of his responsibility to produce a design which conforms in all respects to all the specified requirements and which will be suitable for the purpose envisaged.

Clause number	Tender Data
	Should it appear later during construction or during the maintenance period that the design does not conform to the specified requirements, the Contractor only, shall be liable for any damage arising there from and he shall, at his own expense, do all the necessary work to ensure that the Works conforms to all the specified requirements. 5.4.10. Indemnity Once the alternative design has been approved, the Contractor shall indemnify and hold harmless the Employer, its agents and assigns, against all claims howsoever arising out of the said design whether in contract or delict.
5.1. Submitting a Tender Offer **Cl. F2.13**	5.5.1. Whole of the Works (Cl. F.2.13.1) Tenderers shall offer to provide for the whole of the Works identified. 5.5.2. Original tender documents (Cl. F2.13.3) The original tender document, issued to the Bidder, shall be submitted in its entirety. No copies are required. 5.5.3. Marking of Tender Submissions (Cl. F2.13.5) The complete tender documents shall be enclosed and sealed in a single envelope, marked: **"BID NO. 65 OF 2023: UPGRADING OF LUVHALANI TO DZANANWA ACCESS ROAD.** The Employer's address for delivery of tender offers to be shown on each tender submission package is the Tender Box located at: Makhado Municipality Civic Centre 83 Krogh Street, Makhado 5.5.4. Two envelope system (Cl. F.2.13.6) A two-envelope procedure will not be followed. 5.5.5. Closing time (Cl. F.2.15) The closing time for submission of tender offers is: **12H00** Telegraphic, telephonic, telex, facsimile, e-mail, electronic and late tender offers will not be accepted. 5.5.6. Tender offer validity (Cl. F.2.16) The tender offer validity period is **90 days** after tender closing date. 5.5.7. Clarification of tender offer after submission (Cl. F.2.17) Delete the last part of the second sentence, commencing with the word "and". Furthermore, delete the last two sentences of Cl. F2.17. Add the following sentence: "The rates stated by the Bidder shall be binding".

Clause number	Tender Data
	5.5.8. Provide other Material (Cl. F.2.18.1) Upon request by the Employer, the Bidder shall promptly supply any other material that has a bearing on the tender offer, the bidder's commercial position (including, where applicable, notarized joint venture agreements), Referencing arrangements, or samples of materials, considered necessary by the Employer for the purpose of a full and fair assessment. Should the Bidder not provide the information or material called for, by the time for submission stated in the Employer's request, the Employer will regard the tender offer as being non-responsive. 5.5.9. Certificates (Cl. F.2.23) The following certificates are to be provided with this tender: a) CSD Report, b) Compensation Fund registration certificate, c) Certificate of Contractor Registration issued by the Construction Industry. Development Board or a copy of the application Form for registration in terms of the Construction Industry Development Board Act (Form F006). A minimum grading of **7CE** is required. **Important Note:** Failure to provide the required particulars as per the above-listed certificates implies a non-responsive tender and warrants rejection of the tender on account of non-compliance with the requirements of the Tender Data.
6. EMPLOYER'S UNDERTAKING	
6.1. Opening of Tender Submissions **Cl. F3.4**	The time and location for opening of the tender offers are: **03 July 2023 at 12H00** **Location: Tender Box, Makhado Municipality,** **Civic Centre, 83 Krogh Street, Makhado**
6.2. Arithmetical Errors **Cl. F.3.9.1**	Delete paragraphs (b) and (c) of Cl. F.3.9.1 and replace with: b) If a bill of quantities (or schedule of quantities or schedule of rates) applies and there is an error in the line item resulting from the product of the unit rate and the quantity, the rate shall be binding and the error of extension as entered in the tender offer will be corrected by the Employer in determining the Contract Price. c) Where there is an error in addition, either as a result of other corrections required by this checking process or in the Bidder's addition of prices, such error will be corrected by the Employer in determining the Contract Price. d) The Contract Price for the completed Contract shall be computed from the actual quantities of authorised work done and compliant with the Contract Data, valued at rates contracted against the respective items in the bill of quantities, schedule of Quantities or schedule of rates and shall include such authorised Provisional Sums and items of extra work as have become payable in terms of the Contract Data.
7. ACCEPTANCE	Tender offers will only be accepted if:

Clause number	Tender Data
OF TENDER OFFER **Cl. F3.13**	• CSD summary report is compliant • The bidder is registered with the Construction Industry Development Board in an appropriate contractor grading designation. A minimum grading of **7CE** is required for the main contractor; • The bidder has demonstrated previous experience with the type of work required under this contract having successfully completed a project of similar scope and size. • The bidder or any of its principals is not listed on the Register of Tender Defaulters in terms of the Prevention and Combating of Corrupt Activities Act of 2004 as a person prohibited from doing business with the public sector; and • The bidder has not abused the Employer's Supply Chain Management System. • The bidder has not failed to perform on any previous contract. • Has complete the Compulsory Enterprise Questionnaire and there are no conflicts of interest which may impact on the bidder's ability to perform the contract in the best interests of the employer or potentially compromise the tender process.
8. **PROVIDE COPIES OF THE CONTRACT DOCUMENT** **Cl. F.3.18**	The number of paper copies of the signed Contract to be provided by the Employer to the successful bidder is **one**
9. **Expanded Public Works Programme Requirements**	Only those tenderers who can demonstrate that they will have in their employ management and supervisory staff satisfying the requirement of the scope of work for labour-intensive competencies for supervisory and management staff during the validity of the contract are eligible to submit tenders Only those tenderers who can demonstrate that they will have in their employ management and supervisory staff satisfying the requirement of the scope of work for labour-intensive competencies for supervisory and management staff during the validity of the contract are eligible to submit tenders

PREFERENCE POINTS CLAIM FORM IN TERMS OF THE PREFERENTIAL PROCUREMENT REGULATIONS 2022

This preference form must form part of all tenders invited. It contains general information and serves as a claim form for preference points for specific goals.

NB: BEFORE COMPLETING THIS FORM, TENDERERS MUST STUDY THE GENERAL CONDITIONS, DEFINITIONS AND DIRECTIVES APPLICABLE IN RESPECT OF THE TENDER AND PREFERENTIAL PROCUREMENT REGULATIONS, 2022

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1. GENERAL CONDITIONS

1.1 The following preference point systems are applicable to invitations to tender:

- the 80/20 system for requirements with a Rand value of up to R50 000 000 (all applicable taxes included); and
- the 90/10 system for requirements with a Rand value above R50 000 000 (all applicable taxes included).

1.2 To be completed by the organ of state

(*delete whichever is not applicable for this tender*).

a) The applicable preference point system for this tender is the 90/10 preference point system.

b) The applicable preference point system for this tender is the 80/20 preference point system.

c) Either the 90/10 or 80/20 preference point system will be applicable in this tender. The lowest/ highest acceptable tender will be used to determine the accurate system once tenders are received.

1.3 Points for this tender (even in the case of a tender for income-generating contracts) shall be awarded for:

(a) Price; and

(b) Specific Goals.

1.4 To be completed by the organ of state:

The maximum points for this tender are allocated as follows:

	POINTS
PRICE	80
SPECIFIC GOALS	20
Total points for Price and SPECIFIC GOALS	**100**

1.5 Failure on the part of a tenderer to submit proof or documentation required in terms of this tender to claim points for specific goals with the tender, will be interpreted to mean that preference points for specific goals are not claimed.

1.6 The organ of state reserves the right to require of a tenderer, either before a tender is adjudicated or at any time subsequently, to substantiate any claim in regard to preferences, in any manner required by the organ of state.

2. DEFINITIONS

(a) **"tender"** means a written offer in the form determined by an organ of state in response to an invitation to provide goods or services through price quotations, competitive tendering process or any other method envisaged in legislation;

(b) **"price"** means an amount of money tendered for goods or services, and includes all applicable taxes less all unconditional discounts;

(c) **"rand value"** means the total estimated value of a contract in Rand, calculated at the time of bid invitation, and includes all applicable taxes;

(d) **"tender for income-generating contracts"** means a written offer in the form determined by an organ of state in response to an invitation for the origination of income-generating contracts through any method envisaged in legislation that will result in a legal agreement between the organ of state and a third party that produces revenue for the organ of state, and includes, but is not limited to, leasing and disposal of assets and concession contracts, excluding direct sales and disposal of assets through public auctions; and

(e) **"the Act"** means the Preferential Procurement Policy Framework Act, 2000 (Act No. 5 of 2000).

3. FORMULAE FOR PROCUREMENT OF GOODS AND SERVICES

3.1. POINTS AWARDED FOR PRICE

3.1.1 THE 80/20 OR 90/10 PREFERENCE POINT SYSTEMS

A maximum of 80 or 90 points is allocated for price on the following basis:

80/20 **or** **90/10**

$$Ps = 80\left(1 - \frac{Pt - P\,min}{P\,min}\right) \text{ or } \quad Ps = 90\left(1 - \frac{Pt - P\,min}{P\,min}\right)$$

Where

Ps = Points scored for price of tender under consideration

Pt = Price of tender under consideration

Pmin = Price of lowest acceptable tender

3.2. FORMULAE FOR DISPOSAL OR LEASING OF STATE ASSETS AND INCOME GENERATING PROCUREMENT

3.2.1. POINTS AWARDED FOR PRICE

A maximum of 80 or 90 points is allocated for price on the following basis:

80/20 **or** **90/10**

$$Ps = 80\left(1 + \frac{Pt - P\,max}{P\,max}\right) \text{ or } \quad Ps = 90\left(1 + \frac{Pt - P\,max}{Pmax}\right)$$

Where

Ps	=	Points scored for price of tender under consideration
Pt	=	Price of tender under consideration
Pmax	=	Price of highest acceptable tender

4. POINTS AWARDED FOR SPECIFIC GOALS

4.1. In terms of Regulation 4(2); 5(2); 6(2) and 7(2) of the Preferential Procurement Regulations, preference points must be awarded for specific goals stated in the tender. For the purposes of this tender the tenderer will be allocated points based on the goals stated in table 1 below as may be supported by proof/ documentation stated in the conditions of this tender:

4.2. In cases where organs of state intend to use Regulation 3(2) of the Regulations, which states that, if it is unclear whether the 80/20 or 90/10 preference point system applies, an organ of state must, in the tender documents, stipulate in the case of—

(a) an invitation for tender for income-generating contracts, that either the 80/20 or 90/10 preference point system will apply and that the highest acceptable tender will be used to determine the applicable preference point system; or

(b) any other invitation for tender, that either the 80/20 or 90/10 preference point system will apply and that the lowest acceptable tender will be used to determine the applicable preference point system,

then the organ of state must indicate the points allocated for specific goals for both the 90/10 and 80/20 preference point system.

Table 1: Specific goals for the tender and points claimed are indicated per the table below.

(Note to organs of state: Where either the 90/10 or 80/20 preference point system is applicable, corresponding points must also be indicated as such.

Note to tenderers: The tenderer must indicate how they claim points for each preference point system.)

The specific goals allocated points in terms of this tender	Number of points allocated (90/10 system) (To be completed by the organ of state)	Number of points allocated (80/20 system) (To be completed by the organ of state)	Number of points claimed (90/10 system) (To be completed by the tenderer)	Number of points claimed (80/20 system) (To be completed by the tenderer)
100% Black ownership (attach CSD detail report)	N/A	10	N/A	
Woman Ownership (attach CSD detail report or Certified ID copy)	N/A	05	N/A	
Disability (**Attach Disability letter from a Doctor)**	N/A	05	N/A	

DECLARATION WITH REGARD TO COMPANY/FIRM

4.3. Name of company/firm.....

4.4. Company registration number: .....

4.5. TYPE OF COMPANY/ FIRM

- ☐ Partnership/Joint Venture / Consortium
- ☐ One-person business/sole propriety
- ☐ Close corporation
- ☐ Public Company
- ☐ Personal Liability Company
- ☐ (Pty) Limited
- ☐ Non-Profit Company
- ☐ State Owned Company

[TICK APPLICABLE BOX]

4.6. I, the undersigned, who is duly authorised to do so on behalf of the company/firm, certify that the points claimed, based on the specific goals as advised in the tender, qualifies the company/ firm for the preference(s) shown and I acknowledge that:

i) The information furnished is true and correct;

ii) The preference points claimed are in accordance with the General Conditions as indicated in paragraph 1 of this form;

iii) In the event of a contract being awarded as a result of points claimed as shown in paragraphs 1.4 and 4.2, the contractor may be required to furnish documentary proof to the satisfaction of the organ of state that the claims are correct;

iv) If the specific goals have been claimed or obtained on a fraudulent basis or any of the conditions of contract have not been fulfilled, the organ of state may, in addition to any other remedy it may have –

(a) disqualify the person from the tendering process;

(b) recover costs, losses or damages it has incurred or suffered as a result of that person's conduct;

(c) cancel the contract and claim any damages which it has suffered as a result of having to make less favourable arrangements due to such cancellation;

(d) recommend that the tenderer or contractor, its shareholders and directors, or only the shareholders and directors who acted on a fraudulent basis, be restricted from obtaining business from any organ of state for a period not exceeding 10 years, after the *audi alteram partem* (hear the other side) rule has been applied; and

(e) forward the matter for criminal prosecution, if deemed necessary.

.....

SIGNATURE(S) OF TENDERER(S)

SURNAME AND NAME: .....

DATE: .....

ADDRESS: .....

.....

.....

ATTACH B-BBEE VERIFICATION CERTIFICATE

ANNEXURE A

SUPPLY CHAIN MANAGEMENT

EVALUATION PROCESS AND CRITERIA

The following evaluation process and criteria will be used to evaluate all bids submitted:

1. Administrative Compliance – Phase One

1.1 All bids duly lodged will be examined to determine compliance with bidding requirements and conditions. Bids with obvious deviations from the requirements/conditions, will be eliminated from further evaluation.

1.2 **Critical Criteria**:
The following critical criteria have been identified for this bid and any non-compliance thereto will lead to the bid being regarded as non-responsive and disqualified from further evaluation:

- Provide Central Supplier Database (CSD) number (***Attach CSD registration summary report)***
- All Pages of the Bid document must be initialled.
- Compulsory site inspection attended.
- Completed and signed declaration of interest **(MBD4)**
- Completed and signed declaration on past SCM practices form **(MBD8)**
- Compulsory enterprise questionnaire completed
- Signed J/V agreement must be attached (Where applicable)
- Proof of registration with CIDB attached.
- Complete **MBD 5** and submit audited/reviewed financial statements **(AFS) –** (only where the tender amount exceeds **R10Mil-** including VAT)
- Proof of Municipal Rates and Taxes or letter for Tribal Authority or lease agreement must be attached (Not older than 3 months).

2. Functionality – Phase Two (100 points allocation)

FUNCTIONALITY SCHEDULE
TABLE A1

	TARGETED GOALS Name reference with contact details (Previous 5 yrs., Projects involving roads and stormawater)	Max Points to be Scored	Points Claimed by Tenderer	Allocated Points
1	Project 1	8		
2	Project 2	8		
3	Project 3	8		
4	Project 4	8		
5	Project 5	8		
	Sub-Total: Reputation and References	**40**		

NOTE: The tender should attach <u>Appointment Letter and Completion Certificate</u> as a proof for having completed such project. Points for each project will be allocated as follows:

7CE: 8 points
6CE: 7 points
5CE: 6 points

FINANCIAL REFERENCES
TABLE A2

	TARGETED GOALS	Tendered Goal	Points Claimed by Tenderer	Allocated Points
1	Tenderer submitted banking details proof attached	2		
2	Bank rating of "C" or better	5		
3	Registered financial Institution's full details as guarantor in the amount of 10% as specified for surety purpose shall be submitted	3		
	Sub-Total: Financial References	**10**		

EXPERIENCE AND QUALIFICATION OF KEY STAFF

Experience: TABLE A3.1

	TARGETED GOALS	Points Allocation	Points Claimed by Tenderer	Allocated Points
1	Contract Manager: 10 years in Road Projects	>10 yrs=5 6-9 yrs=3 3-5 yrs=2 1-2yrs=1		
2	Site Agent: 8 years in Road Projects	>8 yrs=5 5-7 yrs=3 3-4 yrs=2 1-2yrs=1		
3	Foreman 5 years in Road Projects	>5 yrs=3 4 yrs=1.5 3 yrs=1 1-2yrs=0.5		
4	Health and Safety Officer 5 years of experience as OHS in Civil Engineering Construction and registered with **SACPCMP**	>5 yrs=2 4 yrs=1 3 yrs=0.5 1-2yrs=0.25		
	Sub-Total: Experience	**15**		

NOTE: Project organogram should be attached. Curriculum vitae with detailed experience and contact details should be attached to the tender document for verification by the consultants.

Qualifications: TABLE A3.2

	TARGETED GOALS	Tendered Goal	Points Claimed by Tenderer	Allocated Points
1	Contract Manager: Civil Engineering or construction management or project management (Must have at least NQF 5 in LIC manage of Labour intensive work)	BSc = 5 B-Tech /PrCPM = 5 ND = 3		
2	Site Agent: Civil Engineering or Construction management	BSc/B-Tech = 5 ND = 4 NQF 5/7 = 3 N6 = 2		
3	Foreman (Must have at least NQF 4 in LIC Supervision of Labour intensive work)	ND = 3 NQF 5 =2 N6 = 2 N3= 1.5 NQF 4= 1.5		
4	Health and Safety Office 5 years of experience as OHS in Road projects	ND = 2 Cert = 0.5		
	Sub-Total: Qualifications	**15**		

CV's and Certified Qualifications should be attached.

PLANT AND EQUIPMENT
TABLE A4

TARGETED GOALS	Tendered Goal	Points Claimed by Tenderer	Allocated Points
1. Grader (2 no)	4		
2. TLB (2 no)	4		
3. Excavators (1 no)	4		
4. Water Cart (10 000 litre) (2 no)	2		
6. 10 m³ Tipper Trucks (4 no)	4		
7. 12 Ton Roller (1 no)	2		
Sub-Total: Plant and Equipment	**20**		

Note: Tenderers should attach certified proof of ownership certificate for the plant mentioned above if they own such plant. In case of hired plant, tenderers will be required to attach a letter of undertaking by the hiring firm indicating that they will provide the tenderer with such plant should the tenderer becomes a successful bidder. The hiring company should also provide proof of ownership for such plants.

SUMMARY

DESCRIPTION	Maximum Points to be Allocated	Points Claimed by Tenderer	Allocated Points
REPUTATION AND REFERENCE OF THE FIRM: TABLE A1	40		
FINANCIAL REFERENCES: TABLE A2	10		
EXPERIENCE OF KEY STAFF: TABLE A3.1	15		
QUALIFICATION OF KEY STAFF: TABLE A3.2	15		
PLANT AND EQUIPMENT: TABLE A4	20		
TOTAL	**100**		

NB: A bid will be disqualified if it fails to meet the minimum threshold of 70% on functionality and a minimum of 28 points on relevant experience.

2.4 Commercial Risk Analysis

Prior to being recommended for further evaluation, a bid will be subjected to risk analysis to ensure that it would, if accepted, not place the Municipality or the bidder, at undue risk.

A risk analysis will be performed to ascertain if any of the following might present an unacceptable commercial risk to the Municipality:

- Unduly low tendered sums
- Unduly high individual rates
- Unduly low rates
- Imbalances in pricing

It is in the best interests of the Municipality to amend an error which will cause the bid to be rejected on the basis of it presenting an unacceptable commercial risk.

❖ **EVALUATION OF BIDS**

- All bids received shall be evaluated in terms of the Supply Chain Management Regulations, Makhado Municipality Supply Chain Management Policy (on request from Municipality), the preferential procurement regulation 2011, and other applicable legislations.

- The Council reserves the right to accept all, some, or none of the bids submitted – either wholly or in part – and it is not obliged **to accept the lowest bid.**

❖ **By submitting this bid, bidder authorizes the Council or its delegate(s) to carry out any investigation deemed necessary to verify the correctness of the statements and documents submitted and that such documents reasonably reflect the ability of the Bidder to provide the goods and services required by the Council.**

PLEASE NOTE

❖ **The Municipal Manager may cancel a contract awarded to a person if:**

- The person committed a corrupt or fraudulent act during the procurement process or in the execution of the contract, or

- An official or other role player committed any corrupt or fraudulent act during the procurement process or in the execution of the contract that benefited that person.

❖ **The Municipal Manager may reject the bid or quote of any person if that person or any of its directors has:**

- Failed to pay municipal rates and taxes or municipal service charges and such rates, taxes and charges are in arrears for more than three months;
- Failed, during the last five years, to perform satisfactorily on a previous contract with the Makhado Municipality or any other organ of State after written notice was given to that bidder that performance was unsatisfactory;

- Abused the supply chain management system of the Municipality or have committed any improper conduct in relation to this system;

- Been convicted of fraud or corruption during the past five years;

- Wilfully neglected, reneged on or failed to comply with any government, municipal or other public sector contract during the past five years; or

- Been listed in the Register for Tender Defaulters in terms of section 29 of the Prevention and Combating of Corrupt Activities Act (No. 12 of 2004) or has been listed on National Treasury's database as a person prohibited from doing business with public sector.

2.5 Tendered rates

Rates for all the bids which have complied with the bid conditions will be assessed for the following:

- Comparison of rates and amounts with the average tendered amount.
- Sensitivity Analysis of Rates (i.e. whether the rates are balanced, acceptable, etc.).
- Expected cash flows requirements.

NB: Bids with unbalanced rates will be disqualified for further evaluation on price and preference points system

3 Business Registration

Prospective bidders shall be registered:

(a) With the South African Revenue Services for all categories of taxes applicable to it.
(b) With the Compensation Commissioner
(c) With the Construction Industry Development Board. (Minimum grading **7CE**).

4 Acceptance of Tender Offer (Cl. F3.13)

Tender offers will only be accepted if:

a) The bidder has in his or her possession a Central Suppliers Database Registration Number (CSD Number);

b) The bidder is registered with the Construction Industry Development Board in an appropriate contractor grading designation. (Minimum grading of **7CE** is required);

c) The bidder or any of its principals is not listed on the Register of Tender Defaulters in terms of the Prevention and Combating of Corrupt Activities Act of 2004 as a person prohibited from doing business with the public sector; and

d) The bidder has not abused the Employer's Supply Chain Management System.

e) The bidder has not failed to perform on any previous contract.

f) has complete the Compulsory Enterprise Questionnaire and there are no conflicts of interest which may impact on the bidder's ability to perform the contract in the best interests of the employer or potentially compromise the tender process.

5. Provide copies of the Contract Document (Cl. F3.18)

The number of paper copies of the signed Contract to be provided by the Employer to the successful bidder is **one**

Annexure A: Standard Conditions of Tender

F.1 General

F.1.1 Actions

The employer and each Tenderer submitting a Tender offer shall comply with these conditions of Tender. In their dealings with each other, they shall discharge their duties and obligations as set out in F.2 and F.3, timeously and with integrity, and behave equitably, honestly and transparently.

F.1.2 Tender Documents

The documents issued by the employer for the purpose of a Tender offer are listed in the Tender data.

F.1.3 Interpretation

F.1.3.1 The Tender data and additional requirements contained in the Tender schedules that are included in the returnable documents are deemed to be part of these conditions of Tender.

F.1.3.2 These conditions of Tender, the Tender data and Tender schedules which are only required for Tender evaluation purposes, shall not form part of any contract arising from the invitation to Tender.

F.1.3.3 For the purposes of these conditions for the calling for expressions of interest, the following definitions apply:

a) **Comparative offer** means the Tenderer's financial offer after the factors of non-firm prices, all unconditional discounts and any other Tendered parameters that will affect the value of the financial offer have been taken into consideration

b) **corrupt practice** means the offering, giving, receiving or soliciting of anything of value to influence the action of the employer or his staff or agents in the Tender process; and

c) **Fraudulent pra**ctice means the misrepresentation of the facts in order to influence the Tender process or the award of a contract arising from a Tender offer to the detriment of the employer, including collusive practices intended to establish prices at artificial levels

d) **Quality (functionality)** means the totality of features and characteristics of a product or service that bear on its ability to satisfy stated or implied needs

F.1.4 Communication and employer's agent

Each communication between the employer and a Tenderer shall be to or from the employer's agent only, and in a form that can be read, copied and recorded. Writing shall be in the English language. The employer shall not take any responsibility for non-receipt of communications from or by a Tenderer. The name and contact details of the employer's agent are stated in the Tender data.

F.1.5 The employer's right to accept or reject any Tender offer

F.1.5.1 The employer may accept or reject any variation, deviation, Tender offer, or alternative Tender offer, and may cancel the Tender process and reject all Tender offers at any time before the formation of a contract. The employer shall not accept or incur any liability to a Tenderer for such cancellation and rejection, but will give written reasons for such action upon written request to do so.

F.1.5.2 The employer may not subsequent to the cancellation or abandonment of a Tender process or the rejection of all responsive Tender offers re-issue a Tender covering substantially the same scope of work within a period of six months unless only one Tender was received and such Tender was returned unopened to the Tenderer.

F.2 Tenderer's obligations

F.2.1 Eligibility

Submit a Tender offer only if the Tenderer satisfies the criteria stated in the Tender data and the Tenderer, or any of his principals, is not under any restriction to do business with employer.

F.2.2 Cost of Tendering

Accept that the employer will not compensate the Tenderer for any costs incurred in the preparation and submission of a Tender offer, including the costs of any testing necessary to demonstrate that aspects of the offer satisfy requirements.

F.2.3 Check documents

Check the Tender documents on receipt for completeness and notify the employer of any discrepancy or omission.

F.2.4 Confidentiality and copyright of documents

Treat as confidential all matters arising in connection with the Tender. Use and copy the documents issued by the employer only for the purpose of preparing and submitting a Tender offer in response to the invitation.

F.2.5 Reference documents

Obtain, as necessary for submitting a Tender offer, copies of the latest versions of standards, specifications, conditions of contract and other publications, which are not attached but which are incorporated into the Tender documents by reference.

F.2.6 Acknowledge addenda

Acknowledge receipt of addenda to the Tender documents, which the employer may issue, and if necessary apply for an extension to the closing time stated in the Tender data, in order to take the addenda into account.

F.2.7 Clarification meeting

Attend, where required, a clarification meeting at which Tenderers may familiarize themselves with aspects of the proposed work, services or supply and raise questions. Details of the meeting(s) are stated in the Tender data.

F.2.8 Seek clarification

Request clarification of the Tender documents, if necessary, by notifying the employer at least five working days before the closing time stated in the Tender data.

F.2.9 Insurance

Be aware that the extent of insurance to be provided by the employer (if any) might not be for the full cover required in terms of the conditions of contract identified in the contract data. The Tenderer is advised to seek qualified advice regarding insurance.

F.2.10 Pricing the Tender offer

F.2.10.1 Include in the rates, prices, and the Tendered total of the prices (if any) all duties, taxes (except Value Added Tax (VAT), and other levies payable by the successful Tenderer, such duties, taxes and levies being those applicable 14 days before the closing time stated in the Tender data.

F2.10.2 Show VAT payable by the employer separately as an addition to the Tendered total of the prices.

F.2.10.3 Provide rates and prices that are fixed for the duration of the contract and not subject to adjustment except as provided for in the conditions of contract identified in the contract data.

F.2.10.4 State the rates and prices in Rand unless instructed otherwise in the Tender data. The conditions of contract identified in the contract data may provide for part payment in other currencies.

F.2.11 Alterations to documents

Not make any alterations or additions to the Tender documents, except to comply with instructions issued by the employer, or necessary to correct errors made by the Tenderer. All signatories to the Tender offer shall initial all such alterations. Erasures and the use of masking fluid are prohibited.

F.2.12 Alternative Tender offers

F.2.12.1 Submit alternative tender offer only if a main tender offer, strictly in accordance with all the requirements of the tender document, is also submitted. The alternative tender offer is to be submitted with the main tender offer together with a schedule that compares the requirements of the tender document with the alternative requirements the tenderer proposes.

F.2.12.2 Accept that an alternative tender offer may be based only on the criteria stated in the tender data or criteria otherwise acceptable to the employer.

F.2.13 Submitting a Tender offer

F.2.13.1 Submit a Tender offer to provide the whole of the works, services or supply identified in the contract data and described in the scope of works, unless stated otherwise in the Tender data.

F.2.13.2 Return all returnable documents to the employer after completing them in their entirety, either electronically (if they were issued in electronic format) or by writing in black ink.

F.2.13.3 Submit the parts of the Tender offer communicated on paper as an original plus the number of copies stated in the Tender data, with an English translation of any documentation in a language other than English, and the parts communicated electronically in the same format as they were issued by the employer.

F.2.13.4 Sign the original and all copies of the Tender offer where required in terms of the Tender data. The employer will hold all authorized signatories liable on behalf of the Tenderer. Signatories for Tenderers proposing to contract as joint ventures shall state which of the signatories is the lead partner whom the employer shall hold liable for the purpose of the Tender offer.

F.2.13.5 Seal the original and each copy of the Tender offer as separate packages marking the packages as "ORIGINAL" and "COPY". Each package shall state on the outside the employer's address and identification details stated in the Tender data, as well as the Tenderer's name and contact address.

F.2.13.6 Where a two-envelope system is required in terms of the Tender data, place and seal the returnable documents listed in the Tender data in an envelope marked "financial proposal" and place the remaining returnable documents in an envelope marked "technical proposal". Each envelope shall state on the outside the employer's address and identification details stated in the Tender data, as well as the Tenderer's name and contact address.

F.2.13.7 Seal the original Tender offer and copy packages together in an outer package that states on the outside only the employer's address and identification details as stated in the Tender data.

F.2.13.8 Accept that the employer will not assume any responsibility for the misplacement or premature opening of the Tender offer if the outer package is not sealed and marked as stated.

F.2.14 Information and data to be completed in all respects

Accept that Tender offers, which do not provide all the data or information requested completely and in the form required, may be regarded by the employer as non-responsive.

F.2.15 Closing time

F.2.15.1 Ensure that the employer receives the Tender offer at the address specified in the Tender data not later than the closing time stated in the Tender data. Proof of posting shall not be accepted as proof of delivery. The employer shall not accept Tender offers submitted by telegraph, telex, facsimile or e-mail, unless stated otherwise in the Tender data.

F.2.15.2 Accept that, if the employer extends the closing time stated in the Tender data for any reason, the requirements of these conditions of Tender apply equally to the extended deadline.

F.2.16 Tender offer validity

F.2.16.1 Hold the Tender offer(s) valid for acceptance by the employer at any time during the validity period stated in the Tender data after the closing time stated in the Tender data.

F.2.16.2 If requested by the employer, consider extending the validity period stated in the Tender data for an agreed additional period.

F.2.17 Clarification of Tender offer after submission

Provide clarification of a Tender offer in response to a request to do so from the employer during the evaluation of Tender offers. This may include providing a breakdown of rates or prices and correction of arithmetical errors by the adjustment of certain rates or item prices (or both). No change in the total of the prices or substance of the Tender offer is sought, offered, or permitted. The total of the prices stated by the Tenderer shall be binding upon the Tenderer.

Note: Sub-clause F.2.17 does not preclude the negotiation of the final terms of the contract with a preferred Tenderer following a competitive selection process, should the Employer elect to do so.

F.2.18 Provide other material

F.2.18.1 Provide, on request by the employer, any other material that has a bearing on the Tender offer, the Tenderer's commercial position (including notarized joint venture agreements), Preferencing arrangements, or samples of materials, considered necessary by the employer for the purpose of a full and fair risk assessment. Should the Tenderer not provide the material, or a satisfactory reason as to why it cannot be provided, by the time for submission stated in the employer's request, the employer may regard the Tender offer as non-responsive.

F.2.18.2 Dispose of samples of materials provided for evaluation by the employer, where required.

F.2.19 Inspections, tests and analysis

Provide access during working hours to premises for inspections, tests and analysis as provided for in the Tender data.

F.2.20 Submit securities, bonds, policies, etc.

If requested, submit for the employer's acceptance before formation of the contract, all securities, bonds, guarantees, policies and certificates of insurance required in terms of the conditions of contract identified in the contract data.

F.2.21 Check final draft

Check the final draft of the contract provided by the employer within the time available for the employer to issue the contract.

F.2.22 Return of other Tender documents

If so instructed by the employer, return all retained Tender documents within 28 days after the expiry of the validity period stated in the Tender data.

F.2.23 Certificates

Include in the Tender submission or provide the employer with any certificates as stated in the Tender data.

F.3 The employer's undertakings

F.3.1 Respond to clarification

Respond to a request for clarification received up to five working days before the Tender closing time stated in the Tender Data and notify all Tenderers who drew procurement documents.

F.3.2 Issue Addenda

If necessary, issue addenda that may amend or amplify the Tender documents to each Tenderer during the period from the date that Tender documents are available until seven days before the Tender closing time stated in the Tender Data. If, as a result a Tenderer applies for an extension to the closing time stated in the Tender Data, the Employer may grant such extension and, shall then notify all Tenderers who drew documents.

F.3.3 Return late Tender offers

Return Tender offers received after the closing time stated in the Tender Data, unopened, (unless it is necessary to open a Tender submission to obtain a forwarding address), to the Tenderer concerned.

F.3.4 Opening of Tender submissions

F.3.4.1 Unless the two-envelope system is to be followed, open valid Tender submissions in the presence of Tenderers' agents who choose to attend at the time and place stated in the Tender data. Tender submissions for which acceptable reasons for withdrawal have been submitted will not be opened.

F.3.4.2 Announce at the meeting held immediately after the opening of Tender submissions, at a venue indicated in the Tender data, the name of each Tenderer whose Tender offer is opened,

the total of his prices, preferences claimed and time for completion, if any, for the main Tender offer only.

F.3.4.3 Make available the record outlined in F.3.4.2 to all interested persons upon request.

F.3.5 Two-envelope system

F.3.5.1 Where stated in the Tender data that a two-envelope system is to be followed, open only the technical proposal of valid Tenders in the presence of Tenderers' agents who choose to attend at the time and place stated in the Tender data and announce the name of each Tenderer whose technical proposal is opened.

F.3.5.2 Evaluate the quality of the technical proposals offered by Tenderers, then advice Tenderers who remain in contention for the award of the contract of the time and place when the financial proposals will be opened. Open only the financial proposals of Tenderers, who score in the quality evaluation more than the minimum number of points for quality stated in the Tender data, and announce the score obtained for the technical proposals and the total price and any preferences claimed. Return unopened financial proposals to Tenderers whose technical proposals failed to achieve the minimum number of points for quality.

F.3.6 Non-disclosure

Not disclose to Tenderers, or to any other person not officially concerned with such processes, information relating to the evaluation and comparison of Tender offers, the final evaluation price and recommendations for the award of a contract, until after the award of the contract to the successful Tenderer.

F.3.7 Grounds for rejection and disqualification

Determine whether there has been any effort by a Tenderer to influence the processing of Tender offers and instantly disqualify a Tenderer (and his Tender offer) if it is established that he engaged in corrupt or fraudulent practices.

F.3.8 Test for responsiveness

F.3.8.1 Determine, on opening and before detailed evaluation, whether each Tender offer properly received:

a) complies with the requirements of these Conditions of Tender,
b) has been properly and fully completed and signed, and
c) is responsive to the other requirements of the Tender documents.

F.3.8.2 A responsive Tender is one that conforms to all the terms, conditions, and specifications of the Tender documents without material deviation or qualification. A material deviation or qualification is one which, in the Employer's opinion, would:

a) Detrimentally affect the scope, quality, or performance of the works, services or supply identified in the Scope of Work,
b) Change the Employer's or the Tenderer's risks and responsibilities under the contract, or,
c) Affect the competitive position of other Tenderers presenting responsive Tenders, if it were to be rectified. Reject a non-responsive Tender offer, and not allow it to be subsequently made responsive by correction or withdrawal of the non-conforming deviation or reservation.

F.3.9 Arithmetical errors

F.3.9.1 Check responsive Tender offers for arithmetical errors, correcting them in the following manner:

a) Where there is a discrepancy between the amounts in figures and in words, the amount in words shall govern.

b) If bills of quantities (or schedule of quantities or schedule of rates) apply and there is an error in the line item total resulting from the product of the unit rate and the quantity, the line item total shall govern and the rate shall be corrected. Where there is an obviously gross misplacement of the decimal point in the unit rate, the line item total as quoted shall govern, and the unit rate shall be corrected.

c) Where there is an error in the total of the prices either as a result of other corrections required by this checking process or in the Tenderer's addition of prices, the total of the prices shall govern and the Tenderer will be asked to revise selected item prices (and their rates if bills of quantities apply) to achieve the Tendered total of the prices.

F.3.9.2 Consider the rejection of a Tender offer if the Tenderer does not correct or accept the correction of his arithmetical errors in the manner described in F.3.9.1.

F.3.10 Clarification of a Tender offer

Obtain clarification from a Tenderer on any matter that could give rise to ambiguity in a contract arising from the Tender offer.

F.3.11 Evaluation of Tender offers

F.3.11.1 General

Appoint an evaluation panel of not less than three persons. Reduce each responsive Tender offer to a comparative offer and evaluate it using the Tender evaluation method that is indicated in the Tender Data and described below:

Method 1: Financial offer	1) Rank Tender offers from the most favourable to the least favourable comparative offer.
	2) Recommend highest ranked Tenderer for the award of the contract, unless there are compelling and justifiable reasons not to do so.
Method 2: Financial offer and preferences	1) Score Tender evaluation points for financial offer.
	2) Confirm that Tenderers are eligible for the preferences claimed and if so, score Tender evaluation points for Preferencing.
	3) Calculate total Tender evaluation points.
	4) Rank Tender offers from the highest number of Tender evaluation points to the lowest.
	5) Recommend Tenderer with the highest number of Tender evaluation points for the award of the contract, unless there are compelling and justifiable reasons not to do so.
Method 3: Financial offer and quality	1) Score quality, rejecting all Tender offers that fail to score the minimum number of points for quality stated in the Tender data.
	2) Score Tender evaluation points for financial offer.
	3) Calculate total Tender evaluation points.
	4) Rank Tender offers from the highest number of Tender evaluation points to the lowest.
	5) Recommend Tenderer with the highest number of Tender evaluation points for the award of the contract, unless there are compelling and justifiable reasons not to do so.
Method 4: Financial offer, quality	1) Score quality, rejecting all Tender offers that fail to score the minimum number of points for quality stated in the Tender data.
	2) Score Tender evaluation points for financial offer.

and preferences	3) Confirm that Tenderers are eligible for the preferences claimed, and if so, score Tender evaluation points for Preferencing.
	4) Calculate total Tender evaluation points.
	5) Rank Tender offers from the highest number of Tender evaluation points to the lowest.
	6) Recommend Tenderer with the highest number of Tender evaluation points for the award of the contract, unless there are compelling and justifiable reasons not to do so.

Score financial offers, preferences and quality, as relevant, to two decimal places.

F.3.11.2 Scoring Financial Offers

Score the financial offers of remaining responsive Tender offers using the following formula:

NFO = W1 x A

where:

NFO = the number of Tender evaluation points awarded for the financial offer.

W1 = the maximum possible number of Tender evaluation points awarded for the financial offer as stated in the Tender Data.

A = a number calculated using either formulas 1 or 2 below as stated in the Tender Data.

Formula	Comparison aimed at achieving	Option 1	Option 2
1	Highest price or discount	$A = (1+ \frac{(P - Pm)}{Pm})$	A = P / Pm
2	Lowest price or percentage commission / fee	$A = (1 - \frac{(P - Pm)}{Pm})$	A = Pm / P

where:

Pm = the comparative offer of the most favourable Tender offer.

P = the comparative offer of Tender offer under consideration.

F.3.11.3 Scoring quality (functionality)

Score quality in each of the categories in accordance with the Tender Data and calculate total score for quality.

F.3.12 Insurance provided by the employer

If requested by the proposed successful Tenderer, submit for the Tenderer's information the policies and / or certificates of insurance which the conditions of contract identified in the contract data, require the employer to provide.

F.3.13 Acceptance of Tender offer

F.3.13.1 Accept Tender offer only if the Tenderer complies with the legal requirements stated in the Tender Data.

F.3.13.2 Notify the successful Tenderer of the employer's acceptance of his Tender offer by completing and returning one copy of the form of offer and acceptance before the expiry of the validity period stated in the Tender data, or agreed additional period. Providing the form of offer and acceptance does not contain any qualifying statements, it will constitute the formation of a contract between the employer and the successful Tenderer as described in the form of offer and acceptance.

F.3.14 Notice to unsuccessful Tenderers

After the successful Tenderer, has acknowledged the employer's notice of acceptance, notify other Tenderers that their Tender offers have not been accepted.

F.3.15. Prepare contract documents

If necessary, revise documents that shall form part of the contract and that were issued by the employer as part of the Tender documents to take account of:

a) addenda issued during the Tender period,
b) inclusion of some of the returnable documents,
c) other revisions agreed between the employer and the successful Tenderer, and
d) the schedule of deviations attached to the form of offer and acceptance, if any.

F.3.16 Issue final contract

Prepare and issue the final draft of contract documents to the successful Tenderer for acceptance as soon as possible after the date of the employer's signing of the form of offer and acceptance (including the schedule of deviations, if any). Only those documents that the conditions of Tender require the Tenderer to submit, after acceptance by the employer, shall be included.

F.3.17 Complete adjudicator's contract

Unless alternative arrangements have been agreed or otherwise provided for in the contract, arrange for both parties to complete formalities for appointing the selected adjudicator at the same time as the main contract is signed.

F.3.18 Provide copies of the contracts

Provide to the successful Tenderer the number of copies stated in the Tender Data of the signed copy of the contract as soon as possible after completion and signing of the form of offer and acceptance.

A: SCHEDULE OF LABOUR CONTENT

The Tenderer must complete the table below to reflect the labour force anticipated to be employed on this contract, including labour employed by sub-contractors.

The specified target value is **5%** of the contract value

Type of Labour	Man-hours	Minimum Wage Rate per Unit	Total Wage Cost (Excl VAT)
Permanent Labour			
Temporary Labour			
SMME/HDI's Labour			
		TOTAL	
		PERCENTAGE	

Notes to Tenderer:

(1) **Labour is defined as hourly paid personnel.**

(2) **The penalty will be applied for non-compliance during the contract or for fraudulent disclosure**

(3) **The minimum wage rate to be R 220-00 per day**

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

B. TRAINING

Name of Training Institution:.....

Name of Programme:.....

Trainer's Name	Qualification	Subject

Notes to tenderer:
Provide details here, or attach hereto, the subjects to be covered and the manner in which the training is to be delivered.

SIGNED ON BEHALF OF THE TENDERER.....

C. ENGINEERING STUDENT TRAINING

Name of Training Institution:.....

Name of Programme:.....

Trainer's Name	Qualification	Subject

Notes to tenderer:

1. **Provide details here, or attach hereto, the subjects to be covered and the manner in which the training is to be delivered.**
2. **Provision should also include on-job student / (in-service) training for the duration of the contract at a monthly stipend of R 6000.00**

SIGNED ON BEHALF OF THE TENDERER .....

MAKHADO MUNICIPALITY

T2.1 List of Returnable Documents

The Tenderer must complete the following returnable documents:

1. Returnable Schedules required only for Tender evaluation purposes

A. Certificate of Authority of Signatory
B. Certificate of Registration with the Construction Industry Development Board
C. Certificate of authority for joint ventures (where applicable)
D. Compulsory Enterprise Questionnaire
E. Record of Addenda to Tender Documents
F. Proposed Amendments and Qualifications
G. Form of Intent to Provide a Demand Guarantee
H. Schedule of Subcontractors
I. Schedule of Available Infrastructure, Resources and Experience
J. Financial Information of the Tenderer
K. Certificate for Municipal Services and Payments: Annexure B
L. Authorisation for deduction of outstanding amounts owed to Council: Annexure C
M. Declaration of Tenderer's Past Supply Chain Management Practices: MBD 8
N. Declaration of interest: MBD 4
O. National industrial participation programme: MBD 5
P. Declaration for procurement above R10 Million: MBD 5
Q. preference points claim form in terms of the preferential procurement regulations 2011
R. Declaration certificate for local production and content: MBD 6.2
S. Certificate of the Independent Tender Determination: MBD 9
T. Compliance with OHSA (Act 85 of 1993)
U. Original Bank rating letter
V. Day Works
W. Names of management and supervisory staff for the LIC works

2. Other documents required only for Tender evaluation purposes

- Compensation Fund Registration Certificate
- Curricula Vitae of Personnel
- Rates of Labour and Materials (Day work Rates)
- CSD Registration
- Valid CSD Number.
- Schedule of Labour Content
- Employment of ABE'S
- ABE Declaration Affidavit
- Generic Training
- Complete MBD 5 where the Tender amount inclusive of VAT exceeds R 10 million:

3. Other documents that will be incorporated into the contract

3.1 The offer portion of the C1.1 Offer and Acceptance
3.2 C1.2 Contract Data (Part 2)
3.3 C2.2 Bills of Quantities

A. CERTIFICATE OF AUTHORITY OF SIGNATORY

Indicate the status of the Tenderer by ticking the appropriate box hereunder. The Tenderer must complete the certificate set out below for the relevant category.

1	Company	
2	Partnership	
3	Joint Venture	
4	Sole Proprietor	
5	Close Corporation	

1. Certificate for company

I, ..., chairperson of the board of directors of

....., hereby confirm that by resolution

of the board (copy attached) taken on ..... 20....., Mr/Ms

....., acting in the capacity

of....., was authorised to sign all documents in

connection with this Tender and any contract resulting from it on behalf of the

company.

As witnesses:

1..... .....
Chairman

....
Print Name Print Name

2. ....
Date

.....
Print Name

2. Certificate of partnership

We, the undersigned, being the key partners in the business trading as

....., hereby

authorise Mr/Ms ....., acting

in the capacity of ....., to sign all documents in

connection with the Tender for Contract ....., and

any contract resulting from it on our behalf.

Name	Address	Signature	Date

NOTE: This certificate is to be completed and **signed by each and all of the key partners** upon whom rests the direction of the affairs of the Partnership as a whole.

3. Certificate for Joint Venture

We, the undersigned, are submitting this Tender offer in Joint Venture and hereby

authorize Mr/Ms ....., authorised signatory of the

firm ....., acting in the capacity of lead partner, to

sign all documents in connection with the Tender offer for Contract

..... and any contract resulting from it on our behalf.

This authorisation is evidenced by the attached power of attorney signed by legally

authorised signatories of all the partners to the Joint Venture.

Name of Firm	Address	Authorising	
		Signature	Name
Lead Partner			

4. Certificate for sole proprietor

I, ..., hereby confirm that I am the sole owner of the business trading

as .....

As witnesses:-

1. ....
Signature: Sole Owner

....
Print Name **Print Name**

2. ....

....
Print Name **Date**

5. Certificate for Close Corporation

We, the undersigned, being the key members in the business trading as ..... hereby

authorise Mr/Ms.....,

acting in the capacity of ....., to sign all documents in

connection with the Tender for Contract ..... and

any contract resulting from it on our behalf.

Name	Address	Signature	Date

Note: This Certificate is to be completed and signed by each and all of the key members upon whom rests the direction of the affairs of the Close Corporation as a whole.

B. CERTIFICATE OF REGISTRATION WITH THE CONSTRUCTION INDUSTRY DEVELOPMENT BOARD

1. General

The Register of Contractors is established by the Construction Industry Development Board in terms of the CIDB Act 38 of 2000 and Construction Industry Development Regulations as published in Government Gazette number 26427 of 2004.

The Act makes it mandatory for public sector clients to apply this register when considering Tenders. Any enterprise that submits a Tender or enters into contract for construction works with the public sector, must be registered.

Once-off joint ventures do not have to register, provided that each partner of the joint venture is separately registered.

2. Status

Tenderers shall fill in the following sections of this form, depending on their status:

2.1 Section A

Tenderers who have accomplished registration and can provide proof of their grading designation.

2.2 Section B

Tenderers who are in the process of registration of an update to an existing registration or a renewal.

2.3 Section C

Tenderers who have submitted the first application.

2.4 Section D

Tenderers submitting this Tender offer in Joint Venture and can provide proof that each partner of the Joint Venture is separately registered.

Note: Only complete <u>one</u> of Sections A, B, C or D.

SECTION A							
I, ... Acting in capacity of							
was authorised to sign all documents in connection with this Tender an any contract resulting from it on							
behalf of the following entity:							
hereby declare that the above mentioned entity has achieved registration with the Construction In-							
dustry Development Board on date ..... and declare that the grading							
designation is reflected in the following **symbols** on the registration certificate.							
		Contract Value					
		Type of Work					
.....					.....		
Signature of Tenderer					Signature of Witness		
.....					.....		
Print Name					Print Name		

SECTION B

I, ... acting in capacity of .....
was authorised to sign all documents in connection with this tender an any contract resulting from it on

behalf of the following entity: .....
hereby declare that the above mentioned entity has achieved registration with the Construction Industry Development Board on date ....., furthermore declare that the existing grading designation is:

Contract Value		
Type of Work		

and the following update has been applied for:

Amendment of category status		mark with "❄"
Change of Particulars		
Annual confirmation of Particulars		
Renewal of Registration		

.....
Signature of Tenderer

.....
Signature of Witness

.....
Print Name

.....
Print Name

SECTION C

I, ... acting in capacity of .....
was authorised to sign all documents in connection with this tender an any contract resulting from it on

behalf of the following entity: .....
hereby declare that the above mentioned entity has submitted its FIRST APPLICATION FOR REGISTRATION with the Contraction Industry Development board on date .....

I furthermore accept that failure to achieve registration with the Construction Industry Development Board in a category stipulated in the Tender Data within 10 days from the date of closing this tender, implies a non-responsive tender and warrants rejection of the Tender on account of non-compliance with the requirements of the Tender Data.

.....	.....
Signature of Tenderer	Signature of Witness
.....	.....
Print Name	Print Name

SECTION D

I, ... acting in capacity of the LEAD PARTNER in the Joint Venture

.....

was authorised to sign all documents in connection with this tender and any contract resulting from it, hereby declare that each partner of the Joint Venture is separately registered with the Construction Industry Development Board and declare that the grading designation is reflected in the following **symbols** on the registration certificates:

Name of Lead Partner:		
	Contract Value	
	Type of Work	

Name of 2nd Partner:		
	Contract Value	
	Type of Work	

Name of 3rd Partner:		
	Contract Value	
	Type of Work	

.....
Signature of Tenderer

.....
Signature of Witness

.....
Print Name

.....
Print Name

C. CERTIFICATE OF AUTHORITY FOR JOINT VENTURES (WHERE APPLICABLE)

Employer: .....

Contract Number: .....

NOTE 1 This form need only be completed in the event of a Joint Venture submitting this Tender.

NOTE 2 Fill in all the information requested in the spaces provided. Attach additional sheets if required.

NOTE 3 Provide a copy of the Joint Venture agreement. Demonstrate that the partners to the Joint Venture share in the ownership, control, management responsibilities, risks and profits of the Joint Venture. The Joint Venture agreement shall include specific details relating to:

a) the contributions of capital and equipment;
b) portions of the Contract to be performed by the partner's own resources; and
c) portions of the Contract to be performed under the supervision of each partner.

NOTE 4 Provide copies of all written agreements between partners concerning the Joint Venture, including those that relate to ownership options and to restrictions/limits regarding ownership and control.

1. Joint Venture Particulars

Name .....

Postal Address: .....

Physical Address
.....

.....

Telephone.....

Fax.....

Name of authorized representative.....

2. Identity of Partner No. 1

Name.....

Postal Address .....

Physical Address .....

.....

Telephone.....

Fax .....

Contact Person.....

3. **Identity of Partner No. 2**

Name.....

Postal Address.....

Physical Address .....

.....

Telephone.....

Fax.....

Contact Person.....

4. **Identity of Partner No. 3**

Name .....

Postal Address.....

Physical Address .....

.....

Telephone.....

Fax.....

Contact Person.....

5. **Description of the role of the partners in the joint venture**

Partner No. 1:.....

.....

Partner No. 2:.....

.....

Partner No. 3:.....

.....

6. **Ownership of the joint venture**

(i) Ownership percentage(s) Partner No. 1 .....%

Partner No. 2 .....%

Partner No. 3 .....%

(ii) Partner percentage in respect of:

a) Profit and loss sharing: Partner No. 1 .....%

Partner No. 2 .....%

Partner No. 3 .....%

b) Initial capital contribution Partner No. 1 R.....

Partner No. 2 R.....

Partner No. 3 R.....

(iii) Anticipated ongoing capital contributions:

Partner No. 1 R.....

Partner No. 2 R.....

Partner No. 3 R.....

(iv) Contributions of equipment (specify types, quality and quantities of equipment) to be provided by each partner:

Partner No. 1: .....

.....

Partner No. 2:.....

.....

Partner No. 3:.....

.....

7. **Recent contracts performed by partners in their own right or as partners in other joint ventures**

a) Partner No. 1

(i) .....

(ii) .....

(iii) .....

(iv) .....

(v) .....

b) Partner No. 2

(i) .....

(ii) .....

(iii) .....

(iv) .....

(v) .....

c) Partner No. 3

(i) .....

(ii) .....

(iii) .....

(iv) .....

(v) .....

8. **Control and participation in the joint venture**

(Identify by name and firm those individuals who are, or will be, responsible for, and have authority to engage in the relevant management functions and policy and decision making, indicating any limitations in their authority, for example, co-signature requirements and monetary limits).

a) Joint Venture cheque signing

.....

.....

.....

b) Authority to enter into contracts on behalf of the Joint Venture

.....

.....

.....

c) Signing, co-signing or collateralizing of loans

.....

.....

.....

d) Acquisition of lines of credit

.....
.....

.....

e) Acquisition of demand bonds

.....

.....

.....

f) Negotiating and signing of labour agreements

.....

.....

.....

9. **Management of the performance of the Contract**
(Fill in the name and firm of the responsible person)

a) Supervision of field operations.....

.....

b) Major purchasing.....

.....

c) Estimating .....

.....

d) Technical management.....

.....

10. **Management and control of the joint venture**

a) Identify the managing partner

.....

.....
.....

b) What authority does each partner have to commit or obligate the other to financial institutions, insurance companies, suppliers, subcontractors or other parties participating in the performance of the contemplated works:

Partner No. 1: .....

.....

Partner No. 2: .....

.....

Partner No. 3: .....

.....

c) Describe the management structure for the joint venture's work under this Contract

Management Function/Designation	Name	Partner

11. Personnel

a) State the approximate number of operative personnel (by trade/function/discipline) needed to execute the Joint Venture contract.

Trade/function/discipline	Number

b) State the number of operative personnel to be employed on the Contract who are currently in the employ of partners:

.....

c) State the number of operative personnel who are not currently in the employ of the respective partners and shall be engaged on the project by the Joint Venture:

.....

d) State the name of the individual who shall be responsible for hiring Joint Venture employees:

.....

e) State the name of the partner who shall be responsible for the preparation of Joint Venture payrolls:

.....

.....

12. Services

List the firms who provide the following services:

Service	Name	Contact Person	Telephone No.
Accounting			
Auditing			
Banking			
Insurance			
Legal			

13. Control and structure of the Joint Venture

Briefly describe the manner in which the Joint Venture is structured and controlled.

.....

.....

.....

The undersigned warrants that he/she is duly authorised to sign this Joint Venture disclosure form and affirms that the foregoing statements are correct and include all the material information necessary to identify and explain the terms and operations of the Joint Venture and the intended participation of each partner in the undertaking.

The undersigned further covenants and agrees to provide the Employer with complete and accurate information regarding actual joint venture work and the payment therefore, and any proposed changes in any provisions of the Joint Venture Agreement, and to permit the audit and examination of the books, records and files of the Joint Venture, or those of each partner relevant to the Joint Venture, by duly authorized representatives of the Employer.

Duly authorized to sign on behalf of.....
(the Joint Venture)

Signature: ..... Print Name: .....
Address: .....

.....

Telephone: .....

Date: .....

Duly authorized to sign on behalf of.....

(**Partner No. 1**)

Signature: .....Print Name: .....

Address: .....

.....

Telephone: .....

Date: .....

Duly authorized to sign on behalf of.....

(**Partner No. 2**)

Signature: .....Print Name: .....

Address: .....

.....

Telephone: .....

Date: .....

Duly authorized to sign on behalf of.....

(**Partner No. 3**)

Signature: ..... Print Name: .....

Address: .....

.....

Telephone: .....
Date: .....

D. COMPULSORY ENTERPRISE QUESTIONNAIRE

The following particulars must be furnished. In the case of a joint venture, **separate** enterprise questionnaires in respect of each partner must be completed and submitted.

Section 1: Name of enterprise: . . . . . .

Section 2: VAT registration number, if any: . . . . . .

Section 3: CIDB registration number, if any: . . . . . .

Section 4: Particulars of sole proprietors and partners in partnerships

Name*	Identity number*	Personal income tax number*

* Complete only if sole proprietor or partnership and attach separate page if more than 3 partners

Section 5: Particulars of companies and close corporations

Company registration number . . . . . .

Close corporation number . . . . . .

Tax reference number . . . . . .

Section 6: Record in the service of the state

Indicate by marking the relevant boxes with a cross, if any sole proprietor, partner in a partnership or director, manager, principal shareholder or stakeholder in a company or close corporation is currently or has been within the last 12 months in the service of any of the following:

☐ a member of any municipal council ☐ a member of any provincial legislature ☐ a member of the National Assembly or the National Council of Province ☐ a member of the board of directors of any municipal entity ☐ an official of any municipality or municipal entity	☐ an employee of any provincial department, national or provincial public entity or constitutional institution within the meaning of the Public Finance Management Act, 1999 (Act 1 of 1999) ☐ a member of an accounting authority of any national or provincial public entity ☐ an employee of Parliament or a provincial legislature

If any of the above boxes are marked, disclose the following:

Name of sole proprietor, partner, director, manager, principal shareholder or stakeholder	Name of institution, public office, board or organ of state and position held	Status of service (tick appropriate column)	
		Current	Within last 12 months

*insert separate page if necessary

Section 7: Record of spouses, children and parents in the service of the state

Indicate by marking the relevant boxes with a cross, if any spouse, child or parent of a sole proprietor, partner in a partnership or director, manager, principal shareholder or stakeholder in a company or close corporation is currently or has been within the last 12 months been in the service of any of the following:

☐ a member of any municipal council ☐ a member of any provincial legislature ☐ a member of the National Assembly or the National Council of Province ☐ a member of the board of directors of any municipal entity ☐ an official of any municipality or municipal entity	☐ an employee of any provincial department, national or provincial public entity or constitutional institution within the meaning of the Public Finance Management Act, 1999 (Act 1 of 1999) ☐ a member of an accounting authority of any national or provincial public entity ☐ an employee of Parliament or a provincial legislature

Name of spouse, child or parent	Name of institution, public office, board or organ of state and position held	Status of service (tick appropriate column)	
		Current	Within last 12 months

*insert separate page if necessary

The undersigned, who warrants that he / she is duly authorised to do so on behalf of the enterprise:

i) authorizes the Employer to obtain a tax clearance certificate from the South African Revenue Services that my / our tax matters are in order;

ii) confirms that the neither the name of the enterprise or the name of any partner, manager, director or other person, who wholly or partly exercises, or may exercise, control over the enterprise appears on the Register of Tender Defaulters established in terms of the Prevention and Combating of Corrupt Activities Act of 2004;

iii) confirms that no partner, member, director or other person, who wholly or partly exercises, or may exercise, control over the enterprise appears, has within the last five years been convicted of fraud or corruption;

iv) confirms that I / we are not associated, linked or involved with any other Tendering entities submitting Tender offers and have no other relationship with any of the Tenderers or those responsible for compiling the scope of work that could cause or be interpreted as a conflict of interest; and

v) confirms that the contents of this questionnaire are within my personal knowledge and are to the best of my belief both true and correct.

Signed		Date	
Name		Position	
Enterprise name			

E. RECORD OF ADDENDA TO TENDER DOCUMENTS

We confirm that the following communications received from the Employer before the submission of this Tender offer, amending the Tender documents, have been taken into account in this Tender offer:

No.	Date	Title or Details
1.		
2.		
3.		
4.		
5.		
6.		
7.		
8.		

Attach additional pages if more space is required.

Signed		Date	
Name		Position	
Tenderer			

F. PROPOSED AMENDMENTS AND QUALIFICATIONS

The Tenderer should record any deviations or qualifications he may wish to make to the Tender documents in this Returnable Schedule. Alternatively, a Tenderer may state such deviations and qualifications in a covering letter to his Tender and reference such letter in this schedule.

The Tenderer's attention is drawn to clause F.3.8 of the Standard Conditions of Tender referenced in the Tender Data regarding the employer's handling of material deviations and qualifications.

Page	Clause or item	Proposal

Signed		Date	
Name		Position	
Tenderer			

G. FORM OF INTENT TO PROVIDE A DEMAND GUARANTEE

If my/our Tender is accepted, I/we will, when required and within the time stipulated, provide a guarantee of

(*) Insurance Company (name).....

(of address) .....

.....

(*) Commercial Bank (Name).....

(Branch).....

(of address) .....

.....

to be approved by you, the Employer, for the amount stipulated.

(*): delete whichever is not applicable.

I/we understand that failure to produce an acceptable Demand Guarantee within the stipulated period is a fundamental breach of Contract, entitling the Employer to:

(i) withhold all payments which may be due to the Contractor pending compliance with the stipulated requirements to produce an acceptable Demand Guarantee.

(ii) instruct the Contractor to cease all work pending provision of the Demand Guarantee, and

(iii) cancel the Contract.

Signed	.....	Date	.....
Print Name	.....	Position	.....
Tenderer	.....		

H. SCHEDULE OF PROPOSED SUBCONTRACTORS

We notify you that it is our intention to employ the following Subcontractors for work in this contract.
If we are awarded a contract, we agree that this notification does not change the requirement for us to submit the names of proposed Subcontractors in accordance with requirements in the contract for such appointments. If there are no such requirements in the contract, then your written acceptance of this list shall be binding between us.
We confirm that all Subcontractors who are contracted to construct a house are registered as home builders with the National Home Builders Registration Council.

No	Name and address of proposed Subcontractor	Nature and extent of work	Previous experience with Subcontractor.
1.			
2.			
3.			
4.			
5.			

Signed		Date	
Name		Position	
Tenderer			

I. SCHEDULE OF AVAILABLE INFRASTRUCTURE, RESOURCES AND EXPERIENCE

1. Tenderer's List of Third Party Design Engineers

In the event that the Tenderer desires to design all or part of the Works or submit any alternative, he/she shall list here-following, the Design Engineers, accomplished in the specific field of practice, which he/she proposes to employ for the purpose of third party certification of all works designed by the Tenderer for the Works.

Notes: (i) All costs of third party designs shall be borne solely by the Tenderer.
(ii) This Schedule must be accurately completed. Phrases such as "to be advised" will not be accepted.

Section of Works	Name and Address of Registered Engineer				ECSA Registration No.

2. Tenderer's Personnel Profile

Key Staff Permanently employed, of foreman level and above	Number of staff
Sub-Total	
Other Permanent Staff	**Number of staff**
Sub-Total	
Temporary Staff	**Number of staff**
Sub-Total	

3. List the Firms who provide the following services:

Service	Name	Contact Person	Telephone
Accounting			
Auditing			
Insurance			
Legal			

4. Identify any amounts of money loaned to your enterprise, indicating the loan source, date and amount

Loan Source	Address	Date of Loan	Loan Amount

5. List a maximum of five contract which your enterprise is engaged in and has not yet completed

Contract Description	Location	Client	Contract Amount	Expected Completion (month & year)

6. List the four largest assignments completed by your enterprise in the last three years

Nature of Work Performed	Client	Consultant Contact Person	Telephone No.	Contract Amount

7. Address of workshop facilities from where maintenance of works will be undertaken

.....

.....

8. Address of Branch Offices in the RSA

.....

.....

8. Address of Nearest Representative to MAKHADO

.....

.....

10. Has work previously been performed for the Employer? YES/NO* -

Specify.....

11. Tenderer's Financial Ability to execute and complete the Works

Provide the estimated cash flow on the project in terms of submissions of payment certificates or payment schedules of the Employer.

NOTES APPLICABLE:

(i) Value added tax to be included in all amounts

(ii) Assume for the purpose of this estimate, payment of certificates within 30 days after receipt by the Employer.

(iii) In calculation of the last column,

j = d	m = l + g
k = j + e	n = m + h
l = k + f	etc

(iv) Failure to detail the required information, shall automatically signify that the Tenderer lacks the infrastructure and resources necessary to execute and complete the Works

Month No. in Contract Period	**Estimated amount in Rands (VAT included)**			
	a Received	**b Payments made**	**a-b Net cash flow**	**Cumulative cash flow**
1	-		d	j
2			e	k
3			f	l
4			g	m
5			h	n
6			etc.	etc.
7				
8				
9				
10				
11				
12				
Maximum negative cash flow. Take the largest negative number in the last column and write in here → → → → →				

Signed	.....	Date	.....
Print Name	.....	Position	.....
Tenderer	.....		

J. FINANCIAL INFORMATION OF TENDERER

This information sheet has to be filled in by the financier of the Tenderer, duly signed and stamped on behalf of the financial institution he represents.

Tenderer Details

Tender Description : .....

Contract Period : .....

Name of Tenderer : .....

Bank Account Number : .....

Tendered Amount : .....

Demand Guarantee will be provided by this Bank: YES □ NO □

If yes, state amount of Demand Guarantee: R .....

Financial Institution

Name of Commercial Bank : .....

Branch : .....

Name of Bank Manager : .....

Telephone Number : .....

I / We acting on behalf of the above Commercial Bank confirm that

..... (Tenderer)

has operated an account with us for the last ..... years.
We have been requested to provide a bank rating based in relation to the financial capability of the Tenderer, taking into account directives set out in the following two tables.

Financial Capability	
Maximum value of contract that the Tenderer is considered capable of	Value on which Bank Rating must be used
up to R300 000	R24 000
R1 000 000	R78 000
R3 000 000	R240 000
R5 000 000	R480 000
R10 000 000	R900 000
R30 000 000	R2 400 000
R100 000 000	R7 800 000

BANK RATING	
Bank Code	**Description of Bank Code**
A	Undoubted for the amount of enquiry
B	Good for the amount of enquiry
C	Good for the amount quoted if strictly in the way of business
D	Fair trade risk for amount of enquiry
E	Figures considered too high
F	Financial position unknown
G	Occasional dishonours
H	Frequent dishonours

The value on which our Bank Rating of the Tenderer is based is R.....

(In words..... only)

ANNEXURE: B

K. CERTIFICATE FOR MUNICIPAL SERVICES AND PAYMENTS

TO: MUNICIPAL MANAGER, MAKHADO MUNICIPALITY

FROM: _____(Name of Tenderer)

FURTHER DETAILS OF TENDERER(S); DIRECTORS/SHAREHOLDERS/PARTNERS, ETC.

Directors/share holders/Partner	Physical address of the Business	Municipal Account No.	Physical residential address of the Director/ Shareholder/ Partner	Municipal Account No.

NB: Please attach certified copy of ID document(s)

_____ _____

Signatory **Date**

Witnesses

1. _____ _____ _____

Full Names **Signature** **Date**

2. _____ _____ _____

Full Names **Signature** **Date**

ANNEXURE: C

L. AUTHORISATION FOR DEDUCTION OF OUTSTANDING AMOUNTS OWED TO COUNCIL

TO: MUNICIPAL MANAGER, MAKHADO MUNICIPALITY

FROM: _____ (Name of the Tenderer or Consortium)

I, _____ the undersigned, hereby authorise the MAKHADO Municipality to deduct the full amount outstanding by the business organisation/Director/Shareholder/Partner, etc. from any payment due by us/me.

Signed at _____ Date_____ Month _____ 20_____

Print Name: _____

Signature: _____

Thus, done and signed for and on behalf of the Tenderer/Contractor

_____ _____
Signatory **Date**

Witnesses

1. _____ _____ _____
Full Names **Signature** **Date**

2. _____ _____ _____
Full Names **Signature** **Date**

M. DECLARATION OF TENDERER'S PAST SUPPLY CHAIN MANAGEMENT PRACTICES

1. This Municipal Tendering Document must form part of all Tenders invited.
2. It serves as a declaration to be used by municipalities and municipal entities in ensuring that when goods and services are being procured, all reasonable steps are to combat the abuse of the supply chain management system.
3. **The of any Tenderer may be rejected if the Tenderer, or any of its directors have:**
   a) Abused the Municipality's Supply Chain Management System or committed any improper conduct in relation to such system:
   b) Been convicted for fraud or corruption during the past five years:
   c) Wilfully neglected, reneged or failed to comply with any government, municipal or public sector contract during the past five years; or
   d) Been listed in the Register for Tender Defaulters in terms of section 29 of the Prevention and Combating of Corruption Activities Act (No 12 of 2004).
4. **In order to give effect to the above, the following questionnaire must be completed and submitted with the Tender.**

ITEM	QUESTION	YES	NO
4.1	Is the Tenderer or any of its directors listed on the National Treasury's database as a company or person prohibited from doing business with the public sector? **(Companies or persons who are listed on this database were informed in writing of this restriction by the National Treasury after the audi alteram partem rule was applied).**		
4.1.1	If so, furnish particulars:		
4.2	Is the Tenderer or any of its directors listed on the Register for Tender Defaulters in terms of section 29 of the Prevention and Combating of Corruption Activities Act (No 12 of 2004)? **(To access this Register, enter the National Treasury's website www.treasury.gov.za, click on the icon "Register for Tender Defaulters" or submit your written request for a hard copy of the Register to facsimile number (012 326 5445).**		
4.2.1	If so, furnish particulars:		
4.3	Was the Tenderer or any of its directors convicted by a court of law (including a court of law outside the Republic of South Africa) for fraud or corruption during the past five years?		
4.3.1	If so, furnish particulars:		
4.4	Does the Tenderer or any of its directors owe any municipal rates and taxes or municipal charges to the municipality/municipal entity, or any other municipality/municipal entity, that is in arrears for more than three months?		
4.4.1	If so, furnish particulars:		
4.5	Was any contract between the Tenderer and the municipality/municipal entity or any other organ of state terminated during the past five years on account of failure to perform on or comply with the contract?		
4.5.1	If so, furnish particulars:		

CERTIFICATION

I, THE UNDERSIGNED (FULL NAME) _____
CERTIFY THAT THE INFORMATION FURNISHED ON THIS DECLARATION FORM TO BE TRUE AND CORRECT.

I ACCEPT THAT, IN ADDITION TO CANCELLATION OF A CONTRACT, ACTION MAY BE TAKEN AGAINST ME SHOULD THIS DECLARATION PROVE TO BE FALSE.

_____	_____
Signature	Date
_____	_____
Position	Name of Tenderer

N. DECLARATION OF INTEREST

1. No Tender will be accepted from persons in the service of the State*.

2. Any person, having a kinship with persons in the service of the State, including a blood relationship, may make an offer/s in terms of this invitation to Tender. In view of possible allegations of favouritism, should the resulting Tender, or part thereof, be awarded to persons connected with or related to persons in service of the State, it is required that the Tenderer or their authorised representative declare their position in relation to the evaluating/adjudicating authority and/or take an oath declaring his/her interest.

3. In order to give effect to the above, the following questionnaire must be completed and submitted with the Tender.

Full Name: _____

Identity No: _____

Company Registration No: _____

Tax Reference No: _____

VAT Registration No: _____

Are you at present in the service of the State? **Yes/No**

If so, furnish particulars

- **Municipal Supply Chain Management Regulation**: "In the service of the State" means to be –

  (a) A member of –
    (i) Any Municipal council;
    (ii) Any Provincial legislature; or
    (iii) The National Assembly or National Council of Provinces
  (b) A member of board of directors of any municipal entity;
  (c) An official of any municipality or municipal entity;
  (d) An employee of any national or provincial department, national or provincial public entity or constitutional institution within the meaning of the Public Finance Management Act, 1999 (Act No. 1of 1999);
  (e) A member of Parliament or provincial legislature.
  (f) A member of the accounting authority of any national or provincial public entity; or
  (g) An employee of Parliament or a provincial legislature

Have you been in the service of the State for the past twelve months? **YES/NO**

If so, furnish particulars.

Do you have any relationship (family, friend, other) with persons in the service of the State and who may be involved with the evaluation or adjudication of this Tender? **YES/NO**

If so, furnish particulars.

Are you aware of any relationship (family, friend, other) between a Tenderer and any persons in the service of the State who may be involved with the evaluation or adjudication of this Tender? **YES/NO**

If so, furnish particulars?

Are any of the company's directors, managers, principle shareholders or stakeholders in service of the State? **YES/NO**

If so, furnish particulars.

Are any spouses, child or parent of the company's directors, managers, principle shareholders or stakeholders in service of the State? **YES/NO**

If so, furnish particulars?

CERTIFICATION

CERTIFY THAT THE INFORMATION FURNISHED ON THIS DECLARATION FORM IS CORRECT. I ACCEPT THAT THE STATE MAY ACT AGAINST ME SHOULD THIS DECLARATION PROVE TO BE FALSE.

Signature	**Date**
Position	**Name of Tenderer**

This document must be signed and submitted together with your Tender

O. THE NATIONAL INDUSTRIAL PARTICIPATION PROGRAMME

INTRODUCTION

The National Industrial Participation (NIP) Programme, which is applicable to all government procurement contracts that have an imported content, became effective on the 1 September 1996. The NIP policy and guidelines were fully endorsed by Cabinet on 30 April 1997. In terms of the Cabinet decision, all state and parastatal purchases / lease contracts (for goods, works and services) entered into after this date, are subject to the NIP requirements. NIP is obligatory and therefore must be complied with. The Industrial Participation Secretariat (IPS) of the Department of Trade and Industry (DTI) is charged with the responsibility of administering the programme.

1 PILLARS OF THE PROGRAMME

1.1 The NIP obligation is benchmarked on the imported content of the contract. Any contract having an imported content equal to or exceeding US$ 10 million or other currency equivalent to US$ 10 million will have a NIP obligation. This threshold of US$ 10 million can be reached as follows:

(a) Any single contract with imported content exceeding US$10 million, Or

(b) Multiple contracts for the same goods, works or services each with imported content exceeding US$3 million awarded to one seller over a 2 year period which in total exceeds US$10 million. or

(c) A contract with a renewable option clause, where should the option be exercised the total value of the imported content will exceed US$10 million. or

(d) Multiple suppliers of the same goods, works or services under the same contract, where the value of the imported content of each allocation is equal to or exceeds US$ 3 million worth of goods, works or services to the same government institution, which in total over a two (2) year period exceeds US$10 million.

1.2 The NIP obligation applicable to suppliers in respect of sub-paragraphs 1.1 (a) to 1.1 (c) above will amount to 30 % of the imported content whilst suppliers in respect of paragraph 1.1 (d) shall incur 30% of the total NIP obligation on a *pro-rata* basis.

1.3 To satisfy the NIP obligation, the DTI would negotiate and conclude agreements such as investments, joint ventures, sub-contracting, licensee production, export promotion, sourcing arrangements and research and development (R&D) with partners or suppliers

A period of seven years has been identified as the time frame within which to discharge the obligation

2. REQUIREMENTS OF THE DEPARTMENT OF TRADE AND INDUSTRY

2.1 In order to ensure effective implementation of the programme, successful Tenderers (contractors) are required to, immediately after the award of a contract that is in excess of **R10 million** (ten million Rands), submit details of such a contract to the DTI for reporting purposes.

2.2 The purpose for reporting details of contracts in excess of the amount of R10 million (ten million Rands) is to cater for multiple contracts for the same goods, works or services; renewable

contracts and multiple suppliers for the same goods, works or services under the same contract as provided for in paragraphs 1.1.(b) to 1.1. (d) above.

3 TENDER SUBMISSIONS AND CONTRACT REPORTING REQUIREMENTS OF TENDERERS AND SUCCESSFUL TENDERERS (CONTRACTORS)

3.1 Tenderers are required to sign and submit this Standard Tendering Document (SBD 5) together with the Tender on the closing date and time.

3.2 In order to accommodate multiple contracts for the same goods, works or services; renewable contracts and multiple suppliers for the same goods, works or services under the same contract as indicated in sub-paragraphs 1.1 (b) to 1.1 (d) above and to enable the DTI in determining the NIP obligation, successful Tenderers (contractors) are required, immediately after being officially notified about any successful Tender with a value in excess of R10 million (ten million Rands), to contact and furnish the **DTI with the following information**:

- Tender / contract number.
- Description of the goods, works or services.
- Date on which the contract was accepted.
- Name, address and contact details of the government institution.
- Value of the contract.
- Imported content of the contract, if possible.

3.3 The information required in paragraph 3.2 above must be sent to the Department of Trade and Industry, Private Bag X 84, Pretoria, 0001 for the attention of Mr Elias Malapane within five (5) working days after award of the contract. Mr Malapane may be contacted on telephone (012) 394 1401, facsimile (012) 394 2401 or e-mail at Elias@thedti.gov.za for further details about the programme.

4 PROCESSES TO SATISFY THE NIP OBLIGATION

4.1 Once the successful Tenderer (contractor) has made contact with and furnished the DTI with the information required, the following steps will be followed:

(a) the contractor and the DTI will determine the NIP obligation;

(b) the contractor and the DTI will sign the NIP obligation agreement;

(c) the contractor will submit a performance guarantee to the DTI;

(d) the contractor will submit a business concept for consideration and approval by the DTI;

(e) upon approval of the business concept by the DTI, the contractor will submit detailed business plans outlining the business concepts;

(f) the contractor will implement the business plans; and

(g) the contractor will submit bi-annual progress reports on approved plans to the DTI.

4.2 The NIP obligation agreement is between the DTI and the successful Tenderer (contractor) and, therefore, does not involve the purchasing institution

Tender number ..... Closing date:.....

Name of Tenderer.....

Postal address .....

.....

Signature..... Name (in print) .....

Date.....

P. DECLARATION FOR PROCUREMENT ABOVE R10 MILLION (ALL APPLICABLE TAXES INCLUDED

For all procurement expected to exceed R10 million (all applicable taxes included), Tenderers must complete the following questionnaire

1 Are you by law required to prepare annual financial statements for auditing?

1.1 If yes, submit audited annual financial statements for the past three years or since the date of establishment if established during the past three years.

.....

.....

2 Do you have any outstanding undisputed commitments for municipal services towards any Municipality for more than three months or any other service provider in respect of which payment is overdue for more than 30 days?

2.1 If no, this serves to certify that the Tenderer has no undisputed commitments for municipal services towards any municipality for more than three months or other service provider in respect of which payment is overdue for more than 30 days.

2.2 If yes, provide particulars.

.....
.....
.....
.....

* Delete if not applicable

3 Has any contract been awarded to you by an organ of state during the past five years, including particulars of any material non-compliance or dispute concerning the execution of such contract? ***YES / NO**

3.1 If yes, furnish particulars

.....
.....

4 Will any portion of goods or services be sourced from outside the Republic, and, if so, what portion and whether any portion of payment from the municipality / municipal entity is expected to be transferred out of the Republic? ***YES/NO**

4.1 If yes, furnish particulars

.....
.....

CERTIFICATION

I, THE UNDERSIGNED (NAME) .....

CERTIFY THAT THE INFORMATION FURNISHED ON THIS DECLARATION FORM IS CORRECT.

I ACCEPT THAT THE STATE MAY ACT AGAINST ME SHOULD THIS DECLARATION PROVE TO BE FALSE.

.....	.....
Signature	Date
.....	.....
Position	Name of Tenderer

Q. DECLARATION CERTIFICATE FOR LOCAL PRODUCTION AND CONTENT

This Municipal Tendering Document (MBD) must form part of all Tenders invited. It contains general information and serves as a declaration form for local content (local production and local content are used interchangeably).

Before completing this declaration, Tenderers must study the General Conditions, Definitions, Directives applicable in respect of Local Content as prescribed in the Preferential Procurement Regulations, 2011 and the South African Bureau of Standards (SABS) approved technical specification number SATS 1286:201x.

1. General Conditions

1.1. Preferential Procurement Regulations, 2011 (Regulation 9. (1) and 9. (3) make provision for the promotion of local production and content.

1.2. Regulation 9. (1) prescribes that in the case of designated sectors, where in the award of Tenders local production and content is of critical importance, such Tenders must be advertised with the specific Tendering condition that only locally produced goods, services or works or locally manufactured goods, with a stipulated minimum threshold for local production and content will be considered.

1.3. Regulation 9. (3) prescribes that where there is no designated sector, a specific Tendering condition may be included, that only locally produced services, works or goods or locally manufactured goods with a stipulated minimum threshold for local production and content, will be considered.

1.4. Where necessary, for Tenders referred to in paragraphs 1.2 and 1.3 above, a two stage Tendering process may be followed, where the first stage involves a minimum threshold for local production and content and the second stage price and B-BBEE.

1.5. A person awarded a contract in relation to a designated sector, may not sub-contract in such a manner that the local production and content of the overall value of the contract is reduced to below the stipulated minimum threshold.

1.6. The local content (LC) as a percentage of the Tender price must be calculated in accordance with the SABS approved technical specification number SATS 1286: 201x as follows:

$$LC = 1 - \left(\frac{x}{y}\right) \times 100$$

Where
x imported content
y Tender price excluding value added tax (VAT)

Prices referred to in the determination of x must be converted to Rand (ZAR) by using the exchange rate published by the South African Reserve Bank (SARB) at 12:00 on the date, one week (7 calendar days) prior to the closing date of the Tender as required in paragraph 4.1 below.

1.7. A Tender will be disqualified if:

- The Tenderer fails to achieve the stipulated minimum threshold for local production and content indicated in paragraph 3 below; and this declaration certificate is not submitted as part of the Tender documentation.

2. Definitions

2.1. **"Tender"** includes advertised competitive Tenders, written price quotations or proposals;

2.2. **"Tender price"** price offered by the Tenderer, excluding value added tax (VAT);

2.3. **"contract"** means the agreement that results from the acceptance of a Tender by an organ of state;

2.4. **"designated sector"** means a sector, sub-sector or industry that has been designated by the Department of Trade and Industry in line with national development and industrial policies for local production, where only locally produced services, works or goods or locally manufactured goods meet the stipulated minimum threshold for local production and content;

2.5. **"Duly sign** "means a Declaration Certificate for Local Content that has been signed by the Chief Financial Officer or other legally responsible person nominated in writing by the Chief Executive, or senior member / person with management responsibility (close corporation, partnership or individual).

2.6. **"imported content"** means that portion of the Tender price represented by the cost of components, parts or materials which have been or are still to be imported (whether by the supplier or its subcontractors) and which costs are inclusive of the costs abroad, plus freight and other direct importation costs, such as landing costs, dock duties, import duty, sales duty or other similar tax or duty at the South African port of entry;

2.7. **"local content"** means that portion of the Tender price which is not included in the imported content, provided that local manufacture does take place;

2.8. **"stipulated minimum threshold"** means that portion of local production and content as determined by the Department of Trade and Industry; and

2.9. **"Sub-contract"** means the primary contractor's assigning, leasing, making out work to, or employing another person to support such primary contractor in the execution of part of a project in terms of the contract.

3. **The stipulated minimum threshold(s) for local production and content for this Tender is/are as follows:**

Description of services, works or goods	Stipulated minimum threshold
_____	_____%
_____	_____%
_____	_____%

4. **Does any portion of the services, works or goods offered have any imported content?**

YES / NO

4.1 If yes, the rate(s) of exchange to be used in this Tender to calculate the local content as prescribed in paragraph 1.6 of the general conditions must be the rate(s) published by the SARB for the specific currency at 12:00 on the date, one week (7 calendar days) prior to the closing date of the Tender.

The relevant rates of exchange information is accessible on www.reservebank.co.za.

Indicate the rate(s) of exchange against the appropriate currency in the table below:

Currency	Rates of exchange
US Dollar	
Pound Sterling	
Euro	
Yen	
Other	

NB: Tenderers must submit proof of the SARB rate (s) of exchange used.

LOCAL CONTENT DECLARATION BY CHIEF FINANCIAL OFFICER OR OTHER LEGALLY RESPONSIBLE PERSON NOMINATED IN WRITING BY THE CHIEF EXECUTIVE OR SENIOR MEMBER/PERSON WITH MANAGEMENT RESPONSIBILITY (CLOSE CORPORATION, PARTNERSHIP OR INDIVIDUAL)

IN RESPECT OF TENDER No. .....

ISSUED BY: (Procurement Authority / Name of Municipality / Municipal Entity):
.....

NB The obligation to complete, duly sign and submit this declaration cannot be transferred to an external authorized representative, auditor or any other third party acting on behalf of the Tenderer.

I, the undersigned, ... (full names),

do hereby declare, in my capacity as .....

of .....(name of Tenderer entity), the following:

(a) The facts contained herein are within my own personal knowledge.
(b) I have satisfied myself that the goods/services/works to be delivered in terms of the above-specified Tender comply with the minimum local content requirements as specified in the Tender, and as measured in terms of SATS 1286.
(c) The local content has been calculated using the formula given in clause 3 of SATS 1286, the rates of exchange indicated in paragraph 4.1 above and the following figures:

Tender price, excluding VAT (y)	R
Imported content (x)	R
Stipulated minimum threshold for Local content (paragraph 3 above)	
Local content % as calculated in terms of SATS 1286	

If the Tender is for more than one product, a schedule of the local content by product shall be attached.

(d) I accept that the Procurement Authority / Municipality /Municipal Entity has the right to request that the local content be verified in terms of the requirements of SATS 1286.

(e) I understand that the awarding of the Tender is dependent on the accuracy of the information furnished in this application. I also understand that the submission of incorrect data, or data that are not verifiable as described in SATS 1286, may result in the Procurement Authority / Municipal / Municipal Entity imposing any or all of the remedies as provided for in Regulation 13 of the Preferential Procurement Regulations, 2011 promulgated under the Policy Framework Act (PPPFA), 2000 (Act No. 5 of 2000).

SIGNATURE: _____ **DATE:** _____

WITNESS No. 1 _____ **DATE:** _____

WITNESS No. 2 _____ **DATE:** _____

R. CERTIFICATE OF INDEPENDENT TENDER DETERMINATION

1 This Municipal Tendering Document (MBD) must form part of all Tenders[1] invited.

2 Section 4 (1) (b) (iii) of the Competition Act No. 89 of 1998, as amended, prohibits an agreement between, or concerted practice by, firms, or a decision by an association of firms, if it is between parties in a horizontal relationship and if it involves collusive Tendering (or Tender rigging).[2] Collusive Tendering is a *pe se* prohibition meaning that it cannot be justified under any grounds.

3 Municipal Supply Regulation 38 (1) prescribes that a supply chain management policy must provide measures for the combating of abuse of the supply chain management system, and must enable the accounting officer, among others, to:

a. take all reasonable steps to prevent such abuse;

b. reject the Tender of any Tenderer if that Tenderer or any of its directors has abused the supply chain management system of the municipality or municipal entity or has committed any improper conduct in relation to such system; and

c. cancel a contract awarded to a person if the person committed any corrupt or fraudulent act during the Tendering process or the execution of the contract.

4 This MBD serves as a certificate of declaration that would be used by institutions to ensure that, when Tenders are considered, reasonable steps are taken to prevent any form of Tender-rigging.

5 In order to give effect to the above, the attached Certificate of Tender Determination (MBD 9) must be completed and submitted with the Tender:

[1] Includes price quotations, advertised competitive Tenders, limited Tenders and proposals.

[2] Tender rigging (or collusive Tendering) occurs when businesses, that would otherwise be expected to compete, secretly conspire to raise prices or lower the quality of goods and / or services for purchasers who wish to acquire goods and / or services through a Tendering process. Tender rigging is, therefore, an agreement between competitors not to compete.

S. CERTIFICATE OF INDEPENDENT TENDER DETERMINATION

I, the undersigned, in submitting the accompanying Tender:

_____

(Tender Number and Description)

in response to the invitation for the Tender made by:

_____

(Name of Municipality / Municipal Entity)

do hereby make the following statements that I certify to be true and complete in every respect:

I certify, on behalf of: _____ that:

(Name of Tenderer)

1. I have read and I understand the contents of this Certificate;

2. I understand that the accompanying Tender will be disqualified if this Certificate is found not to be true and complete in every respect;

3. I am authorized by the Tenderer to sign this Certificate, and to submit the accompanying Tender, on behalf of the Tenderer;

4. Each person whose signature appears on the accompanying Tender has been authorized by the Tenderer to determine the terms of, and to sign, the Tender, on behalf of the Tenderer;

5. For the purposes of this Certificate and the accompanying Tender, I understand that the word "competitor" shall include any individual or organization, other than the Tenderer, whether or not affiliated with the Tenderer, who:

   (a) has been requested to submit a Tender in response to this Tender invitation;
   (b) could potentially submit a Tender in response to this Tender invitation, based on their qualifications, abilities or experience; and
   (c) provides the same goods and services as the Tenderer and/or is in the same line of business as the Tenderer

6. The Tenderer has arrived at the accompanying Tender independently from, and without consultation, communication, agreement or arrangement with any competitor. However communication between partners in a joint venture or consortium[3] will not be construed as collusive Tendering.

7. In particular, without limiting the generality of paragraphs 6 above, there has been no consultation, communication, agreement or arrangement with any competitor regarding:
   (a) prices;
   (b) geographical area where product or service will be rendered (market allocation)
   (c) methods, factors or formulas used to calculate prices;
   (d) the intention or decision to submit or not to submit, a Tender;
   (e) the submission of a Tender which does not meet the specifications and conditions of the Tender; or
   (f) Tendering with the intention not to win the Tender.

8. In addition, there have been no consultations, communications, agreements or arrangements with any competitor regarding the quality, quantity, specifications and conditions or delivery particulars of the products or services to which this Tender invitation relates.

9. The terms of the accompanying Tender have not been, and will not be, disclosed by the Tenderer, directly or indirectly, to any competitor, prior to the date and time of the official Tender opening or of the awarding of the contract.

[3] **Joint venture or Consortium means an association of persons for the purpose of combining their expertise, property, capital, efforts, skill and knowledge in an activity for the execution of a contract.**

10. I am aware that, in addition and without prejudice to any other remedy provided to combat any restrictive practices related to Tenders and contracts, Tenders that are suspicious will be reported to the Competition Commission for investigation and possible imposition of administrative penalties in terms of section 59 of the Competition Act No 89 of 1998 and or may be reported to the National Prosecuting Authority (NPA) for criminal investigation and or may be restricted from conducting business with the public sector for a period not exceeding ten (10) years in terms of the Prevention and Combating of Corrupt Activities Act No 12 of 2004 or any other applicable legislation.

.....	.....
Signature	**Date**
.....	.....
Position	**Name of Tenderer**

T. COMPLIANCE WITH OHSA (ACT 85 OF 1993)

Tenderers are required to satisfy the Employer and the Engineer as to their ability and available resources to comply with the above by answering the following questions and providing the relevant information required below.

1. Is the Contractor familiar with the OHSA (ACT 85 of 1993) and its Regulations?		**YES**	/	**NO**
2. Who will prepare the Contractor's Health and Safety Plan? (Provide a copy of the person/s curriculum vitae/s or company profile).		**YES**	/	**NO**
3. Does the Contractor have a health and safety policy? (If yes, provide a copy). How is this policy communicated to all employees?		**YES**	/	**NO**
4. Does the Contractor keep records of safety aspects of each construction site? If yes, what records are kept?		**YES**	/	**NO**
5. Does the Contractor conduct monthly safety meetings? If yes, who is the chairperson of the meeting, and who attend these meetings?		**YES**	/	**NO**
6. Does the Contractor have a safety officer in his employment, responsible for the overall safety of his company? If yes, please explain his duties and provide a copy of his CV.		**YES**	/	**NO**
7. Does the Contractor have trained first aid employees? If yes, indicate, who.		**YES**	/	**NO**
8. Does the Contractor have a safety induction-training programme in place? (If yes, provide a copy)		**YES**	/	**NO**

Signature of Tenderer: .....**Date:** .....

U. ORIGINAL BANK RATING LETTER

Attached the Bank Rating to this Page

V. DAY WORK SCHEDULE

This Day work Schedule shall be used for the valuation of any additional or substituted work which cannot conveniently be valued at the rates and prices submitted in the schedule of quantities.

In respect of labour and materials used in the additional or substituted work not covered in the Day work Schedule the Contractor shall be paid the actual cost plus the percentage allowance stated in the schedule of quantities.

The Tenderer shall quote hereunder rates which shall apply for payment purposes if the Engineer orders additional or substituted work to be carried out on a day work basis and shall therefore be in accordance with the requirements of clause 37(2) of the General Conditions of Contract.

1. LABOUR AND MATERIALS

Rates and prices entered in the schedule shall be held to allow for net cost of labour and materials delivered to site respectively with the percentage allowances stated in the schedule of quantities.

2. PLANT AND EQUIPMENT

The Tenderers shall list all major items of plant and equipment to be used on the works and which may be required for use on day works. The proposed hire rates of these items shall be entered against each type of machine, such rates to include for all relevant costs of plant hire inclusive of fuels and lubricants but exclusive of labour charges for the operators, which will be paid for under sub-clause (1) above.

The rates for plant items not listed in the schedule will be the ruling plant hire rates, inclusive of fuels and lubricants but exclusive of labour charges for the operators, inclusive of a 7,5% handling charge. It is therefore in the Tenderers interest to ensure that the list is complete.

Should there be insufficient space on the pages provided; the Tenderer shall add further pages as required.

THE RATES FOR THE PLANT AND EQUIPMENT MENTIONED IN THE SCHEDULE SHALL BE FILLED IN FOR THE ITEMS REQUESTED. SHOULD AN ITEM BE OMITTED IT SHALL BE DEEMED TO HAVE BEEN INCLUDED IN THE OTHER DAYWORKS RATES.

I. LABOUR

DESIGNATION		RATE	
		R	C
Brick Layers	per hour		
Plant Operators	per hour		
Truck Drivers	per hour		
Labour - unskilled	per hour		
- semi-skilled	per hour		
- skilled	per hour		

II. MATERIALS

DESIGNATION		RATE	
		R	C
Cement	per 50 kg pocket delivered		
Concrete Sand	per m^3 delivered		
Concrete Aggregate	per m^3 delivered		

III. TRANSPORT

DESIGNATION	RATE	
	R	C
Per cubic metre kilometre		

IV. PLANT AND EQUIPMENT

ITEM	DESCRIPTION	NON-WORKING RATE*		OPERATING RATE		PER
		R	c	R	C	UNIT
	LDV					
	Flatbed truck (20ton)					
	16000Litres Water Tanker					
	TLB					
	Truck 4ton					

*Only applicable on authority of the Employer's Agent.

MAKHADO MUNICIPALITY

PART C1: AGREEMENTS AND CONTRACT DATA

C1.1: FORM OF OFFER AND ACCEPTANCE

C1.2: CONTRACT DATA

C1.3: DEMAND GUARANTEE AND RETENTION MONEY GUARANTEE

C1.4: AGREEMENT IN TERMS OF SECTION 37(2) OF THE OCCUPATIONAL HEALTH AND SAFETY ACT No 85 OF 1993

C1.5: AGREEMENT WITH ADJUDICATOR

MAKHADO MUNICIPALITY

PROJECT DESCRIPTION: UPGRADING OF LUVHALANI TO DZANANWA ACCESS ROAD FROM GRAVEL TO PAVED ROAD

C1.1 Form of Offer and Acceptance

Offer

The Employer, identified in the Acceptance signature block, has solicited offers to enter into a contract for the procurement of construction works viz.:

Project Description: _____

Contract No. _____

The Tenderer, identified in the Offer signature block, has examined the documents listed in the Tender Data and addenda thereto as listed in the Tender Schedules, and by submitting this offer has accepted the Conditions of Tender.

By the representative of the Tenderer, deemed to be duly authorized, signing this part of this Form of Offer and Acceptance, the Tenderer offers to perform all of the obligations and liabilities of the Contractor under the Contract including compliance with all its terms and conditions according to their true intent and meaning for an amount to be determined in accordance with the Conditions of Contract identified in the Contract Data.

The offered total of the prices inclusive of value-added-tax is

.....

.....(Amount in words);

R..... (Amount in figures)
This Offer may be accepted by the Employer by signing the Acceptance part of this Form of Offer and Acceptance and returning one copy of this document to the Tenderer before the end of the period of validity stated in the Tender Data, whereupon the Tenderer becomes the party named as the Contractor in terms of the Conditions of Contract identified in the Contract Data.

Signature(s) .....

Print Name(s) .....

Capacity .....

For the Tenderer.....

(Name and address of organization).....

Signature of witness.....Date: .....

Print Name .....

<u>Important Note:</u> This page to be duly completed by the Tenderer before submitting the Tender.

ACCEPTANCE

By signing this part of this Form of Offer and Acceptance, the Employer accepts the Tenderer's Offer. In consideration, thereof, the Employer shall pay the Contractor the amount due in accordance with the Conditions of Contract identified in the Contract Data. Acceptance of the Tenderer's Offer shall form an agreement between the Employer and the Tenderer upon the terms and conditions contained in this Agreement and in the Contract that is the subject of this Agreement.
The terms of the contract are contained in

Part 1: Agreements and Contract Data (which include this Agreement)

Part 2: Pricing Data

Part 3: Scope of Work

Part 4: Site Information

and drawings and documents or parts thereof, which may be incorporated by reference into parts 1 to 4 above.

Deviations from and amendments to the documents listed in the Tender Data and any addenda thereto, as listed in the Tender Schedules, as well as any changes to the terms of the Offer agreed by the Tenderer and the Employer during this process of offer and acceptance, are contained in the Schedule of Deviations attached to and forming part of this Agreement. No amendments to or deviations from said documents are valid unless contained in this Schedule, which shall be signed by the authorized representative(s) of both parties.

The Tenderer shall, within 7 days of receiving a completed copy of this Agreement (including the Schedule of Deviations, if any), contact the Employer's Agent (whose details are given in the Contract Data) to arrange the delivery of any guarantees, proof of insurance and any other documentation to be provided in terms of the Conditions of Contract identified in the Contract Data. Failure to fulfil any of the obligations in accordance with those terms shall constitute a repudiation of this Agreement.

Notwithstanding anything contained herein, this Agreement comes into effect on the date when the Tenderer receives one fully completed copy of this original document, including the Schedule of Deviations (if any). Such date should be confirmed in a manner that can be read, copied and recorded and shall be accepted by the contracting parties as the Commencement Date. This agreement shall constitute a binding contract between the parties.

Signature(s) .....

Print Name(s) .....

Capacity .....

For the Employer .....
(Name of Organization)

.....

.....
(Address of Organization)

Signature of witness..... Date: .....

Print Name .....

SCHEDULE OF DEVIATIONS

The extent of deviations from the Tender documents issued by the Employer before the Tender closing date is limited to those permitted in terms of the Conditions of Tender.

A Tenderer's covering letter shall not be included in the final contract document. Should any matter in such letter, which constitutes a deviation as aforesaid, be the subject of agreements reached during the process of offer and acceptance, the outcome of such agreement shall be recorded here.

Any other matter arising from the process of offer and acceptance either as a confirmation, clarification or change to the Tender documents, and which it is agreed by the Parties becomes an obligation of the contract, shall also be recorded here.

Any change or addition to the Tender documents arising from the above agreements and recorded here shall also be incorporated into the final Contract Document.

3.1 Subject.....

Details.....

3.2 Subject.....

Details.....

3.3 Subject.....

Details.....

By the duly authorized representatives signing this Schedule of Deviations, the Employer and the Contractor agree to and accept the foregoing Schedule of Deviations as the only deviations from and amendments to the documents listed in the Tender Data and addenda thereto as listed in the Tender Schedules, as well as any confirmation, clarification or changes to the terms of the offer agreed by the Contractor and the Employer in concluding this process of offer and acceptance; in witness thereof the parties hereto have caused this agreement to be executed.

It is expressly agreed that no other matter whether in writing, oral communication or implied during the period between the issue of the Tender documents and the receipt by the Contractor of a completed signed copy of this Agreement shall have any meaning or effect in the contract between the parties arising from this Agreement.

Signed by: .....Signed by: .....

Print Name: .....Print Name: .....

Address: ..... Address: .....

.....

For and on behalf of the **Employer** in the Presence of

Witness: .....

Print Name: .....

Date: .....

.....

For and on behalf of the **Contractor** in the presence of

Witness: .....

Print Name: .....

Date.....

MAKHADO MUNICIPALITY

C.1.2 Contract Data

CONTENTS

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C.1.2.1 . Part 1: Data provided by the Employer

C.1.2.1.1 Conditions of Contract

The Conditions of Contract are:

- the "General Conditions of Contract" as they appear in the commercially-available publication "General Conditions of Contract for Construction Works, Third Edition, 2015", hereinafter referred to as "GCC 2015"; and

- Specific data as contained in this Contract Data.

Each party to the Contract shall purchase its own copy of the GCC 2015 that applies to this Contract, available from its publisher:

South African Institution of Civil Engineering
Private Bag X200
Halfway House
1685
South Africa

Tel +27 (0)11 805 5947

The following Notes apply:

Note 1
The GCC 2015 makes several references to the Contract Data.

Each item of data below is cross-referenced to the clause in the Conditions of Contract to which it applies. Notwithstanding anything specified to the contrary, the Contract Data shall take precedence in the interpretation of any ambiguity or inconsistency between it and the GCC 2015.

The documents forming the Contract are to be taken as mutually explanatory of one another. For the purpose of interpretation, the priority of the documents shall be in accordance with the following order of precedence:

(a) The Form of Offer and Acceptance.
(b) Amendments to the General Conditions of Contract within the Contract Data.
(c) Additional conditions to the General Conditions of Contract within the Contract Data.
(d) Corrigenda to the General Conditions of Contract.
(e) The General Conditions of Contract.
(f) The Specifications, Drawings, Schedules and other documents forming part of the Contract (in that order) contained in the Scope of Work and the Site Information.

If any ambiguity or discrepancy is found in the documents, the Engineer needs to be contacted to issue any necessary clarification or instruction.

Note 2
Certain pro-forma forms and pro-forma agreements contained in the GCC 2015 have been adapted for this particular contract. Those pro-forma forms and pro-forma agreements contained in the GCC 2015 do not apply where replaced by similar pro-forma forms and pro-forma agreements in this document.

C.1.2.1.2 Contract-specific Data

The following contract-specific data, referring to the General Conditions of Contract, are applicable to this Contract:

C.1.2.1.2.1 Compulsory Data

Clause	Data
1.1.1.13	The Defects Liability Period is **12 months.**
1.1.1.14	The time for achieving Practical Completion is **12 months.**
1.1.1.15	The name of the Employer is Makhado Local Municipality
1.1.1.26	The Pricing Strategy of a Re-measurement Contract shall apply
1.2.1.2	The address of the Employer is: Physical address: Civic Centre 83 Krogh Street Makhado. Postal address: PO Box 111 Makhado 0920 e-mail address: livhuwanit@makhado.gov.za and dengas@makhado.gov.za Contact numbers: Direct: 015 519 3000
1.1.1.16	The name of the Employers Agent is: **Tshino Consulting Engineers**
1.2.1.2	The address of the Employers Agent is: **Physical address:** 19 General Joubert Street Polokwane; 0699 **Postal address:** 19 General Joubert Street Polokwane; 0699 **e-mail address:** info@tshino.co.za **Contact number: (015) 291 4769**

Clause	Data
3.3.1	The Employers Agent shall obtain the specific approval of the Employer before executing any of his functions or duties according to the following table:

GCC Clause No	Description	Requires EWA*	Delegated to ER*
3.3.1	Employers Agent's Representative appointment and termination	Y	
3.3.4	Employers Agent's Representative acting on Engineer's behalf	Y	
4.5.4	Payment for notices and fees	Y	
4.7.1	Fossils, etc on Site	Y	
5.7.2	Work at night	Y	
5.7.3	Acceleration of rate of progress	Y	
5.7.3	Payment for acceleration	Y	
5.9.1	Instructions and drawings on Commencement Date		Y
5.11.1	Suspension of the Works		Y
5.11.3	Proceeding with Works after suspension	Y	
5.12.4	Acceleration instead of extension of time	Y	
5.13.2	Reduction in penalty		Y
6.3.1	Variation orders	Y	
6.3.2.1	Confirmation of a Variation Order	Y	
6.4.1.4	Day works as a Variation Order	Y	
6.5.2	Materials for day works	Y	
6.8.2	Contract Prise Adjustment to apply	Y	
6.8.3	Price adjustment for special material	Y	
6.8.4	Costs due to changes in legislation	Y	
6.11.1	Variations exceeding 20%		Y
8.2.2.2	Damage due to excepted risks		Y
10.1.5	Consultation on Contractor's claim	Y	Y
10.1.5	Ruling on Contractor's claim	Y	N

Clause	Data
	*The following abbreviations apply: EAR Employers Agent's Representative EAWA Employers Agent's Written Action N No NA Not Applicable Y Yes
4.9.1	The Contractor shall deliver to the Employers Agent's, on a monthly basis, a detailed inventory of Construction Equipment kept on Site, full particulars given for each day of the month. Distinction shall be made between Owned Equipment and Hired Equipment as well as Equipment in working order and Equipment out of order. Such inventory shall be submitted by the seventh day of the month following the month to be reported.
4.10.2	The Contractor shall deliver to the Employers Agent's, on a monthly basis, a return in detail of supervisory staff and the number of categorized classes of labour employed each day for the said period by the Contractor for execution of the Contract. Such return shall be submitted by the seventh day of the month following the month to be reported.
5.3.1	The documentation required before commencement with Works execution are: Health and Safety Plan (Refer to Clause 4.3) A signed Agreement between the Employer and the Contractor for the Works to be completed by the Contractor in terms of the provisions of Section 37(2) of the Occupational Health and Safety Act (Act No.85 of 1993) and the Construction Regulations promulgated thereunder (Refer to Clause 4.3). Proof of payment to the Employer, that the Contractor has paid all contributions required in terms of the Compensation for Occupational Injuries and Diseases Act, No 130 of 1993 (Refer to Clause 4.3). Initial programme (Refer to Clause 5.6). Security (Refer to Clause 6.2). Insurance (Refer to Clause 8.6).
5.3.2	The time to submit the documentation required before commencement with Works execution is **14 Days.**
5.4.2	The access and possession of Site shall not be exclusive to the Contractor but shall be as set out elsewhere in the Contract.
5.8.1	The non-working Days are Sundays. The special non-working Days are: Statutory public holidays; and All annual year-end shutdown periods as recommended by the South African Federation of Civil Engineering Contractors (SAFCEC),
	and which commence after the Commencement Date and which commence before the Due Completion Date.
5.13.1	The penalty for failing to complete the Works is **R 4000-00** per calendar day.
5.16.3	The latent defect period is 0 year, commencing on the Day after the date of certification of Practical Completion.

Clause	Data
6.5.1.2.3	The percentage allowance to cover overhead charges is: 50 per cent for labour; and 15 per cent for materials.
6.8.2	Contract Price Adjustment: The contract shall be subject to Contract Price Adjustment from month seven work done to month twelve of the contract The value of the certificates issued shall be adjusted in accordance with the Contract Price Adjustment Schedule included in the General Conditions of Contract. The value of "x" is 0.15 The values of the coefficients are: a = 0.25 Labour b = 0.3 Contractor's equipment c = 0.35 Material d = 0.1 Fuel The Province wherein the larger part of the Site is located is **Limpopo**. The applicable industry for the Producer Price Index for material is Diesel The area for the Producer Price Index for fuel is Example Fuel index area The base month is **June 2023**.
6.8.3	
6.10.1.5	The percentage advance on materials not yet built into the Permanent Works is 80%. Proof of ownership is required.
6.10.3	The limit of **retention money is 10%** of the value of the Contract Price. **A Retention Money Guarantee is not compulsory**.
8.6.1.1.2	The value of Plant and materials supplied by the Employer to be included in the insurance sum is **nil**.
8.6.1.1.3	The amount to cover professional fees for repairing damage and loss to be included in the insurance sum is a maximum of **10% (ten percent)** of the Contract Sum.
8.6.1.3	The limit of indemnity for liability insurance is equal to the contract amount.
10.5.1	Dispute resolution shall be by standing adjudication, use GCC 2015, Appendix 5.
10.7.1	The determination of disputes shall be by arbitration.
	Payment for labour-intensive component of the works *Payment for works identified in the Scope of Works as being labour-intensive shall only be made in accordance with the provisions of the Contract if the works are constructed strictly in accordance with the provisions of the Scope of Work. Any payment for such works shall not relieve the Contractor in any way from his obligations either in contract or in delict.*

Clause	Data
Expanded Public Works Programme Requirements	**Linkage of payment for labour-intensive component of works to submission of project data** *The Contractor's payment invoices shall be accompanied by labour information for the corresponding period in a format specified by the employer. If the contractor chooses to delay submitting payment invoices, labour returns shall still be submitted as per frequency and timeframe stipulated by the Employer. The contractor's invoices shall not be paid until all pending labour information has been submitted.*
	Applicable Labour Laws *The current Ministerial Determination (also downloadable at www.epwp.gov.za), Expanded Public Works Programmes, issued in terms of the Basic Condition of Employment Act of 1997 by the Minister of Labour in Government Notice, shall apply to works described in the scope of work as being labour-intensive and which are undertaken by unskilled workers.*

C.1.2.1.2.2 Variations to the General Conditions of Contract

Clause	Data
2.5.1	**Cession** *Amend Clause 2.5.1 as follows:* *Delete the words* "without the written consent of the other"
5.14.5.1	**Consequences of Completion** *Amend Clause 5.14.5.1 as follows:* *In the second line, substitute the word* 'Guarantor' *with* 'Contractor'.
6.2	**Security** *Replace Sub-Clauses 6.2.1 and 6.2.2 with:* "The Contractor shall deliver to the Employer within such time as may be stated in the Contract Data, a Demand Guarantee, of an Insurance Company registered in terms of the Short-term Insurance Act (Act 53 of 1998) or of a registered Commercial Bank, in a sum equal to the amount stated in the Contract Data. The Demand Guarantee shall be issued by an entity subject to the approved of the Employer, and shall conform in all respects to the format contained in the Contract Data. The security to be provided by the Contractor shall be a Demand Guarantee of 10% of the Contract Sum. Wherever a joint venture constitutes the contracting party, the Demand Guarantee shall be issued on behalf of the joint venture. Failure to produce an acceptable Demand Guarantee within the period stated in the Contract Data, is a fundamental breach of Contract, entitling the Employer to cancel the Contract by due notice in terms of Clause 9.2 with specific reference to Sub-clause 9.2.2.5 as amended in the Contract Data."
6.3	**Variations** *Amend Clause 6.3, as follows:* *In the first paragraph, third line, after the words* "or for any reason appropriate", *add the phrase* ", including the limiting of contract expenditure so as not to exceed the Employer's budgeted project funding, " *Add the following phrase to the last paragraph of Clause 6.3.1.6, after the words* "ascertaining the amount of the Contract Price": ", and no such variation shall give reason for consideration of any claim in terms of Clause 6.11."
6.3.2	**Orders for Variations to be in writing** Omit the words "Provided that" under Clause 6.3.2 and omit Clause 6.3.2.1.
6.9.2	**Definition of "materials"** *Amend Clause 6.9.2, as follows:* *Substitute the word* 'plant' *with* 'Plant'.

Clause	Data
6.10.1	**Interim Payments** *Amend Clause 6.10.1.5 as follows:* *In the third line, add the words* 'not yet' *before the words* 'built into'
6.10.5	**Payment of retention money** *Amend Clause 6.10.5 as follows:* *In the second line, add the words* ', if any,' *after the words* 'Defects Liability Period'
6.10.6	**Set-off and delayed payments** *Amend Clause 6.10.6.2 as follows:* *Delete the words* 'Contractor's Bank' *and substitute with the words* 'Employer's Bank'
6.11	**Variations exceeding 15 per cent** *Replace the marginal heading with:* **"Variations exceeding 20 per cent"** *Replace* "**15 per cent**" *with* "20 per cent" *in the text of this Sub-Clause*
7.8.2	**Cost of making good of defects** *Amend Clause 7.8.2.1 as follows:* *In the first line, correct the spelling of* 'therefore'.
8.3.1	**Excepted risks** *Amend Clause 8.3.1.12 as follows:* *In the second line, delete the words* 'Employer or any of their' *and substitute with* 'or any of its'.
8.6.6	**Contractor to produce proof of payment** "The Contractor shall before commencement of the Works produce to the Employer's Agent: 8.6.6.1 The policies by which the insurances are effected, 8.6.6.2 Proof that due payment of all premiums there under, covering the full required period has been made, and 8.6.6.3 Proof of continuity of the policies for the required period.
	Should, during the currency of the Contract, the required period of insurance be extended for any reason, the Contractor shall timeously extend (so as to maintain) the said insurances for the full extended duration. The Employer's Agent shall be empowered to withhold all payment certificates until the Contractor has complied with his obligations in terms of this Clause 8.6.6."
8.6.7	**Remedy on Contractor's failure to insure**

Clause	Data
	Delete sub-clause 8.6.7 and substitute with: "Failure on the part of the Contractor to effect and keep in force any of the insurances referred to in Clause 8.6.1 and its sub-clauses, is a fundamental breach of Contract, entitling the Employer to cancel the Contract by due notice in terms of Clause 9.2 and with specific reference to sub-clause 9.2.2, as amended in the Contract Data."
9.1.2	**State of emergency** *In the fourth line, delete the words* 'supply of' *and substitute with* 'availability of'.
9.2	**Termination by Employer** *Delete the contents of Clause 9.2 and substitute with:* "9.2.1 The Employer may terminate the Contract by written notice to the Contractor if: 9.2.1.1 Sequestration of the Contractor's estate is ordered by a Court with due jurisdiction, or 9.2.1.2 The Contractor publishes a notice of surrender or presents a petition for the surrender of his estate as insolvent, or makes a compromise with his creditors, or assigns in favour of his creditors, or agrees to carry out the Contract under the supervision of a committee representing his creditors, or (being a company) goes into liquidation, whether provisionally or finally (other than a voluntary liquidation for the purpose of amalgamation or reconstruction), or if the Contractor assigns the Contract without having first obtained the Employer's consent in writing, or if execution is levied on his goods, or 9.2.1.3 The Contractor, or anyone on his behalf, or in his employ, offers to any person in the employ of the Employer or the Engineer, a gratuity or reward or commission, or 9.2.1.4 The Contractor furnished materially inaccurate information in his Tender, which had a bearing on the award of the Contract, or 9.2.1.5 The Contractor has abandoned the Contract. 9.2.2 If the Contractor: 9.2.2.1 Has failed to commence the Works in terms of Clause 10 hereof, or has suspended the progress of the Works for fourteen (14) days after receiving from the Engineer written notice to proceed, or 9.2.2.2 Has failed to provide the Guarantee in terms of Clause 7 within the time stipulated in the Contract Data, or
	9.2.2.3 Has failed to proceed with the Works with due diligence, or 9.2.2.4 Has failed to remove materials from the Site or to pull down and replace work within fourteen (14) days after receiving from the Engineer written notice that the said materials or work have been condemned and rejected by the Engineer in terms of these conditions, or 9.2.2.5 Is not executing the Works in accordance with the Contract, or is neglecting to carry out his obligations under the Contract, or

Clause	Data
	9.2.2.6 Has, to the detriment of good workmanship or in defiance of the Engineer's instructions to the contrary, sublet any part of the Contract, or 9.2.2.7 Has assigned the Contract or any part thereof without the Employer's consent in writing, then the Employer may give the Contractor 14 days' notice to rectify the default, and if the Contractor fails to rectify the default in said 14 days, then, without further notice, notify the Contractor in writing of the termination of the Contract and expel the Contractor and order the Contractor to vacate the site within 24 hours of issue of the Notice of Termination and to hand the Site over to the Employer, and the Employer may then enter upon the Site and the Works without affecting the rights and powers conferred on the Employer or the Engineer by the Contract and the Employer may himself complete the Works or may employ another contractor to complete the Works, and the Employer or such other contractor may use for such completion so much of the Construction Equipment, Temporary Works and materials brought onto the Site by the Contractor as the Employer may think proper, and the Employer may at any time sell any of the said Construction Equipment, Temporary Works and unused materials and apply the proceeds of sale towards payment of any sums that may be due or become due to the Employer by the Contractor under the Contract. In such circumstances the Contractor shall forthwith vacate the Site and shall not be entitled to remain on the Site on the grounds that he is entitled to do so on a right of retention until amounts due to him have been paid, neither will the Contractor be entitled to any further payments in terms of this Contract. 9.2.3 If the Contractor, having been given notice to rectify a default in terms of 9.2.2 above, rectifies said default, but later repeats the same or substantially the same default, then the Employer may notify the Contractor of the immediate termination of the Contract, and proceed as stated in the paragraph following the word 'writing' in Clause 9.2.2.7 above. 9.2.4 Should the amounts that the Employer must pay to complete the Works, exceed the sum that would have been payable to the Contractor on due completion by him, then the Contractor shall upon demand pay to the Employer the difference, and it shall be deemed a debt due by the Contractor to the Employer and shall be recoverable accordingly. Provided that should the Contractor on demand not pay the amount of such excess to the Employer, such sum may be determined and deducted by the Employer from any sum due to or that may become due to the Contractor under this or any previous or subsequent contract between the Contractor and the Employer."

C.1.2.1.2.3 Additional clauses to the General Conditions of Contract:

Clause	Data
1.1	**Definitions** *Add the following at the end of Sub-Clause 1.1.1:*
1.1.1.35	"Client", as used in the Occupational Health and Safety Act - Construction Regulations, means Employer.
1.1.1.36	"Principal Contractor", as used in the Occupational Health and Safety Act - Construction Regulations, means Contractor.
4.12	**Contractor's superintendence** *Add the following sub-clause 4.12.4 to Clause 4.12:* "Where a form is included in the Contract Data for this purpose, the Tenderer shall fill in the name of the person he proposes to entrust with the post of Construction Manager on this Contract in the space provided therefore. Previous experience of this person on work of a similar nature during the past five (5) years is to be entered on the form. The Contractor's Construction Manager shall be on Site at all times when work is being performed. The person shall be subject to approval of the Employers Agent's in writing and shall not be replaced or removed from Site without the written approval of the Employers Agent'.
5.6	**Programme** *Add the following sub-clause 5.6.6 to Clause 5.6:* "Failure on the part of the Contractor to deliver to the Employers Agent, the • programme of the Works in terms of Clause 5.6.1 and • supporting documents in terms of Clause 5.6.2 Within the period stated in the Contract Data, shall be sufficient cause for the Engineer to retain 25 per centum of the value of the Fixed Charge and Value-related items in assessment of amounts due to the Contractor, until the Contractor has submitted aforementioned first Programme of the Works and Supporting Documents".
5.9.7	**Employers Agent's to approve Contractor's Designs and Drawings** *Add the following at the end of Sub-Clause 5.9.7* "All designs, calculations, drawings and operation and maintenance manuals shall be fully endorsed by a third party registered engineer, accomplished in such specific field of practice and the cost thereof shall be borne solely by the Contractor. Once the alternative design has been approved, the Contractor shall indemnify and hold harmless the Employers Agent's, the Employer, their agents and assigns, against all claims howsoever arising out of the said design, whether in contract or delict".

Clause	Data
5.11	**Suspension of the Works** *Add the following sub-clause 5.11.7 to Clause 5.11:* "If the Contractor does not receive from the Employer the amount due under an Interim Payment Certificate within 28 days after expiry of the time stated in sub-clause 6.10.4 within which payment is to be made (except for deductions in accordance with sub-clauses 6.10.1.6 and 6.10.1.7), the Contractor may, after giving 14 days' notice to the Employer, suspend the progress of the Works. The Contractor's action shall not prejudice his entitlements to a claim in terms of Clause 10.1 and to cancellation of the Contract in terms of Clause 9.3. If the Contractor subsequently receives full payment of the amount due under such Interim Payment Certificate before giving a notice of cancellation of the Contract, the Contractor shall resume normal working as soon as is reasonably practicable."
5.12	**Extension of Time for Practical Completion** *Add the following at the end of Sub-Clause 5.12.2.2:* "The extension of time to be allowed due to abnormal rainfall shall be calculated separately for each calendar month or part thereof in accordance with the following formula: $V = (Nw - Nn) + \frac{Rw - Rn}{x}$ where V = Extension of time in calendar days for the calendar month under consideration Nw = Actual number of days during the calendar month on which a rainfall of 10 mm or more has been recorded Rw = Actual recorded rainfall for the calendar month Rn = Average rainfall for the calendar month, as derived from existing rainfall records x = 20
	The rainfall records which shall provisionally be accepted for calculation purposes are: Based on records taken from South Africa Weather service

Clause	Data

MONTH	AVERAGE RAINFALL (mm)	RAIN DAYS (per month)
JANUARY	120.9	18
FEBRUARY	100.8	16
MARCH	68.2	17
APRIL	27	10
MAY	9.3	5
JUNE	9	4
JULY	9.3	5
AUGUST	6.2	4
SEPTEMBER	21	7
OCTOBER	34.1	11
NOVEMBER	84	16
DECEMBER	130.2	20

The factor (Nw - Nn) shall be considered to represent a fair allowance for days during which rainfall exceeds 10 mm and the factor (Rw - Rn)/x shall be considered to represent a fair allowance for those days when rainfall does not exceed 10 mm but wet conditions prevent or disrupt work.

The total extension of time shall be the algebraic sum of all monthly totals for the contract period, but if the algebraic sum is negative the time for completion shall not be reduced due to subnormal rainfall. Extensions of time for a part of a month shall be calculated using pro rata values of Nn and Rn."

For this project the rainfall formula will only apply as background information, or dispute resolution. Extension of time for rainfall will only be granted on Actual Delays experienced; noted and agreed upon by the engineer.

6.10

Payments

Add the following at the end of Sub-Clause 6.10.1:

"The Contractor shall complete the 'Contractor's Monthly Report Schedule', which pro forma documentation is obtainable from the Employer's Agent. Pursuant to Sub-Clause (1), these, duly signed by all concerned, together with the Contractor's statement and a VAT invoice in original format are to be submitted to the Employer's Agent. Issue by the Employer's Agent to the Employer and Contractor of any signed payment certificate is conditional to this information being fully endorsed, accurately and timeously submitted to the Employer's Agent r".

Add the following at the end of Sub-Clause 6.10.1.5:

Clause	Data
	"All documentary evidence of such materials shall be unambiguous with respect to ownership having fully passed to the Contractor on or before the date of submittal of the Contractor's monthly statement. Should the Contractor fail to supply unambiguous documentary evidence, he shall, prior to submittal of his monthly statement, deliver to the Employer a Guarantor Guarantee in the form contained in the Appendices to the Contract Data."
9.3	**Termination by the Contractor** *Add the following at the end of Sub-Clause 9.3:* 9.3.5"In addition to, or as an alternative to the rights to termination contained in this Clause 9.3, the Contractor may notify the default to the Employer, with a copy to the Employer's Agent, and if the default is not rectified within 10 days the Contractor may suspend progress of the works until a date 7 days after the default is rectified. The Contractor shall be entitled to extension of time to the extent of delay caused by or resulting from such suspension, and to payment of additional costs caused by or resulting from the suspension. Such extension of time and additional costs shall be promptly ascertained by the Employer's Agent, who shall then grant the extension of time and include the additional costs in all future payment certificates. Such suspension, extension of time and/or payment of additional costs, shall not prejudice the Contractor's rights to cancel the contract."

C.1.2.2 Part 2: Data provided by the Contractor

The General Conditions of Contract, as specified in Part 1, shall be used as a basis for this Data which is required to be completed.

Each item of data given below is cross-referenced to the clause in the Conditions of Contract to which it mainly applies.

Clause	Data
1.1.1.9	The Name of the Contractor is: ....
1.2.1.2	The address of the Contractor is: Physical address: ....
1.2.1.2	Postal address: .... e-mail address: ..... Contact numbers: Corporate: ..... Direct: ..... Mobile: ..... Fax: .....

MAKHADO MUNICIPALITY
(Not to be completed at tender stage)

C1.3 Performance Guarantee

In accordance with clause 6.2.1 of General Conditions of Contract, 3rd Edition 2015

Contract No: ----------

Description of Contract: ----------

GUARANTOR DETAILS AND DEFINITIONS

"Guarantor" means: ----------

---------- (Please put name of firm)

Physical address: ----------

Postal address: ----------

Tel:----------

Fax: ----------

"Employer" means: **MAKHADO MUNICIPALITY**.

"Contractor" means: ----------

---------- (Please put name of firm)

"Guarantee sum" means: 10% of the contract amount

"Employer's Agent" means: ----------

"Works" means: Permanent works together with temporary works

"Site" means: The land and other places, made available by the Employer for the purpose of the contract, on under over in or through which the works are to be executed or carried out.

"Contractor" means: The Agreement made in terms of the Form of Offer and Acceptance and such amendments or additions to the Contractor as may be agreed in writing between the parties.

"**Contract Sum**" means: The accepted amount inclusive for tax of R----------

Amount in words: ----------

---------- **"Expiry Date"** This Guarantee shall expire upon the issue of the **Completion Certificate** issued by Makhado Municipality signed by the Director of Engineering Services, as such date is advised to the Guarantor in writing confirmed by the Employer.

CONTRACT DETAILS

Employer's Agent issues: Interim Payment Certificates, Final Payment Certificate and the Certificate Completion of the Work as defined in the Contract.

7. Payment by the Guarantor in terms of 4 or 5 shall be made within seven (7) calendar days upon receipt of the first written demand to the guarantor.
8. Payment by Guarantor in terms of 5 will only be made against the return of the original Performance Guarantee by the Employer.
9. The Employer shall have the absolute right to arrange his affairs with the Contractor in any manner which the Employer may deem fit and the Guarantor shall not have the right to claim his release from his Performance Guarantee on account alleged to be prejudicial to the Guarantor.
10. The Guarantor chooses the physical address and postal address as stated above for the service of all notices for all purposes in connection herewith.
11. This Performance Guarantee is neither negotiable nor transferable and shall expire in terms of 2, where after on claims will be considered by the Guarantor. The original of this Guarantee shall be returned to the Guarantor after it has expired.
12. This Performance Guarantee, with the required demand notices in terms of 4 or 5, shall be regarded as a liquid document for the purposes of obtaining a court order.
13. Where this Performance Guarantee is issued in the Republic of South Africa the Guarantor hereby consents in terms of Section 45 of the Magistrate's Court Act No 32 of 1944, as amended, to the jurisdiction of the Magistrate's Court of any district having jurisdiction in terms of Section 28 of the said Act, notwithstanding that the amount of the claim may exceed the jurisdiction of the Magistrate's Court.

Sign at ----------

Date ----------

Guarantor's signatory (1) ----------

Capacity ----------

Guarantor's signatory (2) ----------

Capacity ----------

Witness signatory (1) ----------

Witness signatory (2) ----------

PERFORMANCE GUARANTEE

1. The Guarantor's liability shall be limited to the amount of the Guaranteed Sum.
2. Expiry Date" This Guarantee shall expire upon the issue of the final completion certificate issued by Makhado Municipality signed by the Director of Engineering Services, as such date is advised to the Guarantor in writing confirmed by the Employer
   The Employer's Agent and/or the Employer shall advise the Guarantor in writing of the date on the Certificate of the works has been issued.

3. The Guarantor hereby acknowledges that:

3.1. Any reference in this performance Guarantee to the Contract is made for the purpose of convenience and shall not be construed as any intention whatsoever to create an accessory obligation or any intention whatsoever to create a surety ship;

3.2 . Its obligation under this Performance Guarantee is restricted to the payment of money.

4. Subject to the Guarantor's maximum liability referred to in 1, the Guarantor hereby undertakes to pay the Employer the sum certified upon receipt of the documents identified in 4.1 to 4.3:

4.1. A copy of a first written demand issues by the Employer to the Contractor stating that payment of a sum certified by the Employer's Agent and/ or Employer in an Interim or Final Payment Certificate has not been made in terms of the Contract and failing such payment within seven (7) calendar days, the Employer intends to call upon the Guarantor to make payment in terms of 4.2;

4.2. A first written demand issued by the Employer to the Guarantor at the Guarantor's physical address and / or postal address with a copy to the Contractor stating that period of seven (7) days has elapsed since the first written demand terms of 4.1 and the sum certificate has still not been paid;

4.3. A copy of the aforesaid payment certificate which entails the Employer to receive payment in terms of the Contract sum in 4.

5. Subject to the Guarantor's maximum liability referred to in 1, the Guarantor undertakes to pay to the Employer the Guaranteed sum or the full outstanding balance upon receipt of a first written demand from the Employer to the Guarantor at the Guarantor's physical address and/ or postal address calling up this Performance Guarantee, such demand stating that:

5.1. The contractor has been termination due to the Contractor's default and this performance Guarantee is called up in terms of 5; or

5.2. A provisional or final sequestration or liquidation court order has been granted against the Contractor and that the Performance Guarantee is called up in terms of 5; and

5.3. The aforesaid written demand is accompanied by a copy of the notice of termination and/or the provisional /final sequestration and/or the provisional liquidation court order.

6. It is recorded that the aggregate amount of payments required to be made by the Guarantor in terms of 4 and 5 shall not exceed the Guarantor's maximum liability in terms of 1.

RETENTION MONEY GUARANTEE
(Not to be completed at tender stage)

In accordance with clause 6.2.1 of General Conditions of Contract, 3rd Edition 2015

Contract No: ----------

Description of Contract: ----------

GUARANTOR DETAILS AND DEFINATIONS

"Guarantor" means: ----------

---------- (Please put name of firm)

Please address: ----------

Postal address: ----------

Tel:----------

Fax: ----------

"Employer" means: **MAKHADO MUNICIPALITY**.

"Contractor" means: ----------

---------- (Please put name of firm)

"Guarantee sum" means: 10% of the contract amount

"Employer's Agent" means: ----------

"Works" means: Permanent works together with temporary works

"Site" means: The land and other places, made available by the Employer for the purpose of the contract, on under over in or through which the works are to be executed or carried out.

"**Contractor**" means: The Agreement made in terms of the Form of Offer and Acceptance and such amendments or additions to the Contractor as may be agreed in writing between the parties.

"**Contract Sum**" means: The accepted amount inclusive for tax of R----------

Amount in words: ----------

----------"**Expiry Date**" This Guarantee shall expire upon the issue of the **Final Completion Certificate** issued by Makhado Municipality signed by the Director of Technical Services, as such date is advised to the Guarantor in writing confirmed by the Employer.

CONTRACT DETAILS

Employer's Agent issues: Interim Payment Certificates, Final Payment Certificate and the Certificate Completion of the Work as defined in the Contract.

RETENTION GUARANTEE

1. The Guarantor's liability shall be limited to the amount of the Guaranteed Sum.
2. Expiry Date" This Guarantee shall expire upon the issue of the final completion certificate issued by Makhado Municipality signed by the Director of Technical Services, as such date is advised to the Guarantor in writing confirmed by the Employer
   The Employer's Agent and/or the Employer shall advise the Guarantor in writing of the date on the Certificate of the works has been issued.

3. The Guarantor hereby acknowledges that:

3.1. Any reference in this performance Guarantee to the Contract is made for the purpose of convenience and shall not be construed as any intention whatsoever to create an accessory obligation or any intention whatsoever to create a surety ship;

3.3 . Its obligation under this Retention Guarantee is restricted to the payment of money.

4. Subject to the Guarantor's maximum liability referred to in 1, the Guarantor hereby undertakes to pay the Employer the sum certified upon receipt of the documents identified in 4.1 to 4.3:

4.1. A copy of a first written demand issues by the Employer to the Contractor stating that payment of a sum certified by the Employer's Agent and/ or Employer in an Interim or Final Payment Certificate has not been made in terms of the Contract and failing such payment within seven (7) calendar days, the Employer intends to call upon the Guarantor to make payment in terms of 4.2;

4.2. A first written demand issued by the Employer to the Guarantor at the Guarantor's physical address and / or postal address with a copy to the Contractor stating that period of seven (7) days has elapsed since the first written demand terms of 4.1 and the sum certificate has still not been paid;

4.3. A copy of the aforesaid payment certificate which entails the Employer to receive payment in terms of the Contract sum in 4.

5. Subject to the Guarantor's maximum liability referred to in 1, the Guarantor undertakes to pay to the Employer the Guaranteed sum or the full outstanding balance upon receipt of a first written demand from the Employer to the Guarantor at the Guarantor's physical address and/ or postal address calling up this Performance Guarantee, such demand stating that:

5.1. The contractor has been terminated due to the Contractor's default and this Retention Guarantee is called up in terms of 5; or

5.2. A provisional or final sequestration or liquidation court order has been granted against the Contractor and that the Retention Guarantee is called up in terms of 5; and

5.3. The aforesaid written demand is accompanied by a copy of the notice of termination and/or the provisional /final sequestration and/or the provisional liquidation court order.

6. It is recorded that the aggregate amount of payments required to be made by the Guarantor in terms of 4 and 5 shall not exceed the Guarantor's maximum liability in terms of 1.

7. Payment by the Guarantor in terms of 4 or 5 shall be made within seven (7) calendar days upon receipt of the first written demand to the guarantor.

8. Payment by Guarantor in terms of 5 will only be made against the return of the original Retention Guarantee by the Employer.
9. The Employer shall have the absolute right to arrange his affairs with the Contractor in any manner which the Employer may deem fit and the Guarantor shall not have the right to claim his release from his Retention Guarantee on account alleged to be prejudicial to the Guarantor.
10. The Guarantor chooses the physical address and postal address as stated above for the service of all notices for all purposes in connection herewith.
11. This Retention Guarantee is neither negotiable nor transferable and shall expire in terms of 2, where after on claims will be considered by the Guarantor. The original of this Guarantee shall be returned to the Guarantor after it has expired.
12. This Retention Guarantee, with the required demand notices in terms of 4 or 5, shall be regarded as a liquid document for the purposes of obtaining a court order.
13. Where this Retention Guarantee is issued in the Republic of South Africa the Guarantor hereby consents in terms of Section 45 of the Magistrate's Court Act No 32 of 1944, as amended, to the jurisdiction of the Magistrate's Court of any district having jurisdiction in terms of Section 28 of the said Act, notwithstanding that the amount of the claim may exceed the jurisdiction of the Magistrate's Court.

Sign at ----------

Date ----------

Guarantor's signatory (1) ----------

Capacity ----------

Guarantor's signatory (2) ----------

Capacity ----------

Witness signatory (1) ----------

Witness signatory (2) ----------

C1.4 OCCUPATIONAL HEALTH AND SAFETY AGREEMENT

This agreement is mandatory for all contractors appointed by the Makhado Municipality or any other institution that do work for or on behalf of Municipality.
This agreement is between:

THE CONTRACTOR:

Herein represented by.....

In his capacity, as .....Being duly authorized hereto hereinafter

Referred to as "contractor".

Compensation Commissioner Number:
(Attach a copy of the Registration

Certificate to this agreement)

Company : Name:.....

Registration Number: .....

CEO : Name:.....

ID Number: .....

Physical Address: .....

.....

And the MAKHADO MUNICIPALITY
(Hereinafter referred to as "the Council")

1. DEFINITIONS

1.1	**CONTRACTOR**	Means the "Contractor" as defined in the "Principal Contract". Annexed hereto in his capacity as mandatory.
1.2	**MANDATORY**	Includes an agent, contractor or subcontractor for work to be done or service rendered, but without derogating from his status in his own right as an employer of people or user of equipment, machinery, tools or materials.
1.3	**THE PRINCIPAL CONTRACT**	Means the contract annexed hereto as annexure "A".
1.4	**COUNCIL**	Means the MAKHADO Municipality
1.5	**RISK CONTROL OFFICER**	A person appointed in writing by Council.

1.6 Any definitions contained in any Statute hereinafter mentioned shall have the meaning allocated to it by the specific statute.

2. OBJECTIVE

2.1 Whereas Council and the Contractor have entered into a contract for service (work) as fully indicated in the "Principle Contract" and whereas the "Contractor" agreed to indemnify Council against the risks stated hereunder whether foreseeable or not, and, whereas it is agreed between the parties that it is of cardinal importance to safeguard both Council and the Contractor's obligation in terms of relevant legislation as well as to extend the obligation as a company and/or legal person and/or person as an entity concerned with health, safety and the environment.

2.2 These rules are applicable to all contractors performing work for Council within the jurisdictional area of the Council and on any premises, which are owned, rented or developed by the Council.

2.3 The Council acts though those officials or persons who are generally or specifically charge with the responsibility, in terms of legislation, as well as any other official or person who is generally or specifically charged with the control and supervision of the project.

IT IS HEREBY AGREED AS FOLLOWS:

3. INDEMNITIES

3.1 The "Contractor" hereby indemnifies the "Council" against any loss in respect of all claims, proceeding, damages, costs and expenses arising out of any claim or proceeding pertaining to the non-compliance by the "Contractor" of any statutory requirements and/or requirements regarding the following Acts in particular pertaining to the provisions of:

3.1.1 The Occupational Health and Safety Act 85 of 1993 (as amended), including the Construction Regulations, 2014 as promulgated on 7 February 2014, in terms of Section 43 of the Occupational Health and Safety Act, 1993 (Act No 85 of 1993), in Government Gazette No. 25207 and Regulation Gazette No. 7721. See Annexure B.

3.1.2 The Health Act 63 of 1977.

3.1.3 Road Traffic Act 29 of 1989 (as amended).

3.1.4 Environment Conservation Act 73 of 1989.
3.1.5 The National Water Act 36 of 1998.
3.1.6 The Criminal Procedure Act 51 of 1977.
3.1.7 The Explosives Act 26 of 1956.
3.1.8 The Arms and Ammunition Act 75 of 1969.
3.1.9 Compensation for Occupational Injuries and Diseases Act 130 of 1993.
3.1.10 The Labour Relations Act 66 of 1995.
3.1.11 The Unemployment Insurance Act 30 of 1966 (as amended).
3.1.12 The Basic Conditions of Employment Act 75 of 1997 (as amended).
3.1.13 Standards Act 29 of 1993.
3.1.14 any statutory provisions in any act and/or any law or bylaw of any local government and/or any published official standard incorporated into any statute or bylaw relating to the completion of the work set out in the "Principal Contract".
3.1.15 Any other health and safety standard prescribed by the "Council".

3.2 The "Contractor" shall ensure that he familiarizes himself with the requirements of the above legislation and that he, his employees and any subcontractor will comply with all the statutory provisions contained in them.

3.3 The "Contractor" shall indemnify the "Council" in respect of any physical loss or damage to any plant, equipment or other property belonging to the "Contractor" or for which he is responsible and he hereby indemnifies the "Council" against any loss in respect of all claims, proceedings, damages, costs and expenses consequent upon the loss of or damage to any plant, equipment or other property belonging to, or which is the responsibility of, any subcontractor, agent or employee of the subcontractor.

3.4 The "Contractor" shall and hereby indemnifies the "Council" against any liability, loss, claim or proceedings whatsoever, whether arising in common law or by statute, consequent on personal injuries to or the loss of health or death of any person whosoever arising out of or in the course of or caused by the execution of the "Principal Contract".

3.5 The "Contractor" shall and hereby indemnifies the "Council" against any liability, loss, claim or proceedings consequent on loss of or damage to any movable or immovable property arising out of or in the course of or caused by the execution of the "Principal Contract" and due to any act or omission of the "Contractor", his agents, servants or subcontractors.

4. PERFORMANCE SAFE WORKING PRACTICE

4.1 The "Council" requires a high standard of safe work performance from all employees and expects that the standard be maintained by the "Contractor" within the "Council's" jurisdictional area or on its premises.

4.2 Irrespective of human considerations, the maintaining of these health and safety rules shall be the execution of the prescribed legal requirements. These rules are not to hinder the "Contractor" in rendering services or indemnify the "Contractor" from any legal responsibility to ensure healthy and safe work circumstances.

4.2 The "Council" shall assist the "Contractor" in any practical considerations to accommodate the healthy and safe execution of work and therefore require co-operation in the execution of these safety rules.

5. LOCK OUT PROCEDURE

5.1 When power or air driven machines or equipment, electrical apparatus or pipe lines are examined, repaired, adjusted, cleaned, lubricated or serviced in any other way than normal servicing, then all isolating switches, -levers, valves or appliances must be put in the "off" or "closed" position and locked.

5.2 Should more than one team work on a machine, then each person in control of a team, must put a separate lock on the switch, lever, valve or appliance.

6. CRANES, VEHICLES AND HOISTING

6.1 For each crane or hoisting equipment used, the "Contractor" must submit a valid and recent test certificate or other form of the last examination of the machine or equipment, to the "Council".

6.2.1 Only trained personnel with written permission and where determined by Law, with a valid driver's license, may be allowed to operate any electrical diesel or petrol driver overhead crane, hydraulic or electrical hoisting equipment, self-driven forklift, tractor or any other crane or vehicle. No employee of the "Contractor" may perform any overhead work or work on an overhead crane or hoisting equipment or work near cranes or crane rail, before:

i) An agreement was concluded with the "Council".
ii) Approval has been obtained from the "Council" to perform the work.
iii) All applicable danger – and warning symbolic signs are put into position, or exemption, if applied for, is in operation.

6.3 The "Contractor" shall be wholly responsible for any loss or damage to cranes, hoisting equipment, plant, machines or equipment brought onto the work site by the "Contractor"

7. MACHINE VALANCES, PROTECTION AND FENDING

7.1 No machine valances, protection or fending may be removed from machines, manholes, etc. without the written permission of "Council" if applicable exemption procedures were not appropriated.

8. SCAFFOLD, LADDERS, TOOLS AND EQUIPMENT

8.1 No equipment or appliance belonging to "Council" may be used without written permission from "Council".

8.2 Unless prior arranged, "Contractors" must bring sufficient tools and equipment to the site to finish the contract, including offices and storerooms. The mentioned equipment remains the responsibility of the "Contractor" with respect to loss, damage and theft.

8.3 In exceptional cases, where tools and equipment belonging to "Council" are used to finish the contract, the said equipment and tools are used on own risk and the "Contractor" indemnifies "Council" from any claims that may arise. The said indemnity must be in writing, as well as information regarding the loan period, identification and condition of tools and equipment. The "Contractor" is responsible for the returning of said tools and equipment in the same condition or better. The "Contractor" is responsible to "Council" for any damage or excessive wear of such tools or equipment and material.

9. EXCAVATIONS

9.1 Before any excavations commence, written permission must be obtained from "Council" to confirm the location of existing electrical cables, water pipes, etc.

9.2 All excavations and obstructions in floor, tar and dirt surfaces must be fenced effectively and safeguarded between sundown and sunup with a sufficient amount of red/yellow warning lights and symbolic signs.

9.3 The surrounding area must be kept clean, safe and tidy during excavation. Excess material may not obstruct unnecessarily.

9.4 If any property is in danger during excavation, it must be supported and the proposed support work must be submitted to the Department of Labour (OHS) and "Council" for approval.

9.5 Written permission must be obtained from "Council" to grant admittance to restricted areas as well as areas where dangerous or poisonous gases are present.

10. FIRST AID

10.1 The "Contractor" must provide and maintain a first aid box equipped according to legal requirement where more than (5) five persons are employed. The first aid box must be in the care of a person with a competency certificate from one of the following organizations:

(i) SA Red Cross Association;
(ii) St Johns Ambulance;
(iii) SA First Aid League; or
(iv) A person or organization approved by the Chief inspector for this purpose.

10.2 A visible notice must be put up on any work premises with the name of the person responsible for first aid. In an emergency "Council's" Ambulance / Fire Department or emergency services may be contacted at (015) 290 2000.

11. FLAMMABLE LIQUIDS

11.1 The "Contractor" shall be held responsible for the necessary precautionary fire prevention measures. No smoking signs must be put up where applicable. The "Contractor's" employees must be informed of "Council's" fire prevention measures and evacuation procedures.

12. COMPENSATION BY CONTRACTOR

12.1 The "Contractor" shall be held responsible for all loss of and damage to property, the death or injury of persons, the resultant loss or damage suffered as well as all law suits, claims, costs, charges, fines and expenses due to negligence, violation of statutory liability or neglect of the "Contractor" or the "Contractor's" employees.

13. TRANSGRESSION OF RULES AND MISBEHAVIOUR

13.1 The "Contractor" is warned that any act(s) leading to damage or loss of employees of the "Contractor" or the "Council" shall not be tolerated. The "Council" may (without any reason) demand that any employee of the "Contractor" be withdrawn from the principal "Contract" or site.

14. INCIDENT REPORTING

14.1 All incidents referred to in Section 24 of the Occupational Health and Safety Act and or other incidents shall be reported, by the "Contractor", to the Department of Labour, as well as to the "Council" and should such an incident take place outside normal working hours, on a Saturday, Sunday or Public holiday provided with a written report relating to any incident.

14.2 The "Council" will obtain an interest in the issue of any formal inquiry conducted in terms of the Occupational Health and Safety Act in any incident involving the "Contractor" and/or his employees and/or his subcontractors.

14.3 The "Contractor" undertakes to report to "Council" anything deemed to be unhealthy and/or unsafe and that he undertakes to verse his employees and/or subcontractors in this regard.

15. LIAISON AND SUPERVISION

15.1 The "Contractor" hereby undertakes to liaise on a regular basis with the designated Risk Control Officer and "Council" representative regarding any hazards or incidents that may be identified or encountered during the performance of the "Principal Contract".

16. SERVICE INTERRUPTION

16.1 Should any work done by the "Contractor" cause a possible interruption, written permission must be obtained from "Council", before such work commences. The "Contractor" may not switch on or off any compressed air, steam, oxygen, vacuum supply or electrical supply without written permission from the "Council".

17. CONFIDENTIALITY

17.1 The "Contractor" and his employees shall regard all data, documentation and information of the contract and related documentation as confidential.

17.2 Lost documentation/plans or related documentation shall immediately be reported in writing to the "Council".

17.3 The "Contractor" shall not put up any advertisements or billboard at the site without permission.

17.4 The "Contractor" shall not take photographs of the contract site or part thereof or any work process or part thereof, without written permission from the "Council", or have photographs taken, published or let it be published.

18. CONTRACT SITE AND PRESERVATION

18.1 Employees of the "Contractor" shall not be allowed entrance to the site unless a valid identity document, issued by "Council", is displayed. The mentioned documents shall only be valid for a limited period, where after it must be renewed.

19. COMPLETION OF WORK

19.1 The "Contractor" or his employees shall not leave the contract site before the "Council" is satisfied that the contract is completed according to the requirements and standards set out in the contract and that the working site is left in a satisfactory and safe condition.

20. LIQUOR, DRUGS, DANGEROUS WEAPONS AND FIREARMS

20.1 The "Contractor" shall ensure that no liquor, drugs, dangerous weapons or firearms be brought onto the premises.

21. SEARCHES

21.1 The "Contractor" and any person engaged in the contract work may at any time be searched by "Council" appointed security personnel and all packages, suitcases, etc. must be presented to the access control point for examination prior to them being brought onto the property or leaving the property.

22. GENERAL CONDITIONS

22.1 Notwithstanding anything to the contrary in this agreement, it is hereby specifically determined that the "Contractor-"

22.1.1 shall have acquainted himself and be conversant with the contents of all statutory provisions applicable to the health and safety of workers and other persons on the site including the execution of the work, and in particular the conditions contained in the Occupational Health and Safety Act, 1993 (Act 85/1993), and the regulations promulgated in terms thereof, and shall comply therewith meticulously and in all aspects and/or take care that it is complied with;

22.1.2 shall be obliged to immediately execute all instructions given to him by an authorized representative of "Council" in order to ensure and uphold the implementation and enforcement of the provisions referred to in sub-paragraph 1, to the satisfaction of the said representative;

22.1.3 shall indemnify the "Council" against any or all liability which may be incurred by the "Council" as a result of the omission of the "Contractor", his employees, sub-contractors and/or representatives to comply with the provisions referred to in sub-paragraph 1, or to ensure that it shall be complied with;

22.1.4 shall undertake to pay upon demand any and/or all legal costs and other expenses which "Council" may have incurred as a consequence of any criminal charges or other proceedings pending against, or involving the "Council" as a result of the contravention or non-compliance by the "Contractor", his employees, sub-contractors and/or representative of any of the statutory provisions referred to in sub-paragraph 1.

22.1.5 Should the "Contractor" neglect to immediately execute any health and safety written orders issued to him, or to his employee in charge of the works, in terms of the stipulations of sub-paragraph 2, the "Council" shall be entitled to suspend the execution of the works and take the necessary steps to execute or have such order executed. Under these circumstances the contractor shall be obliged to pay "Council", upon demand, all costs and expenses incurred by "Council", in order to execute or have the said orders executed.

22.1.6 Should the abovementioned steps not establish a healthy and safe work environment the "Council" will be entitled to terminate the contract without incurring any further costs or claims from the contractor?

23. "CONTRACTOR" IDENTIFICATION BOARD

23.1 The "Contractor" shall provide on any work premises a temporary identification board containing at all worksites the following information:

- Company name on behalf of which division/department the work is being done.
- The contact number and name of the person representing the "Contractor".
- The contact number and name of the person representing "Council"

24. ACKNOWLEDGEMENT

24.1 The "Contractor" hereby acknowledges that he has read and received a copy of the "Principal Contract" and agrees to be bound by and undertakes to observe all the terms and conditions of the "Principal Contract". This appointment is made in terms of Section 37(2) of the Occupational Health and Safety Act, 85 of 1993.

25. EXCEPTIONS AND OMISSIONS

26. REMARKS

THE CONTRACTOR

SIGNED AT ..... ON THIS ..... DAY OF .....

WITNESSES:

..... 1. .....
THE CONTRACTOR

2. .....

THE COUNCIL

SIGNED AT ..... ON THIS ..... DAY OF.....

WITNESSES..... 1. .....
THE COUNCIL

2. ....

b) INDEMNITY CERTIFICATE

Contractor.....

Employer: MAKHADO Municipality

Contract.....

I/we .....

Hereafter the "Contractor"

"Contractor" hereby indemnifies the MAKHADO Municipality (Council) against any claim of whatever sort which may arise directly or indirectly from the execution by me/us of the above-mentioned contract and which may be instituted against "Council", as well as of any loss or damage which the "Council" suffers or expenditure the "Council" incurs to prevent responsibility for such claim, loss or damage, whatever the cause of such claim may be or whatever loss or damage the "Council" suffers.

THUS done and signed at ..... on this..... Day

of..... 20.....

WITNESSES:

1. ....
CONTRACTOR

2. ....
COUNCIL

c) ACKNOWLEDGEMENT CERTIFICATE

I, in my capacity as.....

Duly authorized hereto .....representing

.....Contractors, acknowledge receipt of a copy of the Makhado Municipality's safety manual for contractors and the under mentioned person as my supervisor regarding all works and services which must be executed by the Contractor. The appointment is done in terms of the Occupational Health and Safety Act, 1993 (Act 85/1993).

SIGNED AT ..... ON..... 200...

I, ... accept the abovementioned appointment, and declare that I am familiar with the contents of the Makhado Municipality's Safety Manual for contractors.

CASUALTIES REGISTRATION NUMBER

_____

_____

_____

SIGNED AT ..... ON..... 200....

SIGNATURE:

WITNESSES: 1. .....

2. .....

A copy of this certificate shall be submitted to the "Council" before any work commences.

C1.5: Agreement with Adjudicator

This agreement is made on the.....day of ..... 20.....between: The Employer

(name of company / organisation) .....
of

(address).....

.....and the Contractor

(name of company /organisation) .....

of *(address)*.....

.....(hereinafter called **the Parties**)

and

(name).....of *(address)*

.....
(hereinafter called **the Adjudicator**)

Disputes or differences may arise/have arisen* between the Parties under a Contract dated.....

and known as Contract No.....

(Contract title) .....

and these disputes or differences shall be/have been* referred to adjudication in accordance with the CIDB Adjudication Procedure, (hereinafter called "**the Procedure**") and the Adjudicator may be or has been requested to act.
(Delete as necessary)*

IT IS NOW AGREED as follows:

1. The rights and obligations of the Adjudicator and the Parties shall be as set out in the Procedure.

2. The Adjudicator hereby accepts the appointment and agrees to conduct the adjudication in accordance with the Procedure.

3. The Parties bind themselves jointly and severally to pay the Adjudicator's fees and expenses in accordance with the Procedure as set out in the Contract Data.

4. The Parties and the Adjudicator shall at all times maintain the confidentiality of the adjudication and shall endeavour to ensure that anyone acting on their behalf or through them will do likewise, save with the consent of the other Parties which consent shall not be unreasonably refused.

5. The Adjudicator shall inform the Parties if he intends to destroy the documents which have been sent to him in relation to the adjudication and he shall retain documents for a further period at the request of either Party.

SIGNED by:

(*Signature*): ..... (*Signature*): .....(*Signature*): .....

Name: .....

who warrants that he/ she is duly authorised to sign for and on behalf of the **First Party** in the presence of

Name: .....

who warrants that he/ she is the duly authorised to sign for and on behalf of the S**econd Party** in the presence of

Name: .....

Adjudicator in the presence of

Witness:

(*Signature*).....

Witness:

(*Signature*).....

Witness:

(*Signature*).....

Name: .....

Address: .....

.....

Date: .....

Name: .....

Address: .....

.....

Date: .....

Name: .....

Address: .....

.....

Date: .....

MAKHADO MUNICIPALITY

PROJECT DESCRIPTION: UPGRADING OF LUVHALANI TO DZANANWA ACCESS ROAD FROM GRAVEL TO PAVED ROAD

C2.1 Pricing Instructions

1. GENERAL

The pricing instructions describe the criteria and assumptions which will be assumed in the Contract that the Bidder has taken into account when developing his prices. The Bills of Quantities record the Contractor's rates for providing supplies, services, engineering and construction works in accordance with the Scope of Work.

The terms of payment and the provisions for price adjustment, if applicable, are established in the Contract Data. These items are not described in the Pricing Data.

The Bidder's obligations in pricing the Bidder offer and the Employer's undertakings in the checking and correction of arithmetical errors are dealt with in the Standard Conditions of Bidder contained in Annexure F of SANS 294, as amended in and read in conjunction with the Bidder Data.

2. DOCUMENTS MUTUALLY EXPLANATORY

The documents forming the Contract are to be taken as mutually explanatory of one another. The Bill of Quantities forms an integral part of the Contract Documents and shall be read in conjunction with the Bidder Data, Contract Data, Scope of Work, Site Information General and Special Conditions of Contract, the Specifications and the Drawings.

3. DEFINITIONS

For the purpose of this Bill 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 Scope of Work and Site Information.
Quantity	:	The number of units of work for each item.
Rate	:	The payment per unit of measurement at which the Contractor Contracts to do the work.
Amount	:	The product of the quantity and the rate Bidded for an item.
Sum	:	An amount contracted for an item, the extent of which is described in the Bill of Quantities, the specifications or elsewhere but the quantity of work of which is not measured in any units.

4. DESCRIPTIONS

Descriptions in the Bill of Quantities are abbreviated and comply generally with those in the Standardised Specifications. Clause 8 of each Standardised Specification, read together with

the relevant clauses of the Scope of Work, set out what ancillary or associated activities are included in the rates for the operations specified. Should any requirements of the measurement and payment clause of the applicable Standardised Specification, or the Scope of Work, conflict with the terms of the Bill, the requirements of the Standardised Specification or Scope of Work, as applicable, shall prevail.

5. REFERENCES

The clauses in a specification in which further information regarding the schedule item can be obtained appear under "Reference clause" in the Bill. The reference clauses indicated are not necessarily the only sources of information in respect of scheduled items. Further information and specifications may be found elsewhere in the contract documents. Standardised Specifications for this contract is COLTO 1998 Edition.

6. UNITS OF MEASUREMENT

The units of measurement indicated in the Bill of Quantities are metric units.
The following abbreviations are used in the Bill of Quantities:

%	=	per cent
h	=	hour
ha	=	hectare
kg	=	kilogram
kl	=	kilolitre
km	=	kilometre
km-pass	=	kilometre-pass
kW	=	kilowatt
l	=	litre
m	=	metre
mm	=	millimetre
MN	=	meganewton
MN-m	=	meganewton-metre
MPa	=	megapascal
m^2	=	square metre
m^3	=	cubic metre
m^3-km	=	cubic metre-kilometre
m^2-pass	=	square metre-pass
no	=	number
PC sum	=	Prime Cost sum
Prov Sum	=	Provisional Sum
sum	=	lump sum
t	=	ton (1 000 kg)

7. NET MEASUREMENTS

Unless otherwise stated, items are measured net in accordance with the drawings, and no allowance is made for off-cuts and waste.

8. QUANTITIES

The quantities set out in these Bills of Quantities are approximate and do not necessarily represent the actual amount of work to be done. The quantities of work accepted and certified for payment will be used for determining payments due and not the quantities given in the Bills of Quantities.

The Contract Amount to be determined in accordance with the conditions of contract identified in the Contract Data shall be computed from the actual quantities of authorized work done, value at rates determined in terms of the Contract Data, against the respective items in the Bill of Quantities.

9. CURRENCY

All rates and sums of money quoted in the Bill of Quantities shall be in Rand and whole cents. Fractions of a cent shall be discounted.

10. VALUE ADDED TAX

Value Added Tax shall be excluded from the rates and sums contracted for the various items of work included in the Bill of Quantities. VAT will be added as a single entry to the summary.

11. RATES AND PRICES

11.1 General

a) The Contractor must price each item in the Bill of Quantities in BLACK INK. Reproduced computer printouts of the Bills of Quantities will not be acceptable.

b) The rates and prices to be inserted in the Bill of Quantities shall cover all the services and incidentals for the work described under the several items. Such prices and rates shall cover all costs and expenses that may be required in and for the execution of the work described, and shall cover the cost of all general risks, liabilities and obligations set forth or implied in the documents on which the Bidder is based, as well as overhead charges and profit. Reasonable prices shall be inserted as these will be used as a basis for assessment of payment for additional work that may have to be carried out.

c) Where the Contractor is required to furnish detailed drawings and designs or other information in terms of the Contract Data, all costs thereof shall be deemed to have been provided for and included in the unit rates and sum amounts contracted for the items scheduled in the Bill of Quantities. Separate additional payments will not be made.

d) A price or rate is to be entered against each item in the Bill of Quantities, whether the quantities are stated or not. An item against which no price is entered will be considered to be covered by the other prices or rates in the Bill. The Contractor will not be paid for items against which no rate or lump sum has been entered in the Bill of Quantities.

e) Should the Contractor group a number of items and contract one lump sum for such group of items, this single lump sum shall apply to that group of items and not to each individual item.

f) Should the Contractor indicate against any item that compensation for such item is included in another item, the rate for the item included in another item shall be deemed nil.

g) A submission may be regarded as non-responsive if any rates or lump sums in the Bill of Quantities are, in the opinion of the Employer, unreasonable or out of proportion.

11.2 "Rate only" items

The Contractor shall fill in a rate (in the rate column) against all items where the words "rate only" appear in the Amount column, which rate will constitute payment for work which may be done in terms of this item. Such "rate-only" items are used where it is estimated that little or no work will be required under the item or where the item is to be considered as an alternative to another item for which a quantity is given.

11.3 Arithmetic

Excepting where Sum Amounts are required or where Provisional Sums have been indicated, the Contractor shall enter an applicable rate in the Rate Column of the Bill of Quantities for each scheduled item. He shall also enter an appropriate sum in the Amount column for each scheduled item, by determining in the applicable line item the product of the Quantity and the Unit Rate.

Where there is a discrepancy between the amounts in figures and in words, the amount in words shall govern.

If bills of quantities (or schedule of quantities or schedule of rates) apply and there is an error in the line item total resulting from the product of the unit rate and the quantity, the line item total shall govern and the rate shall be corrected. Where there is an obviously gross misplacement of the decimal point in the unit rate, the line item total as quoted shall govern, and the unit rate shall be corrected.

Where there is an error in the total of the prices either as a result of other corrections required by this checking process or in the Tenderer's addition of prices, the total of the prices shall govern and the Tenderer will be asked to revise selected item prices (and their rates if bills of quantities apply) to achieve the Tendered total of the prices.

11.4 Labour Intensive work

Those parts of the contract to be constructed using labour-intensive methods have been marked in the bill of quantities with the letters LI in a separate column or as a prefix or suffix against every item so designated. The works, or parts of the works so designated are to be constructed using labour-intensive methods only. The use of plant to provide such works, other than plant specifically provided for in the scope of works, is a deviation from the contract. The items marked with the letters 'LI' are not necessarily an exhaustive list of all the activities which must be done by hand, and this clause does not over-ride any of the requirements in the generic labour intensive specification in the Scope of Works.

Where minimum labour intensity is specified by the design the contractor is expected to use their initiative to identify additional activities that can be done labour-intensively in order to comply with the set minimum labour intensity target.

Payment for items which are designated to be constructed labour-intensively (either in this schedule or in the Scope of Works) will not be made unless they are constructed

using labour-intensive methods. Any unauthorised use of plant to carry out work which was to be done labour-intensively will not be condoned and any works so constructed will not be certified for payment.

12. VARIATION IN TEXT

No alteration, erasure or addition is to be made in the text of the Bill of Quantities. Should any alteration, erasure or addition be made, it will not be recognized; the original wording of the Bill of Quantities will be adhered to.

MAKHADO MUNICIPALITY

PROJECT DESCRIPTION: UPGRADING OF LUVHALANI TO DZANANWA ACCESS ROAD FROM GRAVEL TO PAVED ROAD

C2.2 BILL OF QUANTITIES

The following is a sample Bill of Quantities for a paved road project with bill items indicated with "LI" to be executed by Labour Intensive methods.

BID NO. 65 OF 2023 UPGRADING OF LUVHALANI TO DZANANWA ACCESS ROAD		
SUMMARY OF SCHEDULE OF QUANTITIES		
SECTION	**DESCRIPTION**	**AMOUNT**
SCHEDULE A : GENERAL		
1200	GENERAL REQUIREMENTS AND PROVISIONS	
1300	CONTRACTOR'S ESTABLISHMENT ON SITE AND GENERAL OBLIGATIONS	
1400	HOUSING, OFFICES AND LABORATORY FOR THE ENGINEER'S SITE PERSONNEL	
TOTAL SCHEDULE A: GENERAL		R -
SCHEDULE B: ROADWORKS		
1500	ACCOMMODATION OF TRAFFIC	
1700	CLEARING AND GRUBBING	
1800	DAYWORK AND HIRE OF CONSTRUCTION PLANT	
2100	DRAINS	
2200	PREFABRICATE CULVERTS	
2300	CONCRETE KERBING, CONCRETE, CHANNELING, OPEN CHUTES AND CONCRETE LININGS FOR OPEN DRAINS	
3100	BORROW MATERIALS	
3300	MASS EARTHWORKS	
3400	PAVEMENT LAYERS OF GRAVEL MATERIAL	
3500	STABILIZATION	
5100	PITCHING, STONEWORK AND PROTECTION AGAINST EROSION	
5200	GABIONS	
5400	GUARDRAILS	
5600	ROAD SIGNS	
5700	ROAD MARKINGS	
5900	FINISHING THE ROAD AND ROAD RESERVE AND TREATMENT OF OLD ROADS	
7300	CONCRETE BLOCK PAVINGS	
8100	TESTING MATERIALS AND WORKMANSHIP	
TOTAL OF SCHEDULE B : ROADWORKS		R -

MAKHADO MUNICIPALITY

PROJECT DESCRIPTION: UPGRADING OF LUVHALANI TO DZANANWA ACCESS ROAD FROM GRAVEL TO PAVED ROAD

SUMMARY OF SCHEDULE OF QUANTITIES

CALCULATION OF TENDER SUM	
TOTAL SCHEDULE A: GENERAL	R -
TOTAL OF SCHEDULE B : ROADWORKS	R -
TOTAL OF SCHEDULE A AND B	R -
CONTINGENCIES The sum provided here is under the sole control of the Engineer and may be deducted in whole or in part. (The Tenderer must add 5% of the total of schedule of quantities)	R -
SUBTOTAL (1)	R -
CONTRACT PRICE ADJUSTMENT Sum provided in terms of the provisions of the General of Conditions of Contract (The Tenderer must add 5% of Sub-Total 1)	R -
SUBTOTAL (2)	R -
VALUE-ADDED TAX (VAT) The tenderer shall add 15% of subtotal (2) for VAT	R -
TENDER (CONTRACT) SUM CARRIED TO FORM OF TENDER OF OFFER AND ACCEPTANCE	R -

SCHEDULE OF QUANTITIES

NB: TENDERERS MUST COMPLETE THE SCHEDULE OF QUANTITIES IN BLACK INK.

SCHEDULE A : GENERAL — SECTION 1200

BID NO. 65 OF 2023 UPGRADING OF LUVHALANI TO DZANANWA ACCESS ROAD

ITEM NO	LI	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
		GENERAL REQUIREMENTS AND PROVISIONS				
B12.01	LI	Locating and relocating of existing services	Prov. Sum	1	R 700 000,00	R 700 000,00
B12.02	LI	Hand excavation to determine the position of existing services	m³	120		
B12.03	LI	Provision for community liaison officer (CLO) @ R 6000,00 pm	Prov. Sum	1		R 84 000,00
B12.04		Provision for attending steering committee meetings	Prov. Sum	1		R 18 480,00
B12.05		Provisional sum for payment of EPWP contract notice board as instructed by Engineer	Number	2,00		
B12.06	LI	Provision of Accredited Training including venue for the EPWP Participants	Prov. Sum	1	R 201 500,00	R 201 500,00
B12.07	LI	Employment of Two Trainee Technician for the duration of the contract @R 5000.00 pm	Prov. Sum	1	R 144 000,00	R 144 000,00
B12.08		Percentage for charges and profit on the provisional sums for contractor's cost and profit (B12.01, B12.03, B12,05 to B12.07)	%	R 1 147 980,00		
1200		TOTAL CARRIED TO SUMMARY				

SCHEDULE A : GENERAL						SECTION 1300
ITEM NO	LI	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
		CONTRACTOR'S ESTABLISHMENT ON SITE AND GENERAL OBLIGATIONS				
13.01		**The Contractor's general obligations:**				
		(a) Fixed obligations	Lump Sum	1		
		(b) Value-related obligations	Lump Sum	1		
		(c) Time-related obligations	month	12		
		NB The combined total tendered for subitems (a), (b) and (c) shall not exceed 15% of the Tender Sum (excl VAT)				
13/H/B1.1		**Contractors' initial obligations in respect of the Occupational Health and Safety Act and Construction Regulations**	Lump Sum	1		
13/H/B1.2		**Contractors' time related obligations in in respect of the Occupational Health and Safety Act and Construction Regulations (incl full time competent construction Safety Officer who is registered with SACPCMP)**	month	12,00		
13/H/B1.3		**Submission of the Health and Safety File**	Lump Sum	1		
1300		TOTAL CARRIED TO SUMMARY				

SCHEDULE A : GENERAL **SECTION 1400**

ITEM NO	LI	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
		HOUSING, OFFICES AND LABORATORIES FOR THE ENGINEER'S SITE PERSONNEL				
14,01	**LI**	**Office and laboratory accommodation:**				
		(a) Offices (interior floor space only)	m²	36		
		(e) Ablution units	m²	10		
14,02		**Office and laboratory furniture:**				
		(a) Chairs	number	5		
		(d) Desks, complete with drawers and locks	number	2		
14,03		**Office and laboratory fittings, installations and equipment:**				
		(a) Items measured by number:				
		(i) 220/250 volt power points	number	4		
		(iii) Double 80 watt fluorescent-light fittings complete with ballast and tubes	number	2		
		(vi) Wash hand basins complete with tap and drains	number	1		
		(xi) Air-conditioning units with 2,2 kW minimum capacity, mounted and with own power connection	number	1		
		(xiv) General-purpose steel cupboards with shelves	number	1		
		(xv) Steel filing cabinets with drawers	number	1		
		(xvi) Refrigerators	number	1		
		(x) Fire extinguishers, 9,0 kg all purpose dry powder	number	2		
14,04	**LI**	**Car-ports**	number	4		
14,08		**Services:**				
		(a) Services at offices and laboratories:				
		(i) Fixed costs	Lump Sum	1		
		(ii) Running costs	month	12		
14.10		**Provision of photostat facilities**	month	12		
14,12		**Supply of Survey Equipment, Computer and Printers**				
		(a) Printers	Prov. Sum	1		
		(b) Provision of survey equipment	Prov. Sum	1		
1400		**TOTAL CARRIED TO SUMMARY**				

SCHEDULE B : ROAD CONSTRUCTION						SECTION 1500
ITEM NO	LI	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
		ACCOMMODATION OF TRAFFIC				
15,02		**Earthworks for temporary deviations:**				
		(a) Shaping of temporary deviations	km	4,28		
		(b) Cut and borrow to fill	m³	879		
		(c) Cut to spoil	m³	75		
15.03		**Temporary traffic-control facilities:**				
	LI	(a) Flagmen	Man-day	672		
	LI	(b) Portable STOP and GO-RY signs	number	2		
	LI	(e) Road signs, R- and TR-series, (900mm dia)	number	10		
	LI	(f) Road signs, TW-series, (1200mm sides)	number	10		
	LI	(h) Delineators (DTG50J)				
		(i) Single	number	12		
		(ii) Mounted back to back	number	20		
	LI	(i) Movable barricade/road sign combination Chevron and Road Closed type	number	4		
	LI	(n) Provision of high visibility safety jackets and hat	number	4		
15,04	LI	**Relocation of traffic-control facilities**	Lump Sum	1		
15,05		**Gravelling and repair of temporary deviations and existing gravel shoulders used as temporary deviations:**				
		(a) Temporary deviations	m³	525		
15,06		**Watering of temporary deviations**	kilolitre	5000		
15,07		**Blading by road grader of:**				
		(a) Temporary deviations	km-passes	27,48		
1500		Carried forward				

SCHEDULE A : ROAD CONSTRUCTION						SECTION 1500
ITEM NO		DESCRIPTION	UNIT	QUANTITY		AMOUNT
		brought forward				
15,12	LI	**Temporary culverts:**				
		(a) Provision and laying of temporary prefabricated culverts complete:				
		(1) 600mm dia	m	Rate Only		Rate Only
		(2) 900mm dia	m	Rate Only		Rate Only
		(b) Re-use of prefabricated culverts complete:				
		(1) 600mm dia	m	Rate Only		Rate Only
		(2) 900mm dia	m	Rate Only		Rate Only
		(c) Eventual removal of prefabricated culverts:				
		(1) 600mm dia	m	60		
		(2) 900mm dia	m	70		
		(d) Overhaul on excavated material carted to spoil, backfill material (but excluding Portland cement), prefabricated culverts removed and reinstalled, and prefabricated culverts removed and stacked, for haul in excess of a free-haul distance of 1,0 km	m^3-km	3250		
1500		TOTAL CARRIED TO SUMMARY				

SCHEDULE B : ROAD CONSTRUCTION						SECTION 1700
ITEM NO	LI	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
		CLEARING AND GRUBBING				
17,01		Clearing and grubbing	ha	2,14		
17,02		Removal and grubbing of large trees and tree stumps:				
		(a) Girth exceeding 1 m up to and including 2 m	number	2,00		
17,04		Clearing and grubbing at inlets and outlets of hydraulic structures	m^2	5,00		
1700		TOTAL CARRIED TO SUMMARY				

SCHEDULE B : ROAD CONSTRUCTION						SECTION 1800
ITEM NO	LI	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
		DAYWORKS				
8.01		**Labourers**				
		(i) Unskilled	hour	9,00		
		(ii) Semi-skilled	hour	9,00		
		(iii) Skilled	hour	9,00		
18.02		**Foremen**	hour	9,00		
18.03		Trucks				
		(i) 6m3	hour	9,00		
		(ii) 10m3	hour	9,00		
		(iii) 5 ton flat truck	hour	9,00		
18.04		**TLB**	hour	9,00		
18.05		**Loader (0,5m3 bucket)**	hour	9,00		
18.06		**Grader (CAT 140G or similar)**	hour	9,00		
18.07		**Vibratory roller**	hour	9,00		
18.08		**Grid roller**	hour	9,00		
18.09		**Pedestrian roller (Bomag BW90)**	hour	9,00		
18.10		**Water truck (5000l)**	hour	9,00		
18.11		**Chainsaw**	hour	9,00		
18.12		**Mechanical broom**	hour	9,00		
18.13		**Light delivery vehicle (1 ton capacity)**	hour	9,00		
1800		TOTAL CARRIED TO SUMMARY				

SCHEDULE B : ROAD CONSTRUCTION						SECTION 2100
ITEM NO	LI	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
		DRAINS				
21.01	LI	**Excavation for open drains**				
		(a) Excavating soft material situated within the following depth ranges below the surface level:				
		(i) 0 m up to 1,5 m	m^3	720,00		
		(b) Extra over subitem 21.01(a) for excavation in hard material, irrespective of depth	m^3	72,00		
21.06	LI	**Natural Marerial in subsoil drainage system (crushed stone):**				
		(b) crushed stone obtained from commercial sources (Coarse grade 19mm)	m^3	180,00		
21.08	LI	**Pipes in subsoil drainage systems:**				
		(c) High density type polyethylene pressure pipes and fitting complete with couplings (100mm internal dia. Perforated)	m	2 000,00		
21.09	LI	**Polythylene sheeting 0.15 mm thick, or similar approved material, for lining subsoil drainage system**	m^2	720,00		
21.10		**Synthetic fibre filter fabric**				
		(a) Kaytech Grade A2	m^2	1 800,00		
21.12		**Concrete outlet structures, manhole boxes, Junction boxes, and cleaning eyes for subsoil drainage systems**				
		(a) Outlet Structures	No	5,00		
		(b) Cleaning eyes	No	5,00		
21.18		**Excavation for cleaning of existing drainage systems**				
		a) Manhole inlet and outlet structure	m^3	3,00		
		b) Culverts barrels	m^3	4,00		
21.19		**Selected backfill material under concrete-lined side drains compacted to 93% mod. AASHTO density**	m^3	90,00		
2100		TOTAL CARRIED TO SUMMARY				

SCHEDULE B : ROAD CONSTRUCTION						SECTION 2200
ITEM NO	LI	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
		PREFABRICATED CULVERTS				
22.01		**Excavation:**				
		(a) Excavating soft material situated within the following depth ranges below the surface level:				
	LI	(i) 0 m up to 1,5 m	m³	939		
		(ii) Exceeding 1,5 m and up to 3,0 m	m³	292		
		(b) Extra over subitem 22.01(a) for excavation in hard material, irrespective of depth	m³	126		
		(c) Extra over subitem 22.01(a) for excavation by hand within the following depth ranges below surface level:				
		(i) 0 m up to 1,5 m	m³	30		
22.02		**Backfilling:**				
	LI	(a) Using the excavated material	m³	485		
	LI	(b) Using imported selected material	m³	349		
	LI	(c) Extra over subitems 22.02(a) and (b) for soil cement backfilling containing 5% cement	m³	96		
22.03		**Concrete pipe culverts:**				
		(b) On class B bedding:				
	LI	(i) OG Class 100D - 600 mm Diameter	m	84,00		
	LI	(i) OG Class 100D - 750 mm Diameter	m	70,00		
		(ii) OG Class 100D - 900 mm Diameter	m	13,00		
		(iv) OG Class 100D - 1200 mm Diameter	m	44,00		
22,05		**Portal and rectangular concrete culverts:**				
		b) Without fabricated floor slabs,				
		(i) 1200 x1200 RP-150S	m	69,00		
		(i) 2400 x 2400 RP-75S	m	33,00		
22.07		**Cast in situ concrete and formwork:**				
		(a) In class A bedding, screeds and the encasing for pipes, including formwork:				
	LI	(i) Class 15/19 concrete	m³	15		
2200		Carried forward				

SCHEDULE A : ROAD CONSTRUCTION						SECTION 2200
ITEM NO		DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
		Brought forward				
	LI	(b) In floor slabs for portal or rectangular culverts, including formwork, joints and class U2 surface finish:				
		(i) Class 30/19 concrete	m^3	59		
		(c) In inlet and outlet structures, skewed ends, catchpits, manholes, thrust and anchor blocks, excluding formwork, but including class U2 surface finish:				
		(i) Class 30/19 concrete	m^3	28		
		(d) Formwork of concrete under subitem 22.07(c) above (type of finish indicated):				
	LI	(1) Vertical formwork for F1 surface finish	m^2	70		
		B(f) In concrete surface slab on top of culvert sections, including formwork, joints and class U2 surface finish				
		(1) Class 30/19	m^3	88		
		B(g) In concrete barriers on sides of driving surface				
		(1) Class 30/19	m^3	7		
		Concrete backfilling for culverts and making up levels				
	LI	(a) Class 15/19	m^3	29		
22.10		**Steel reinforcement:**				
		(a) Mild steel bars	t	1		
		(b) High-tensile steel bars	t	5		
		(c) Welded steel fabric ref 617	kg	1 040		
22.12	LI	**Removing existing concrete:**				
		(a) Plain concrete	m^3	10		
		(b) Reinforced concrete	m^3	25		
2200		Carried forward				

SCHEDULE A : ROAD CONSTRUCTION						SECTION 2200
ITEM NO		DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
		Brought forward				
22.14	LI	Removing and stacking existing prefabricated culverts (450 - 900mm concrete pipes)	m	15		
22.15	LI	Treating surfaces with epoxy resin for joining new to old concrete (ABE epoxy resin or similar)	litre	5		
22.18	LI	Brickwork				
		(a) 115mm thick	m^2	200		
		(b) 230mm thick	m^2	150		
22.19	LI	Plaster	m^2	200		
22.25		Overhaul on excavated material carted to spoil, backfill material (but excluding Portland cement in the case of soil cement), existing structures demolished and removed to spoil, and removing and relaying, and removing and stacking existing prefabricated culverts, for haul in excess of the free-haul distance	m^3-km	2 713		
2200		TOTAL CARRIED TO SUMMARY				

SCHEDULE B : ROAD CONSTRUCTION						SECTION 2300
ITEM NO	LI	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
		CONCRETE KERBING, CONCRETE CHANNELLING, CHUTES AND DOWNPIPES, AND CONCRETE LINING				
23.01		Concrete kerbing				
		(a) Precast kerbing to SABS 927:2006				
	LI	(i) Figure 8 C	m	1 167		
23.07		Trimming of excavation for concrete-lined opened drains				
	LI	(a) In soft material	m^2	2 102		
	LI	(b) In hard material	m^2	233		
23.08		Concrete lining for open drains;				
	LI	(a) Cast insitu concrete lining (trapezodial) including formwork 25/19 mpa	m^3	1 422		
	LI	(b) Class U2 surface finish to cast in situ concrete (trapezoidal drain)	m^2	14 214		
23.10	LI	Sealed joints in concrete linings of open drains (polysulphide sealants)	m	4 739		
23.12		Steel reinforcement				
		(a) Welded steel fabric ref: 193	kg	27 432		
2300		TOTAL CARRIED FORWARD TO SUMMARY				

SECTION 3100

ITEM NO	LI	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
		BORROW MATERIALS				
36,01		Excess overburden				
		(a) Depth up to and including 0.5m	m^3	6		
		(b) Depth exceeding 0.5m and up to 1.0m	m^3	1652		
31,03		Finishing-off borrow areas in:				
		(a) Hard material	ha	0,2		
		(b) Intermediate material	ha	0,3		
		(c) Soft material	ha	0,5		
31.04		**Borrow material: Compansation to land Owner**				
		(a) Prime cost sum	PC Sum	1	R 20 000,00	R 20 000,00
		(b) Handling cost and profit	%	R 20 000,00		
3500		TOTAL CARRIED TO SUMMARY				

SCHEDULE B : ROAD CONSTRUCTION						SECTION 3300
ITEM NO	LI	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
		MASS EARTHWORKS				
33.01		**Cut and borrow to fill, including free-haul up to 1,0 km:**				
		(a) Material in compacted layer thicknesses of 200 mm and less:				
		(ii) Compacted to 93% of modified AASHTO density	m^3	4560		
33.03		Extra over item 33.01 for excavating and breaking down				
		(a) Intermediate excavation	m^3	2280		
		(b) Hard excavation	m^3	228		
		(d) Boulder excavation Class A	m^3	60		
33.04		Cut to spoil, including free haul up to 1,0 km materials				
		(a) Soft excavation	m^3	11550		
		(b) Intermediate excavation	m^3	4247		
		(c) Hard excavation	m^3	263		
		(e) Boulder excavation Class A	m^3	10		
33.07		**Removal of unsuitable material (including free-haul of 1 km)**				
		(a) In layer thickness of 200mm and less				
		(i) Stable material	m^3	5497		
33.10		**Roadbed preparation and the compaction of material**				
		(b) Compaction to 93% of modified AASHTO density	m^3	5085		
33.12		**In situ treatment of roadbed:**				
		(a) In situ treatment by ripping	m^3	300		
		(b) In situ treatment by blasting	m^3	60		
33.13		**Finishing-off cut and fill slopes, medians and interchange areas:**				
		(a) Cut slopes	m^2	3000		
		(b) Fill slopes	m^2	1625		
33/16.02		**Overhaul (extra over items 33.01 on material hauled in excess of the free-haul distance of 1km (ordinary overhaul)**	m^3-km	48210		
33/32.06		**Stockpilling of material**	m^3	2165		
3300		TOTAL CARRIED TO SUMMARY				

SCHEDULE B : ROAD CONSTRUCTION						SECTION 3400
ITEM NO	LI	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
		PAVEMENT LAYERS OF GRAVEL MATERIAL				
B/34.01		**Pavement layers constructed from gravel taken from cut, borrow pit or commecial source (the tendered rate shall include full compensation for procuring, furnishing, placing, processing and testing all material and hauling the material over an unlimited free-haul distance)**				
		(a) Gravel (G7) selected layer compacted to				
		(i) 93% of modified AASHTO density (15mm thick)	m^3	5 496		
		(c) Gravel (G6) subbase (unstabilized gravel) compacted to:				
		(i) 95% of modified AASHTO density, (150 mm thick)	m^3	5 015		
		(f) Gravel (G5) base (chemically stabilized gravel) C3 Compacted to :				
		(ii) 98% of modified AASHTO density for a compacted layer thickness of 150 mm	m^3	4 809		
		(l) Gravel (G5) shoulders compacted to compacted to:				
		(i) 93% of modified AASHTO density for a compacted layer thickness of 150 mm	m^3			
34/16.02		**Overhaul on material hauled in excess of 1,0 km (ordinary overhaul)**	m^3-km	4 912		
34/32.04		**Removal of oversize pavement material**	m^3	125		
34/32.06		**Stockpiling of material**	m^3	9 824		
3400		TOTAL CARRIED TO SUMMARY				

SCHEDULE B : ROAD CONSTRUCTION						SECTION 3500
ITEM NO	LI	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
		<u>STABILIZATION</u>				
35.01		Chemical stabilization 150mm layer thickness extra over unstabilized compacted layers (base layer) C3				
		(a) Gravel base, 150mm thick	m^3	4 809		
35.02		**Chemical stabilizing agent:**				
		(a) CEMII B-L	t	297		
35.04		**Provision and application of water for curing**	kilolitre	250		
3500		TOTAL CARRIED TO SUMMARY				

SCHEDULE B : ROAD CONSTRUCTION						SECTION 5100
ITEM NO	LI	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
		PITCHING, STONEWORK AND PROTECTION AGAINST EROSION				
51.01	LI	**Stone pitching:**				
		(b) Grouted stone pitching	m^2	820		
5100		TOTAL CARRIED TO SUMMARY				

SCHEDULE B : ROAD CONSTRUCTION						SECTION 5200
ITEM NO	LI	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
5200		GABIONS				
52.01		**Foundation trench excavation and backfilling**				
	LI	(a) In solid rock (material which requires blasting)	m^3	384		
	LI	(b) In all other classes of material	m^3	120		
52.02	LI	**Surface preparation for bedding the gabions**	m^2	800		
52.03		**Gabions**				
		(a) Galvanised gabion boxes 1.0m wide, 2.7mm diameter (1) 1.0m x 1.0m x 80mm x 1000				
	LI	(i) 0 - 3m high - box 2m long	m^3	266		
		(b) Galvanised gabion boxes 0.5m wide, 2.7mm diameter (1) 0,5m x 1,0m x 80mm x 100mm				
	LI	(i) 0 - 3m high	m^3	280		
		(c) Galvanized gabion reno mattresses (80mm x 100mm) with 2.7mm diameter wire, incl. diaphragms				
	LI	(i) 2,0m x 1,0m x 0,3m	m^3	120		
52.04	LI	**Filter Fabric (Bidim U34 or Similar)**	m^2	620		
5200		TOTAL CARRIED TO SUMMARY				

SCHEDULE B : ROAD CONSTRUCTION						SECTION 5400
ITEM NO	LI	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
		GUARDRAILS				
54.01		**Guardrails on timber posts:**				
	LI	(a) Galvanized	m	400		
54.03	LI	**Extra Over item 54,01 for horizontally curved guardrails factory bent to a radius of less than 45m**	m	55		
54.04	LI	**End treatments:**				
		(a) End wings	number	8		
54.05	LI	**Additional guardrail posts:**				
		(a) Timber	number	36		
54.06	LI	**Reflective plates**	number	100		
54.07	LI	**Removing existing guardrails**	m	Rate Only		Rate Only
5400		TOTAL CARRIED TO SUMMARY				

SCHEDULE B : ROAD CONSTRUCTION						SECTION 5600
ITEM NO	LI	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
		ROAD SIGNS				
B56.01	LI	**Road sign boards with painted or coloured semi-matt background. Symbols, lettering and borders in diamond grade retro-reflective material, where the sign board is constructed from:**				
		(c) Prepainted galvanized steel plate (chromadek or approved equivalent):				
		(i) Area not exceeding 2 m²	m²	30		
		(ii) Area exceeding 2 m² but not 10 m²	m²	20		
56,02	LI	**Extra over item 56.01 for using:**				
		(a) Background of retro-reflective material:				
		(i) Class I	m²	50		
56,03	LI	**Road sign supports (overhead road sign structures excluded):**				
		(a) Steel tubing (D Profile)				
		(i) 76mm dia, 2mm thick	t	1		
		(ii) 100mm dia, 4mm thick	t	1		
56.05L	LI	**Excavation and backfilling for road sign supports (not applicable to kilometre posts)**	m³	18		
56.06L	LI	**Extra over item 56.05 for cement-treated soil backfill**	m³	6		
56.07L		**Extra over item 56.05 for rock excavation**	m³	6		
56.11	LI	**Construction of speed hump**	number	6		
5600		TOTAL CARRIED TO SUMMARY				

SCHEDULE A : ROAD CONSTRUCTION						SECTION 5700
ITEM NO	LI	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
		ROAD MARKINGS				
57.02	LI	**Retro-reflective road-marking paint:**				
		(a) White lines (broken or unbroken):				
		(i) 100 mm wide	km	4,58		
		(iv) 300 mm wide	km	0,40		
		(b) Yellow lines (broken or unbroken):				
		(i) 100 mm wide	km	Rate Only		Rate Only
		(d) White lettering and symbols	m²	134,00		
57.06	LI	**Setting out and premarking the lines (excluding traffic-island markings, lettering and symbols)**	km	4,98		
5700		TOTAL CARRIED TO SUMMARY				

SCHEDULE A : ROAD CONSTRUCTION						SECTION 5900
ITEM NO	LI	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
		FINISHING THE ROAD AND ROAD RESERVE AND TREATING OLD ROADS				
59.01		**Finishing the road and road reserve:**				
		(b) Single carriageway road	km	4,28		
59.02		**Treatment of old roads and temporary deviations**	km	4,28		
5900		TOTAL CARRIED TO SUMMARY				

SCHEDULE A : ROAD CONSTRUCTION						SECTION 7300
ITEM NO	LI	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
7300/LI		CONCRETE BLOCK PAVING				
73.01	LI	Concrete block paving: (a) Supply and laying of 80mm thick concrete interlocking paving blocks of 25MPa crushing strength including 25mm thick sand bedding and filling the joints with jointing sand	m^2	28 030,00		
73.02	LI	Cast insitu concrete edge and intermediate beams. Concrete class 25/19	m^3	314,40		
73,03	LI	**provision of approved herbicide and ant poison:**				
		(a) Provision and spraying of Materials	PC Sum	1	280 000,00	R 280 000,00
		(b) Handling cost and profit	%	280000		
7300		TOTAL CARRIED TO SUMMARY				

SCHEDULE A : ROAD CONSTRUCTION						SECTION 8100
ITEM NO	LI	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
		TESTING MATERIALS AND WORKMANSHIP				
81.02		**Other special tests requested by the Engineer:**				
		(a) Cost of testing	Prov. Sum	1,00	100 000,00	R 100 000,00
		(b) Charge on Prime Cost Sum	%	100 000,00		
8100		**TOTAL CARRIED TO SUMMARY**				

BID NO. 65 OF 2023 UPGRADING OF LUVHALANI TO DZANANWA ACCESS ROAD

SUMMARY OF SCHEDULE OF QUANTITIES

SECTION	DESCRIPTION	AMOUNT
SCHEDULE A : GENERAL		
1200	GENERAL REQUIREMENTS AND PROVISIONS	
1300	CONTRACTOR'S ESTABLISHMENT ON SITE AND GENERAL OBLIGATIONS	
1400	HOUSING, OFFICES AND LABORATORY FOR THE ENGINEER'S SITE PERSONNEL	
TOTAL SCHEDULE A: GENERAL		
SCHEDULE B: ROADWORKS		
1500	ACCOMMODATION OF TRAFFIC	
1700	CLEARING AND GRUBBING	
1800	DAYWORK AND HIRE OF CONSTRUCTION PLANT	
2100	DRAINS	
2200	PREFABRICATE CULVERTS	
2300	CONCRETE KERBING, CONCRETE, CHANNELING, OPEN CHUTES AND CONCRETE LININGS FOR OPEN DRAINS	
3100	BORROW MATERIALS	
3300	MASS EARTHWORKS	
3400	PAVEMENT LAYERS OF GRAVEL MATERIAL	
3500	STABILIZATION	
5100	PITCHING, STONEWORK AND PROTECTION AGAINST EROSION	
5200	GABIONS	
5400	GUARDRAILS	
5600	ROAD SIGNS	
5700	ROAD MARKINGS	
5900	FINISHING THE ROAD AND ROAD RESERVE AND TREATMENT OF OLD ROADS	
7300	CONCRETE BLOCK PAVINGS	
8100	TESTING MATERIALS AND WORKMANSHIP	
TOTAL OF SCHEDULE B : ROADWORKS		

CALCULATION OF TENDER SUM

TOTAL SCHEDULE A: GENERAL	
TOTAL OF SCHEDULE B : ROADWORKS	
TOTAL OF SCHEDULE A AND B	
CONTINGENCIES The sum provided here is under the sole control of the Engineer and may be deducted in whole or in part. (The Tenderer must add 5% of the total of schedule of quantities)	
SUBTOTAL (1)	
CONTRACT PRICE ADJUSTMENT Sum provided in terms of the provisions of the General of Conditions of Contract (The Tenderer must add 5% of Sub-Total 1)	
SUBTOTAL (2)	
VALUE-ADDED TAX (VAT) The tenderer shall add 15% of subtotal (2) for VAT	
TENDER (CONTRACT) SUM CARRIED TO FORM OF TENDER OF OFFER AND ACCEPTANCE	

SIGNED BY THE BIDDER .....

PART C3: SCOPE OF WORK

C3.1: STANDARD SPECIFICATIONS

C3.2: ENGINEERING

C3.3: CONSTRUCTION

C3.4: EXPANDED PUBLIC WORKS PROGRAM LABOR INTENSIVE SPECIFICATION

C3.5: HEALTH AND SAFETY SPECIFICATION

C3.6: GENERAL LABOUR-INTENSIVE SPECIFICATION

MAKHADO MUNICIPALITY

PROJECT DESCRIPTION: UPGRADING OF LUVHALANI TO DZANANWA ACCESS ROAD FROM GRAVEL TO PAVED ROAD

C3: SCOPE OF WORK

PART A: GENERAL

PS-1	Project Description
PS-2	Description of the Site and Access
PS-3	Details of the Works
PS-4	Construction Management Requirements
PS-5	Security Clearance of Personnel
PS-6	Subcontractors
PS-7	Supply of Materials
PS-8	Execution of Works

PART B: AMENDMENTS TO THE STANDARD SPECIFICATIONS

PSA	SABS 1200 A: General
PSC	SABS 1200 D: Earthworks

PARTICULAR SPECIFICATIONS

SECTION PC Trimming Of Site

SECTION PC Maintenance

SECTION PE Contingencies

SECTION PG Generic Labour-Intensive Specification

SECTION POHS

MAKHADO MUNICIPALITY

PROJECT DESCRIPTION: UPGRADING OF LUVHALANI TO DZANANWA ACCESS ROAD FROM GRAVEL TO PAVED ROAD.

C3 Scope of Work

As much as is economically feasible all work shall be implemented by employing Labour Intensive Construction methods. Over and above the normal Building and Allied works to be implemented by employing skilled and unskilled labour the works specified in the "Guidelines for the Implementation of Labour-Intensive Infrastructure Projects under the Expanded Public Works Programme (EPWP)" shall be undertaken using Labour Intensive Construction methods

1 DESCRIPTION OF THE WORKS

1.1 Employer's objectives

The employer's objectives are to deliver public infrastructure using labour intensive methods in accordance with EPWP Guidelines

Labour-intensive works

Labour-intensive works shall be constructed/maintained using local workers who are temporarily employed in terms of this Scope of Work.

Labour-intensive competencies of supervisory and management staff

Contractors shall engage supervisory and management staff in labour-intensive works that have completed the skills programme including Foremen/Supervisors at NQF "National Certificate: Supervision of Civil Engineering Construction Processes" and Site Agent/Manager at NQF level 5 "Manage labour-intensive Construction Processes" or equivalent QCTO qualifications.

1.2 Overview of the works

The work will be carried using Labour- Intensive approach as much as possible. Labour-intensive works comprise the activities described in SANS 1921-5, Earthworks activities which are to be performed by hand, and its associated specification data. Such works shall be Constructed using local workers who are temporarily employed in terms of this Scope of Work.

1.3 Extent of the works

The project entails the upgrading of approximately ±4.28 km portion of internal road from a gravel road to paved road using conventional and Labour Intensive methods.

The project entails the upgrading of the Luvhalani to Dzananwa Internal Street from gravel to paved road and provision of storm-water management to safely discharge runoff into natural environment

The project includes but not limited to:

- Site Establishment, Clear and Grubbing.
- Identification of services, lowering and relocating where required.
- Earthworks.
- Excavation for storm water pipelines and subsoil drainage.
- Construction of box culvert bridge.
- Preparation of bedding and laying of pipes.
- Construction of junction boxes for storm water line networks.
- Box cutting and preparation of the road bed.
- Construction of pavement layers.
- Erection of guardrail.
- Erection of permanent road signs.
- Road making.
- Construction of concrete side drains.
- Construction of concrete lined edge beam.
- Paving with 80mm interlocking blocks.
- Finishing.

1.4 Location of the Works

The project is located within Makhado Municipal area of Vhembe District of the Limpopo Province. The GPS co-ordinates at the start of the road, where the road is currently ending, are as follows:

Luvhalani to Dzananwa road Start to End

Description	S Coordinate	E Coordinate	S Coordinate	E Coordinate	Distance
	Start		End		Km
Road 1	23'03'41"	30'18'21"	23'03'54"	30'19'08"	4.28

The site shall not only include the works area for the construction of the new services, but shall be extended in the broader sense to take account of all areas occupied by the Contractor, be it deliberate or unintentional, in the execution of the contract..

1.5 General Information

Labour Regulations

C3.1.7.1 Payment for the labour-intensive component of the works
Payment for works identified in clause 2.3 "the Extent of the Project" in the Project Specifications as being labour-intensive shall only be made in accordance with the provisions of the Contract if the works are constructed strictly in accordance with the provisions of the scope of work. Any non-payment for such works shall not relieve the Contractor in any way from his obligations either in contract or in delict.

C3.1.7.2 Applicable labour laws
The Ministerial Determination for Special Public Works Programmes, issued in terms of the Basic Conditions of Employment Act of 1997by the Minister of Labour in **Government Notice N° R949 in Government Gazette 33665 of 22 October 2010,** as reproduced below, shall apply to works described in the scope of work as being labour intensive and which are undertaken by unskilled or semi-skilled workers.

C3.1.7.3 Introduction
This document contains the standard terms and conditions for workers employed in elementary occupations on a Special Public Works Programme (SPWP). These terms and conditions do NOT apply to persons employed in the supervision and management of a SPWP.
In this document –
(a) "department" means any department of the State, implementing agent or contractor;
(b) "employer" means any department, implementing agency or contractor that hires workers to work in elementary occupations on a SPWP;
(c) "worker" means any person working in an elementary occupation on a SPWP;
(d) "elementary occupation" means any occupation involving unskilled or semi-skilled work;
(e) "management" means any person employed by a department or implementing agency to administer or execute an SPWP;
(f) "task" means a fixed quantity of work;
(g) "task-based work" means work in which a worker is paid a fixed rate for performing a task;
(h) "task-rated worker" means a worker paid on the basis of the number of tasks completed;
(i) "time-rated worker" means a worker paid on the basis of the length of time worked.

C3.1.7.4 Terms of Work

(a) Workers on a SPWP are employed on a temporary basis.

(b) A worker may NOT be employed for longer than 24 months in any five-year cycle on a SPWP.

(c) Employment on a SPWP does not qualify as employment as a contributor for the purposes of the Unemployment Insurance Act 30 of 1966.

C3.1.7.5 Normal Hours of Work
An employer may not set tasks or hours of work that require a worker to work–
(a) more than forty hours in any week
(b) on more than five days in any week; and
(c) for more than eight hours on any day.

(d) An employer and worker may agree that a worker will work four days per week. The worker may then work up to ten hours per day.

(e) A task-rated worker may not work more than a total of 55 hours in any week to complete

the tasks allocated (based on a 40-hour week) to that worker.

C3.1.7.6 Meal Breaks

(f) A worker may not work for more than five hours without taking a meal break of at least thirty minutes duration.

(g) An employer and worker may agree on longer meal breaks.

(h) A worker may not work during a meal break. However, an employer may require a worker to perform duties during a meal break if those duties cannot be left unattended and cannot be performed by another worker. An employer must take reasonable steps to ensure that a worker is relieved of his or her duties during the meal break.

(i) A worker is not entitled to payment for the period of a meal break. However, a worker who is paid on the basis of time worked must be paid if the worker is required to work or to be available for work during the meal break.

C3.1.7.7 Special Conditions for Security Guards

(a) A security guard may work up to 55 hours per week and up to eleven hours per day.

(b) A security guard who works more than ten hours per day must have a meal break of at least one hour or two breaks of at least 30 minutes each.

C3.1.7.8 Daily Rest Period

(a) Every worker is entitled to a daily rest period of at least eight consecutive hours. The daily rest period is measured from the time the worker ends work on one day until the time the worker starts work on the next day.

C3.1.7.9 Weekly Rest Period

(a) Every worker must have two days off every week. A worker may only work on their day off to perform work which must be done without delay and cannot be performed by workers during their ordinary hours of work ("emergency work").

C3.1.7.10 Work on Sundays and Public Holidays

(a) A worker may only work on a Sunday or public holiday to perform emergency or security work.

(b) Work on Sundays is paid at the ordinary rate of pay.

(c) A task-rated worker who works on a public holiday must be paid –

i. the worker's daily task rate, if the worker works for less than four hours;

ii. double the worker's daily task rate, if the worker works for more than four hours.

(d) A time-rated worker who works on a public holiday must be paid –

i. the worker's daily rate of pay, if the worker works for less than four hours on the public holiday;

ii. double the worker's daily rate of pay, if the worker works for more than four hours on the public holiday.

C3.1.7.11 Sick Leave

(a) Only workers who work four or more days per week have the right to claim sick-pay in terms of this clause.

(b) A worker who is unable to work on account of illness or injury is entitled to claim one day's paid sick leave for every full month that the worker has worked in terms of a contract.

(c) A worker may accumulate a maximum of twelve days' sick leave in a year.

(d) Accumulated sick-leave may not be transferred from one contract to another contract.

(e) An employer must pay a task-rated worker the worker's daily task rate for a day's sick leave.

(f) An employer must pay a time-rated worker the worker's daily rate of pay for a day's sick leave.

(g) An employer must pay a worker sick pay on the worker's usual payday.

(h) Before paying sick-pay, an employer may require a worker to produce a certificate stating that the worker was unable to work on account of sickness or injury if the worker is –

i. absent from work for more than two consecutive days; or

ii. absent from work on more than two occasions in any eight-week period.

(i) A medical certificate must be issued and signed by a medical practitioner, a qualified nurse or a clinic staff member authorised to issue medical certificates indicating the duration and reason for incapacity.

(j) A worker is not entitled to paid sick-leave for a work-related injury or occupational disease for which the worker can claim compensation under the Compensation for Occupational Injuries and Diseases Act.

C3.1.7.12 Maternity Leave

(a) A worker may take up to four consecutive months' unpaid maternity leave.

(b) A worker is not entitled to any payment or employment-related benefits during maternity leave.

(c) A worker must give her employer reasonable notice of when she will start maternity leave and when she will return to work.

(d) A worker is not required to take the full period of maternity leave. However, a worker may not work for four weeks before the expected date of birth of her child or for six weeks after the birth of her child, unless a medical practitioner, midwife or qualified nurse certifies that she is fit to do so.

(e) A worker may begin maternity leave –

(f) four weeks before the expected date of birth; or

(g) on an earlier date –

(i)if a medical practitioner, midwife or certified nurse certifies that it is necessary for the health of the worker or that of her unborn child; or
(ii) if agreed to between employer and worker; or
(iii) on a later date, if a medical practitioner, midwife or certified nurse has certified that the worker is able to continue to work without endangering her health.

(h) A worker who has a miscarriage during the third trimester of pregnancy or bears a stillborn child may take maternity leave for up to six weeks after the miscarriage or stillbirth.

(i) A worker who returns to work after maternity leave, has the right to start a new cycle of twenty-four months employment, unless the SPWP on which she was employed has ended.

C3.1.7.12 Family responsibility leave

Workers, who work for at least four days per week, are entitled to three days paid family responsibility leave each year in the following circumstances -
(a)when the employee's child is born;
(b) when the employee's child is sick;
(c) in the event of a death of –
(i) the employee's spouse or life partner;
(ii) the employee's parent, adoptive parent, grandparent, child, adopted child, grandchild or sibling.

C3.1.7.13 Statement of Conditions

An employer must give a worker a statement containing the following details at the start of employment –
(a) the employer's name and address and the name of the SPWP;
(b) the tasks or job that the worker is to perform; and
(c) the period for which the worker is hired or, if this is not certain, the expected duration of the contract;
(d) the worker's rate of pay and how this is to be calculated;
(e) the training that the worker will receive during the SPWP.
(f) An employer must ensure that these terms are explained in a suitable language to any employee who is unable to read the statement.
(g) An employer must supply each worker with a copy of these conditions of employment.

C3.1.7.14Keeping Records

Every employer must keep a written record of at least the following –
(a) the worker's name and position;
(b) in the case of a task-rated worker, the number of tasks completed by the worker;
(c) in the case of a time-rated worker, the time worked by the worker;
(d) payments made to each worker.
(e) The employer must keep this record for a period of at least three years after the completion of the SPWP.

C3.1.7.15 Payment

(a) An employer must pay all wages at least monthly in cash or by cheque or into a bank account.

(b) A task-rated worker will only be paid for tasks that have been completed.

(c) An employer must pay a task-rated worker within five weeks of the work being completed and the work having been approved by the manager or the contractor having submitted an invoice to the employer.

(d) A time-rated worker will be paid at the end of each month.

(e) Payment must be made in cash, by cheque or by direct deposit into a bank account designated by the worker.

(f) Payment in cash or by cheque must take place –

i. at the workplace or at a place agreed to by the worker;

ii. during the worker's working hours or within fifteen minutes of the start or finish of work;

iii. in a sealed envelope which becomes the property of the worker.

C3.1.7.16 An employer must give a worker the following information in writing –

(a) the period for which payment is made;
(b) the numbers of tasks completed or hours worked;
(c) the worker's earnings;
(d) any money deducted from the payment;
(e) the actual amount paid to the worker.
(f) If the worker is paid in cash or by cheque, this information must be recorded on the envelope and the worker must acknowledge receipt of payment by signing for it
(g) If a worker's employment is terminated, the employer must pay all monies owing to that worker within one month of the termination of employment.

C3.1.7.17 Deductions

(a) An employer may not deduct money from a worker's payment unless the deduction is required in terms of a law.

(b) An employer must deduct and pay to the SA Revenue Services any income tax that the worker is required to pay.

(c) An employer who deducts money from a worker's pay for payment to another person must pay the money to that person within the time period and other requirements specified in the agreement law, court order or arbitration award concerned.

(d) An employer may not require or allow a worker to –

i. repay any payment except an overpayment previously made by the employer by mistake;

ii. state that the worker received a greater amount of money than the employer actually

paid to the worker; or

iii. pay the employer or any other person for having been employed.

C3.1.7.18 Health and Safety

(a) Employers must take all reasonable steps to ensure that the working environment is healthy and safe.

(b) A worker must –

i. work in a way that does not endanger his/her health and safety or that of any other person;

ii. obey any health and safety instruction;

iii. obey all health and safety rules of the SPWP;

iv. use any personal protective equipment or clothing issued by the employer;

v. report any accident, near-miss incident or dangerous behaviour by another person to their employer or manager.

C3.1.7.19 Compensation for Injuries and Diseases

(a) It is the responsibility of the employers (other than a contractor) to arrange for all persons employed on a SPWP to be covered in terms of the Compensation for Occupational Injuries and Diseases Act, 130 of 1993.

(b) A worker must report any work-related injury or occupational disease to their employer or manager.

(c) The employer must report the accident or disease to the Compensation Commissioner.

(d) An employer must pay a worker who is unable to work because of an injury caused by an accident at work 75% of their earnings for up to three months. The employer will be refunded this amount by the Compensation Commissioner. This does NOT apply to injuries caused by accidents outside the workplace such as road accidents or accidents at home.

C3.1.7.20 Termination

(a) The employer may terminate the employment of a worker for good cause after following a fair procedure.

(b) A worker will not receive severance pay on termination.

(c) A worker is not required to give notice to terminate employment. However, a worker who wishes to resign should advise the employer in advance to allow the employer to find a replacement.

(d) A worker who is absent for more than three consecutive days without informing the employer of an intention to return to work will have terminated the contract. However, the worker may be re-engaged if a position becomes available for the balance of the 24-month period.

(e) A worker who does not attend required training events, without good reason, will have terminated the contract. However, the worker may be re-engaged if a position becomes available for the balance of the 24-month period.

C3.1.7.21 Certificate of Service

On termination of employment, a worker is entitled to a certificate stating –

(a) the worker's full name;
(b) the name and address of the employer;
(c) the SPWP on which the worker worked;
(d) the work performed by the worker;
(e) any training received by the worker as part of the SPWP;
(f) the period for which the worker worked on the SPWP;
(g) any other information agreed on by the employer and worker.

C3.1.7.22 Contractor's default in payment to Labourers and Employees

(a) Any dispute between the Contractor and labourers, regarding delayed payment or default in payment of fair wages, if not resolved immediately may compel the Employer to intervene.

(b) The Employer may, upon the Contractor defaulting payment, pay the moneys due to the workers not honoured in time, out of any moneys due or which may become due to the Contractor under the Contract.

C3.1.7.23 Provision of Handtools

(a) The Contractor shall provide his labour force with hand tools of adequate quality, sufficient in numbers and make the necessary provisions to maintain the tools in good and safe working conditions

C3.1.7.23 Reporting Requirements of the Contractor

The Contractor should submit the following at the beginning of the Contract:

- Contracts of all the workers employed on the contracts including their certified identity documents;
- Proof of Registration for COIDA and UIF;
- OHS Files

The Contractor shall submit monthly returns/reports as specified below:

- Signed Muster rolls/pay sheets of temporary workers and permanent staff detailing the number, category, gender, rate of pay and daily attendance.
- Copies of certified identity documents of workers

- Number of persons who have attended training including nature and duration of training provided
- Assets created, rehabilitated or maintained in accordance with indicators in the EPWP M&E framework
- Plant utilization returns
- Progress report detailing production output compared to the programme of works

C3.1 STANDARD SPECIFICATIONS

C3.2 ENGINEERING

C3.2.1 Design

(a) The **Employer** is responsible for the design of the permanent Works as reflected in these Contract Documents unless otherwise stated.

(b) The **Contractor** is responsible for the design of the temporary Works and their compatibility with the permanent Works.

(c) The **Contractor** shall supply all details necessary to assist the engineer in the compilation of the as-built drawings.

C3.2.2 Employer's Design

(a) Detail description of Works

(b) General Works

(c) Sign Gantries. e.g.

C3.2.3 Contractor's Design

Where contractor is to supply the design of designated parts of the permanent Works or temporary Works he shall supply full working drawings supported by a professional engineer's design certificate.

C3.2.4 Design procedures

All designs and modifications thereto shall be communicated in writing and the contractor and engineer shall maintain master lists to record and track all transactions.

C3.3 CONSTRUCTION

C3.3.1 STANDARD SPECIFICATIONS

(a) The following specifications shall apply for the construction of the Works.

(i) The COLTO Standard Specifications for Road and Bridge Works for State Road Authorities (1998).

The contractor may purchase copies of Volume (i) from the South African Institution of Civil Engineers.

SAICE		Tel : (011) 805-5947
Waterfall Park	/ Postnet Suite 81	Fax : (011) 805-5971
Howick Gardens	/ Private Bag X65	
Vorna Valley	/ Halfwayhouse	Contact Person : Angeline Aylward
Becker Street	/ 1685	
Midrand		

(b) SANS or BS Specifications and Codes of Practice

Wherever any reference is made to the South African Bureau of Standards (SANS) and the British Standards Specification (BSS) in either these Bill of Quantities or the Specification of Materials and Methods to be Used (OOG-001E), this reference shall be deemed to read "SABS or equivalent standard" and BS or equivalent standard" respectively.

(c) Various other specifications specified in the COLTO Standard Specifications or the Project Specifications.

(d) Latest **Sabita Manual**, Manual 25 entitled "*Quality Management in the Handling and Transport of Bituminous Binders*".

C3.3.2 PROJECT SPECIFICATIONS RELATING TO STANDARD SPECIFICATIONS

C3.3.2.1 General Conditions of Contract Referred to in the Standard Specifications

The references to the General Conditions of Contract appearing in the COLTO Standard Specifications refer to the COLTO General Conditions of Contract which is superseded in this contract by the General Conditions of Contract for Construction Works 2010. The corresponding clause in the latter document pertaining to the reference in the COLTO Standard Specifications is listed in the table below.

Clause No. in the Standard Specifications	Clause No. in COLTO General Conditions	Equivalent Clause No. in General Conditions of Contract 2010
1202	15	5.6.1
1206	14	Deleted
1209	52	6.10.2
1210	54	51.1
1212(1)	49	6.10.1
1215	45	5.12.1
1217	35	8.2.1
1303	49	6.8
1303	53	6.11
1303	12	5.6
1303	45	5.12.1
1403	40(1)	6.4.1
1505	40	6.4
31.03	40	6.4
3204(b)	40	6.4
3303(b)	2	3
5803(c)	40	6.4
5805(d)	40	6.4
6103(c)	40	6.4
Item 83.03	22	5.15
ALL SECTIONS	48	6.6

C3.3.2.2 Amendments to the Standard Specifications

There are no amendments to the Standard Specifications as issued by the Committee of Land Transport Officials (COLTO).

C3.3.2.3 Project Specifications Relating to Standard Specifications

This part of the project specifications deals with matters relating to the standard specifications. Where reference is made in the standard specifications to the project specifications this part shall also contain the relevant information e.g. the requirements where a choice of materials or construction methods are provided for the standard specifications.

In certain clauses the standard specifications allow a choice to be specified in the project specifications between alternative materials or methods of construction and for additional requirements to be specified to suit a particular contract. Details of such alternatives or additional requirements applicable to this contract are contained in this part of the project specifications. It also contains some additional specifications and amendments of the standard specifications required for this particular contract.

The number of each clause and each payment item in this part of the project specifications consists of the prefix B followed by a number corresponding to the number of the relevant clause or payment item in the standard specifications. The number of a new clause or a new payment item, which does not form part of a clause or a payment item in the standard specifications and is included here, is also prefixed by B followed by a new number. The new numbers follow on the last clause or item number used in the relevant section of the standard specifications.

Clauses and pay items referring to labour intensive methods are prefixed by L in the project specifications.

Clauses and pay items referring to emerging contractors are prefixed by E in the project specifications.

MATTERS RELATING TO THE STANDARD SPECIFICATIONS

SECTION 1200 : GENERAL REQUIREMENTS AND PROVISIONS 19

SECTION 1300 : CONTRACTOR'S ESTABLISHMENT ON SITE AND GENERAL OBLIGATIONS 29

SECTION 1400 : HOUSING, OFFICES AND LABORATORIES FOR THE ENGINEER'S SITE PERSONNEL 30

SECTION 1500 : ACCOMMODATION OF TRAFFIC 32

SECTION 1700 : CLEARING AND GRUBBING 37

SECTION 1800 : DAYWORK SCHEDULE 39

SECTION 1900 : MECHANICAL SAW CUTTING 41

SECTION 2100 : DRAINS 43

SECTION 2200 : PREFABRICATED CULVERTS 44

SECTION 2300 : CONCRETE KERBING, CONCRETE CHANNELLING, CHUTES AND DOWNPIPES AND CONCRETE LININGS FOR OPEN DRAINS 49

SECTION 3100 : BORROW MATERIALS 51

SECTION 3200 : SELECTION, STOCKPILING AND BREAKING-DOWN THE MATERIAL FROM BORROW PITS, CUTTINGS AND EXISTING PAVEMENT LAYERS, AND PLACING AND COMPACTING THE GRAVEL LAYERS 53

SECTION 3300 : MASS EARTHWORKS 54

SECTION 3400 : PAVEMENT LAYERS OF GRAVEL MATERIAL 56

SECTION 5200 : GABIONS 57

SECTION 5600 : ROAD SIGNS 60

SECTION 5700 : ROAD MARKINGS 63

SECTION 5800 : LANDSCAPING AND PLANTING GRASS 65

SECTION 5900 : FINISHING THE ROAD AND ROAD RESERVE AND TREATING OLD ROADS 67

SECTION 6100 : FOUNDATIONS FOR STRUCTURES 68

SECTION 6400 : CONCRETE FOR STRUCTURES 69

1200 : GENERAL REQUIREMENTS AND PROVISIONS

B1202 SERVICES

Add the following to the fifth paragraph:

"Provision is made in the bill of quantities for payment for searching and exposing of known or unknown services as well as the relocation and/or protection of existing services. Any moving of existing services which may be required within the proclaimed road reserve will be undertaken by the relevant service authorities or by a selected subcontractor if so ordered by the engineer."

B1204 PROGRAMME OF WORK

(a) General requirements

Amend the word "network" in the fourth line of the first paragraph to read as "bar (Gantt) chart".

Add the following after the third paragraph:

"The bar-chart programme to be provided by the contractor shall show the various activities in such detail as may be required by the engineer. Progress in terms of the programme shall be updated monthly by the contractor in accordance with the progress made by the contractor.

In compiling the programme of work, the contractor shall indicate and make due allowance for the following, as specified elsewhere in the contract documents:

- The requirements regarding the accommodation of traffic and areas that may be occupied at any time for construction purposes (as indicated on the drawings and specified in Section 1500 of the specifications)
- Requirements regarding the training of labourers and Emerging Contractors (EC's).
- The requirements for work to be undertaken by labourers and work to be undertaken by EC's.

(b) Programme of work for rehabilitation work

Amend the word "network" in the fourth line of the second paragraph to read as "bar (Gantt) chart".

B1205 WORKMANSHIP AND QUALITY CONTROL

Add the following to the third paragraph:

"The engineer shall, however, undertake acceptance control tests for the judgement of workmanship and quality, without accepting any obligations vested with the contractor in terms of the contract with specific reference to quality of materials and workmanship. Such acceptance control test done by the engineer shall not relieve the contractor of his obligations to maintaining his own quality control system."

Add the following at the end of this clause:

"The engineer shall, for the purpose of acceptance control on products and workmanship, assess test results and measurements in accordance with the provisions of section 8300 of the standard specifications. Where small quantities of work are involved, a lot shall mean a full day's production for a specific item of work subject to acceptance control testing."

B1206 THE SETTING-OUT OF THE WORK AND PROTECTION OF BEACONS

Add the following:

"The contractor shall be responsible for the true and proper setting out of the Works and for the correctness of the position, levels, dimensions and alignment of all parts of the Works and for the provision of all necessary instruments, appliances and labour in connection therewith."

The Contractor shall take care that property beacons, trigonometrical survey beacons or setting-out beacons are not displaced or destroyed without the consent of the Engineer. Property beacons and trigonometrical survey beacons that have been displaced or destroyed shall be replaced by a registered land surveyor, who shall certify such replacement.

The cost of replacing all beacons displaced or destroyed during the course of the Contract without the consent of the Engineer shall be borne by the Contractor."

B1209 PAYMENT

(b) Rates to be inclusive

Add the following:

"VAT shall be excluded from the rates and provided for as a lump sum in the Summary of Bill of Quantities".

(e) Materials on the site

Add the following:

"In addition, the engineer may at his sole discretion also allow payments under "Materials on Site" in respect of any construction materials if stored off-site providing that:

(a) The site selected for this purpose is approved by the engineer

(b) Such land is physically separated from any production plant or operation

(c) Only materials for use under this contract is stockpiled on such land

(d) The contractor has provided proof of an agreement with the owner of such land that the owner has no claim whatsoever on any materials stockpiled on such land

(e) Materials obtained by the contractor for or on behalf of emerging subcontractors (SMME's) shall remain the responsibility of the contractor after payment has been made in respect of materials on site."

B1215 EXTENSION OF TIME RESULTING FROM ABNORMAL RAINFALL

Add the following after the first paragraph of this clause:

"For the purposes of this contract, extension of time resulting from abnormal rainfall or other forms of inclement weather shall be determined according to the requirements of Method ii (critical-path method)."

Method (ii) (Critical path method)

Delete "(based on a five-day working week)" in the fifth and sixth lines of the second paragraph of the description of this method.

Delete the last sentence of the second paragraph of the description of this method and replace with

the following:

"The value of "n" shall be taken as three (03) working days per calendar month.

If normal rainy or inclement weather, resulting in delays, occurs for less than three (03) working days in any calendar month, the difference between the three (03) working days and the actual number of working days on which normal rainy or inclement weather occurred, shall be ignored and not accumulated for the duration of the contract period for the purposes of determining an extension of time due to normal rainy weather, nor due to any other reason.

Items of work on the critical path of the programme of work which are subject to climatic limitations shall also be considered for extension of time if such items of work are delayed by e.g. cold weather, high winds or other inclement weather conditions.

In this regard, reference shall be made to weather limitations specified for the application of various bituminous products. However, for months during which seal-work cannot be undertaken in terms of the specifications, no extension of time shall be claimed for.

Rainfall records for Tshakhuma

MONTH	AVERAGE RAINFALL (mm)	RAIN DAYS (per month)
JANUARY	120.9	18
FEBRUARY	100.8	16
MARCH	68.2	17
APRIL	27	10
MAY	9.3	5
JUNE	9	4
JULY	9.3	5
AUGUST	6.2	4
SEPTEMBER	21	7
OCTOBER	34.1	11
NOVEMBER	84	16
DECEMBER	130.2	20

B1217 PROTECTION OF THE WORKS AND REQUIREMENTS TO BE MET BEFORE CONSTRUCTION OF NEW WORK ON TOP OF COMPLETED WORK IS COMMENCED

Add the following subclause:

"(h) No concrete kerbing or concrete drains directly adjoining the bituminous surfacing shall be constructed prior to the completion of the bituminous surfacing."

B1222 USE OF EXPLOSIVES

Add the following subclause:

"(h) Where blasting operations are undertaken in close proximity of temporary deviations, the

contractor shall implement all such safeguarding measures as may be required and instructed by the engineer."

B1224 THE HANDING-OVER OF THE ROAD RESERVE

Add the following:

"The total length of the road reserve between the specified limits of construction will be handed over to the contractor on the commencement date. Reference shall, however, be made to the requirements of section 1500 of these specifications where limitations in respect of work-areas are specified. In the event of the non-adherence by the contractor in terms of the mentioned specifications, the engineer shall withdraw such sections of the road reserve as may be justified to ensure suitable progress of the works or safe passage of traffic."

B1229 SABS CEMENT SPECIFICATIONS

Replace the last paragraph of this clause with the following:

"Where reference is made in this specification or the standard specifications to the cement specifications, eg. SABS 471: Portland cement and rapid hardening Portland cement, it shall be replaced with the new specification:

SABS ENV 197-1: Cement-composition, specifications and conformity criteria.

Part 1: Common cements.

Furthermore, where reference is made in this specification or the standard specifications to the different cement types, the following new names/types shall apply:

Typical new product nomenclature	
Cement type	**Cement strength class**
CEM I	32,5
CEM I	32,5R
CEM I	42,5
CEM I	42,5R
No provision made	No provision made
CEM II/A-S	32,5
CEM II/A-S	32,5R
CEM II/A-S	42,5
CEM II/A-V	32,5
CEM II/A-V	32,5R
CEM II/A-W	32,5
CEM II/A-W	32,5R
CEM II/A-V	42,5
CEM II/A-V	42,5R
CEM II/A-W	42,5
CEM II/A-W	42,5R
CEM III/A	32,5

Typical new product nomenclature		
Cement type		**Cement strength class**
CEM III/A		32,5R
CEM II/B-V		32,5
CEM II/B-W		32,5
	CEM II/B-S	32,5R
	CEM II/B-S	42,5
	CEM III/A	32,5R
	CEM III/A	42,5

CEM I 32,5, CEM II A-S 32,5, CEM II/A-V 32,5, or CEM III A may be used for the manufacture of reinforced concrete members."

Add the following new clauses:

"B1230: IN-SERVICE AND STRUCTURED TRAINING

The contractor shall in addition to the structured (accredited) training as provided for in Part C of this document implement an in-service training programme, from the commencement of the contract, in which the various skills required for the execution and completion of the works are imparted to the labourers engaged thereon, in a programmed and progressive manner. Labourers shall be trained progressively throughout the duration of the contract, in the various stages of a particular type of work.

(a) Details of in-service and structured training

(i) The in-service training programme shall be submitted with the initial works programme. The progress in relation to this programme will be recorded monthly and attached to the site meeting minutes and payment certificate.

(ii) The contractor shall provide on site, sufficient skilled and competent trainers to train all labourers engaged on the contract, in the various skills required for the execution and completion of the works.

(iii) All labourers shall be remunerated in respect of all time spent undergoing training.

(iv) Every worker engaged on the contract shall on the termination of his participation on the contract, be entitled to receive from the contractor, a certificate of service in which the following information shall be recorded:

- the name of the contractor
- the name of the employee
- the name of the project/contract
- the nature of the work satisfactorily executed by the worker and the time spent thereon
- the nature and extent of training provided to the worker
- the dates of service.

The cost of the above obligations shall be deemed to be covered by the sums and rates

tendered for items B13.01(a), (b) and (c) in the bill of quantities. The performance of the contractor in providing in-service training, shall be taken into consideration should the contractor fail to reach his CPG at the completion of the project.

(b) Lead time for training

The training of labour as specified shall, as far as possible, take place before commencement of each activity and the contractor shall take into account in his programme the lead-time he requires for such training. All training herein specified shall be deemed to be a construction activity and a non-negotiable condition of the contract".

B1231 COMMUNITY LIAISON OFFICER (CLO)

The contractor or his appointed agent will appoint a Community Liaison Officer (CLO) after consultation with the local communities, the engineer and the employer. The contractor shall direct all his liaison efforts with the local communities through the appointed officer. The contractor shall, however, accept the appointed as part of his management personnel.

(a) Duties of the Community Liaison Officer

The Community Liaison Officer's duties will be:

(i) To be available on site daily between the hours of 7h00 and 17h00 and at other times as the need arises. His normal working day will extend from 7h00 in the morning until 17h00 in the afternoon.

(ii) To determine, in consultation with the contractor, the needs of the temporary labour for relevant skills training. He will be responsible for the identification of suitable trainees and will attend one of each of the training sessions.

(iii) To communicate daily with the contractor and the engineer to determine the labour requirements with regard to numbers and skill, to facilitate in labour disputes and to assist in their resolution.

(iv) To assist in and facilitate in the recruitment of suitable temporary labour and the establishment of a "labour desk".

(v) To attend all meetings in which the community and/or labour are present or are required to be represented.

(vi) To assist in the identification, and screening of labourers from the community in accordance with the contractor's requirements.

(vii) To inform temporary labour of their conditions of temporary employment and to inform temporary labourers as early as possible when their period of employment will be terminated.

(viii) To attend disciplinary proceedings to ensure that hearings are fair and reasonable.

(ix) To keep a daily written record of his interviews and community liaison.

(x) To attend monthly site meetings to report on labour and RDP matters.

(xi) All such other duties as agreed upon between all parties concerned.

(xii) To submit monthly returns regarding community liaison as illustrated in Part C5.1 of this

document (form RDP 12(E)).

(b) Payment for the community liaison officer

A special pay item is incorporated in section 1200 of the bill of quantities relating to payment of the liaison officer on a prime cost sum basis. This payment shall only be made for the period for which the duties of the liaison officer are required. The remuneration of the CLO shall be determined by the Employer in terms of the Sectorial determination 2: Civil Engineering Sector (Task grade 3).

(c) Period of employment of the community liaison officer

The period of employment of the community liaison officer shall be as decided upon jointly by the contractor, engineer and employer at a maximum period of a six months basis, but with the option of renewal.

B1232 SUBCONTRACTORS

Over and above the stipulations of clause 4.4 of the General Conditions of Contract 2010, regarding subletting of part of the works, it is a condition of the contract that an approved subcontractor shall not sublet part of his work, covered in his appointment by the main contractor, to another subcontractor without the consent and approval of the engineer. Subletting shall in all cases be critically considered by the engineer.

In addition to the provisions of clause 4.4 of the general conditions of contract regarding subcontracting of the works, it is a requirement of this contract that an approved subcontractor shall not further subcontract work subcontracted to him by the main contractor, to another subcontractor without the consent and approval of the engineer. Subcontracting shall in all cases be critically considered by the engineer. The engineer reserves the right to limit the extent or the volume of work subcontracted by the contractor, should he deem it necessary in terms of progress or quality of workmanship.

B1233 WORKMEN'S COMPENSATION ACT

All labour employed on the site shall be covered by the Compensation for Occupational Injuries and Deceases Act (COIDA). The contractor shall pay in full, including the payment of the necessary levies, such amounts, as are due in terms of the Act. The contractor at the commencement of the contract shall resolve the manner in which Workmen's Compensation will be handled. Amounts paid by the contractor shall not be included in the wage rates but shall be covered by the Contractor to be deemed as included in his General Obligations rates in Section 1300 of the Bill of Quantities.

Add the following clause:

B1234 MINE HEALTH AND SAFETY ACT 1996, ACT 29 OF 1996

(a) Introduction

The main objective of this Act is to protect the health and safety of persons at mines. This specification is therefore aimed at promoting health and safety specifically at borrow pits. Borrow pits are classified as mines.

(b) General Provisions

The contractor shall be responsible for controlling his operations at every borrow pit where material is being excavated to ensure compliance with all the requirements of the Mine Health and Safety Act, 1996. The contractor shall also ensure that the works, shaping and finishing off of the borrow

pit are done in accordance with the provisions as specified in section 3100 of the COLTO Standard Specifications and this Act. The contractor shall also comply to the requirements as set out in C3.4.3.2 Environmental Management Plan.

The minimum requirements for operations at borrow pits are:

- Borrow pits are worked in such a way that the health and safety of employees and the public will not be endangered.
- A monthly report shall be submitted to the engineer on health and safety aspects at the borrow pits.
- The contractor shall appoint a manager to manage the borrow pits in accordance with the Mine Health and Safety Act.
- The contractor shall take the necessary steps to ensure that the work area of the borrow pits are safe at all times. This shall include items such as the provision of fencing and security guards.

(c) Duties of the Manager

The minimum duties of the manager supervising the activities at borrow pits shall be:

- Maintain a healthy and safe borrow pit environment.
- Identify hazards and related risks to which persons and employees are exposed.
- Establish a health and safety policy that
  - o Describes the organisation of work.
  - o Contains aspects concerning the protection of the employees and other persons' health and safety.
  - o Contains a risk analysis.
- Supply and erect the necessary safety and warning signs.

Add the following pay items and change the clause number.

B12.35 MEASUREMENT AND PAYMENT

(Compiler to allow for the temporary and permanent fencing off of borrow pits under section 5500 of the Standard Specification. Standard fencing, six strings, 1,2m high. Also allow for the finishing off, drainage, etc of the borrow pits under the standard pay items).

Add the following items:

"ITEM **UNIT**

B12.01 Excavation

Excavating material within the following depth ranges below ground level for the exposing of/or searching for services

(a) 0m to 2m

(i) soft material cubic metre (m^3)

(ii) hard material cubic metre (m^3)

(b) Extra over item B12.01(a) for excavation by means of hand tools such as picks, crowbars and pneumatic tools or mechanical breakers in close vicinity of services where no machine excavation is permitted

(i) soft material cubic metre (m^3)

(ii) hard material cubic metre (m^3)

Measurement and payment shall be as specified for item 22.01 in the standard specifications.

ITEM			UNIT
B12.02	**Backfilling**		
(a)	Using the excavated material		cubic metre (m^3)
(b)	Using imported selected material		cubic metre (m^3)

Measurement and payment shall be as specified for item 22.02 in the standard specifications.

ITEM			UNIT
B12.03	(a)	Allow a provisional sum for existing services to be relocated and/or protected as ordered by the engineer	provisional sum
	(b)	Handling costs and profit in respect of subitem B12.03(a) above	percentage (%)

Measurement and payment shall be in accordance with the general conditions of contract."

ITEM			UNIT
B12.04	**Provision for a Community Liaison Officer**		
	a)	Provisional sum for the payment of the Community Liaison Officer Provisional Sum	
	b)	Handling costs and profit in respect of sub-item B12.04(a)	Percentage (%)

Expenditure of the above item shall be made in accordance with the general conditions of contract.

The tendered percentage is a percentage of the amount actually spent under the sub-item B12.04 (a), which shall include full compensation for the handling costs of the contractor, and the profit in connection with providing the community liaison officer."

ITEM			UNIT
B12.05	(a)	Mine Health and Safety obligations	Month
	(b)	Special information signs	Prime Cost Sum (PC Sum)
	(c)	Provision of security guards	Prime Cost Sum (PC Sum)
	(d)	Handling cost and profit in respect of sub-item B12.05(b) and (c)	Percentage (%)

Payment of the rate per month for sub-item B12.05(a) shall include full compensation for all the contractors obligations relevant to the Mine Health and Safety Act.

The prime cost sums shall be paid in accordance with the provisions of the General Conditions of Contract. The tendered percentage is a percentage of the amount actually spent under the prime cost items, which shall include full compensation for the profit in connection with providing the specified service.

1300 : CONTRACTOR'S ESTABLISHMENT ON SITE AND GENERAL OBLIGATIONS

B1302 GENERAL REQUIREMENTS

(a) Camps, constructional plant and testing facilities

Add the following:

"The contractor shall, at each area where work is being undertaken, provide on a daily basis at least one (1) portable chemical latrine unit per fifteen (15) for use by construction workers employed on the project. The latrine units shall be serviced daily and kept in a hygienic and orderly state to the satisfaction of the engineer. No separate payment shall be made for this requirement and shall be deemed to be included in the rates tendered for the contractor's time-related obligations."

B1303 PAYMENT

ITEM		UNIT
B13.01	**The contractor's general obligations**	(As specified)

Add the following after the fifth paragraph:

"The combined total tendered for sub-items (a), (b) and (c) shall not exceed 15% of the tender sum, excluding VAT.

1400 : HOUSING, OFFICES AND LABORATORIES FOR THE ENGINEER'S SITE PERSONNEL

B1402 OFFICES AND LABORATORIES

(a) General

Add the following:

"The facilities to be provided for the engineer in terms of these specifications shall be fenced off by a two metre high veranda type security fence with diamond mesh on the vertical portion and barbed wire on the overhang. A security gate shall be provided in the fence which shall be guarded at all times by an acceptable watchman provided by the contractor.

The engineer's establishment may be incorporated within the contractor's establishment provided that the preceding requirements are met to the satisfaction of the engineer.

Separate payment shall be made for the provision and erecting of the security fence and gate as indicated on the drawings, but the cost in respect of the provision of a watchman at all times by the contractor shall be deemed to be included in the contractor's tendered rate for item B13.01(c)."

(b) Offices

Add the following new sub-sub-clause:

"(xviii) The engineer's site supervisory staff shall be provided with cellular telephones by the contractor for site communication purposes. Provision is made in the bill of quantities for separate payment of the supply and operating costs of such cellular phones."

B1403 HOUSING

(c) Rented accommodation

Add the following:

"The engineer may arrange for the obtaining of rented accommodation for his supervisory personnel on site. Payment of such rent shall be made under the provisional sum in sub-item 14.07(a) and shall be expended on a monthly basis by the contractor as ordered by the engineer."

B1406 MEASUREMENT AND PAYMENT

Add the following sub-item:

ITEM			UNIT
B1403 (b) (ix)	1.	Provision of cellular telephones	Number (No)
	2.	Provisional sum for the costs of cellular calls and other charges	Provisional sum
	3.	Handling cost and profit in respect of sub-item B14.03(b)(ix) 2	Percentage (%)

The unit of measurement for sub-sub-item B14.03 (b) (ix)1 shall be the number of cellular telephones supplied to the engineer's site supervisory staff. The tendered rate shall include full compensation for the purchasing of the cellular phones inclusive of any fixed contract costs with the service provider."

Measurement and payment in respect of the provisional sum item shall be made in accordance with

the provisions of the general conditions of contract.

The tendered percentage is a percentage of the amount actually spent under sub-item B.14.03 (b)(ix) 2, which shall include full compensation for the handling costs of the contractor, and the profit in connection with the payment of the cost of calls and other charges relating to the use by the engineers site staff of the supplied cellular telephones."

ITEM		UNIT
B14.11	**Provision and erection of security fencing (Including gate)**	metre (m)

The unit of measurement shall be the metre of security fence supplied and erected as indicated on the drawings and/or ordered by the engineer. The tendered rate shall include full compensation for procuring and furnishing of all material, including one vehicle gate, labour and equipment required to erect the specified security fence and maintain it for the duration of the contract."

General: Method of payment

Add the following:

"The tendered rates under this section of the bill of quantities shall also include full compensation for the dismantling and removal from site of all offices, laboratories and other facilities provided for the engineer's supervisory staff at the completion of the contract."

1500 : ACCOMMODATION OF TRAFFIC

B1502 GENERAL REQUIREMENTS

(e) Access to properties

Add the following:

"Where the alignment of the new road coincides with the alignment of the existing road, a number of accesses to private properties will have to be operational and maintained during the constructional period. No separate payment will be made for providing acceptable and safe access across the new road at all times during construction of the road."

(i) Traffic safety officer

Add the following after subclause (viii):

"(ix) be responsible for contacting all the relevant authorities in the event of an accident on the site of the Works

(vi) arrange for the removal of broken down vehicles that obstruct the normal traffic flow

The Contractor shall provide the traffic safety officer with all the necessary resources to carry out his duties as specified, inter alia, light delivery van (LDV), personnel, warning signs and revolving amber flashing lights. A warning sign with the words "CONTRACTOR TRAFFIC CONTROL" and/or "AANNEMER VERKEERSBEHEER" in clearly legible letters shall be mounted on the vehicle at least 1,5m above ground level to be clearly visible. The vehicle shall be equipped with two revolving amber-coloured flashing lights with a minimum intensity of 55W. The flashing lights shall be switched on and the warning sign be displayed at all times when the vehicle is used on the site.

No separate payment will be made for the traffic safety officer, his vehicle, personnel and equipment and the cost thereof shall be included in the Contractor's cost for his establishment and general obligations (Section 1300)."

Add the following new subclauses:

"(j) Handing over the site

The total extent of the site between the limits of construction as described in this document and indicated on the drawings will be handed over to the contractor at the commencement of the contract period. The engineer however reserves the right to adjust this arrangement should progress or safe passage of traffic warrant such a change.

(k) Use of explosives in close proximity of temporary deviations

The contractor shall arrange all necessary traffic control and other requirements to safeguard the traffic on temporary deviations during blasting operations.

(l) Land taken up for deviations

Negotiations with landowners to obtain the land taken up by temporary deviations will be undertaken by the employer. A prime cost sum is allowed in the bill of quantities for payment of compensation to affected landowners. All other negotiations regarding temporary access to properties, land-use, fencing requirements etc. shall be dealt with by the contractor in conjunction with the engineer and be confirmed in writing and be kept on record by the contractor.

"(m) Maximum lengths of construction areas

A temporary deviation, where the proposed road follows the existing route shall be constructed along the length of existing road. Traffic shall generally be accommodated as follows:

On a two-way two lane gravel deviation (Class 1) constructed partially outside or adjacent to the existing road reserve boundaries of road.

(i) On one-way single lane gravel deviation (Class 2) constructed inside the existing road reserve boundaries and on either side of road. In this instance special cognisance shall be taken to accommodate traffic to private properties.

A maximum length of one section of approximately 5,0km or two sections of 3,0km each of deviation (Class 1 or 2) shall be operational at a time and no relieve of this limitation shall be considered by the engineer except where the programme necessitates such at the construction of bridges."

B1503 TEMPORARY TRAFFIC CONTROL FACILITIES

Add the following after the first paragraph:

"All temporary road signs, devices, sequences, layouts and spacing shall comply with the requirements of the Road Traffic Act, 1996 (Act 93 of 1996), the National Road Traffic Regulations, 2000, the South African Road Traffic Signs Manual, the requirements of the relevant road authority and the drawings. All temporary traffic control facilities shall comply with the guidelines set in SA Road Traffic Signs Manual, Volume 2, Chapter 13: Roadworks Signing, (SARTSM, June 1999, obtainable from the Government Pinter, Pretoria)."

(b) Road signs and barricades

Add the following:

"All the temporary road signs are to be mounted on posts as specified in section 5600 of the specifications. Provision shall be made for the supply and erection of the signs and the maintenance of the signs during the construction period. Provisions shall also be made for the removal of the temporary road signs on completion of the construction work when such signs are no longer required.

Temporary road signs and channelization devices shall be manufactured in accordance with the latest edition of the South African Road Traffic Signs Manual (June 1999) and placed as shown on the drawings and in Road Signs Note 13. Delineators shall be manufactured from a non-metal material and shall be mounted on a base section also manufactured of non-metal material. Single as well as back-to-back mounted delineators are required.

The obligation to arrange safe passage of traffic shall always be vested with the contractor regardless what is indicated on the drawings of the engineer."

(c) Channelization devices and barricades

Add the following:

"Drums shall not be used as channelization devices.

TW 401 and TW 402 delineators shall comply with the following requirements:

a) It shall be manufactured from a flexible material and shall comply with SABS 1555. The blade portion of the delineator shall be positively affixed to a base unit which in turn shall be stable on its own or be stabilized by means of sandbags when used on the road.

ii) The blade shall be retro-reflectorised, with class 1 yellow sheeting on the side facing oncoming traffic..

iii) It shall nominally be 1000mm high x 250mm wide and the bottom edge of the delineator shall not be more than 200mm above the road surface.

iv) It shall be subject to the approval of the Engineer.

The maximum spacing between centres of delineators shall be as shown on the drawings or as directed by the Engineer."

(e) Warning devices

Add the following:

"It is a requirement of this contract that all construction vehicles and plant used on the works will be equipped with rotating amber flashing lights and warning boards as specified in the standard specifications. Construction vehicles travelling outside the limits of construction areas shall however, not operate the warning lights.

The warning lights shall have a base diameter of at least 170mm and the amber bulb cover a height of a least 150mm high. It shall be a requirement that the contractor also provides the engineer's site personnel with warning lights for their vehicles (a maximum of two lights are required) without any payment applicable.

B1514 TEMPORARY FENCING AND GATES

Replace the contents of this clause with the following:

"Where temporary fencing is ordered by the engineer, it shall be paid for under item 55.06 of the standard specifications. The temporary fencing shall be new fencing material, which shall subsequently be dismantled and removed and erected at an alternative position as directed by the engineer. When ordered by the engineer, temporary fences and gates shall be moved to new locations or either left in place or when no longer required be dismantled and removed from site if so directed. Allowance is made in the bill of quantities for moving existing fences and gates."

Add the following clause:

B1517 RETRO-REFLECTIVE MATERIAL

"Retro-reflective material for temporary signs shall comply with the requirements of SABS 1519-1 for weathered material. Tests shall be carried out with a field retro-reflectometer and the testing procedure and classification are described in Clause B 8118. The value of the coefficient of Retro-Reflection shall be at least 60% of the values indicated in Table B 8118/1."

B1518 MEASUREMENT AND PAYMENT

Renumber item 15.01 as B15.01 and add the following:

"The tendered rate shall also include for all measures necessary to safeguard traffic on temporary deviations during blasting operations as well as all temporary traffic-control facilities for temporary deviations."

Delete all references to half width construction under payment item 15.01. Half width construction will be measured under payment item 15.10.

Renumber item 15.03 as B15.03 and add the following

"This sections provides only for additional traffic-control facilities as and when required on instruction by the Engineer and does not provide for facilities already included under payment item B15.01"

Add the following sub-item:

"ITEM		**UNIT**
B15.03	**Temporary traffic control facilities**	
(n)	Provision of high visibility safety jackets and safety hats	number (No)

The unit of measurement shall be the number of safety jackets supplied to the supervisory staff.

The tendered rate shall include full compensation for providing and maintaining hats and the jackets equipped with high visibility retro-reflective and/or fluorescent panels in red, yellow and white for the duration of the contract".

Add the following items:

"ITEM		UNIT
B15.14	**Allow provisional sum for:**	
(a)	repair of damaged temporary road signs and delineators	provisional sum
(b)	replacement of damaged temporary road signs and delineators	provisional sum

The provisional sums allowed under sub-items (a) and (b) shall be expended on a daywork basis in terms of the provisions of the general conditions of contract.

Payment shall only be made in respect of repair work or replacement of such temporary traffic-control facilities arising from damage or loss occasioned by the travelling public and which did not arise from negligence or non-compliance with the requirements of the specifications on the part of the contractor.

ITEM		UNIT
B15.15	**Prime cost sum for:**	
(a)	Compensation to landowners for land taken up by deviations	prime cost (PC) sum
(b)	Handling cost and profit in respect of sub-item B15.15(a) above	percentage (%)

The prime cost sum shall be expended in accordance with the provisions of the general conditions of contract. Payment to the landowner shall be made within fourteen (14) days after such order has been given by the engineer. The contractor shall provide detailed proof of payment before payment shall be certified to the contractor.

The tendered percentage in item B15.15(b) is an extra over percentage on the amount actually spent under sub-item B15.15(a) which shall include full compensation for the handling costs and profit of the contractor."

1700 : CLEARING AND GRUBBING

B1702 DESCRIPTION OF WORK

a) Clearing

Add the following:

"Clearing shall include the removal of material to a thickness of up to 150mm in-situ material as ordered by the engineer. No payment shall be made for temporary stockpiling of topsoil material in the case where this material is applied as topsoil after completion of road side slopes.

Should the required depth exceed 150mm, the total volume of material removed shall either be classified as "temporary stockpiling of topsoil" or "unsuitable roadbed material" or "cut to spoil" whichever is applicable as allowed for in the standard specifications. In these cases no payment shall be made for clearing and grubbing.

Clearing as described shall in all cases be undertaken in such a manner that the topsoil is preserved and not contaminated with other debris or rubbish. Cross-sections for the determination of earthworks quantities shall be taken after clearing (topsoil or unsuitable roadbed material) and roadbed preparation if applicable.

Payment for gabion boxes and mattresses which have to be removed and the material sorted and stacked shall be made under section 5200"

B1703 EXECUTION OF WORK

(a) Areas to be cleared and grubbed

Add the following:

"Apart from normal clearing and grubbing, the fill embankments of the existing roads are also to be cleared and grubbed over the areas where the new horizontal alignment coincides with the alignment of the existing road, or where repairs are required to the fill embankments of the approaches of bridges. Provision is made for separate payment for clearing and grubbing of the existing fill embankments where conventional machinery might be suitable to undertake the work due to the steep side slopes of the embankments. An additional pay-item is allowed for in the bill of quantities for this type of clearing and grubbing which may have to be undertaken by hand or similar manner."

B1704 MEASUREMENT AND PAYMENT

Change item 17.01 to read as follows:

ITEM			UNIT
B17.01	**Clearing and grubbing of:**		
	a)	Normal areas:	
		i) Within the road reserve	hectare (ha)
		ii) In borrow pits	hectare (ha)
	b)	Existing fill embankments with Slopes steeper that 1:4	hectare (ha)

Measurement and payment for sub-items (a) and (b) shall be as specified for item 17.01 of the standard specifications. Where distinction is made for clearing and grubbing existing fill embankments with slopes steeper than 1:4 (vertical : horizontal), payment shall be made under item B17.01."

1800 : DAYWORK SCHEDULE

Note: This is a new section added to the Standard Specifications.

Add the following:

B1801 SCOPE

This section covers the listing of daywork items for use in determining payment for work which cannot be quantified in specific pay item "units" in the bill of quantities or work ordered by the engineer during the construction period which was not foreseen at tender stage for which no applicable rate exists in the schedule or for work of a special or different character warranting special payment as decided by the engineer.

B1802 ORDERING OF DAYWORK

No daywork shall be undertaken unless specific written authorisation is obtained from the engineer.

B1803 MEASUREMENT AND PAYMENT

The engineer may order the following daywork items:

ITEM	DESCRIPTION	UNIT
B18.01	Labourers:	
	(i) Unskilled	Hour (h)
	(ii) Semi-skilled	Hour (h)
	(iii) Skilled	Hour (h)
B18.02	Foreman	Hour (h)
B18.03	Tipper trucks:	
	(i) 3 – 5 ton	Hour (h)
	(ii) 5,1 – 10 ton	Hour (h)
B18.04	Loader (0,5m^3)	Hour (h)
B18.05	Grader (CAT 140G or similar)	Hour (h)
B18.06	LDV	Hour (h)
B18.07	Compaction Rollers:	
	(i) Vibrator roller	Hour(h)
	(ii) Tamping roller	Hour (h)
	(iii) Grid roller	Hour(h)
B18.08	Hand Controlled Compactors	
	(i) Pedestrian roller (Bomag BW90)	Hour(h)
	(ii) Vibratory plate	Hour(h)
	(iii) Rammers	Hour(h)
B18.09	Water truck (min 10000 l)	Hour(h)
B18.10	Dozer (D7 or similar)	Hour(h)

The unit of measurement shall be the actual number of hours worked by labourers or foremen or an

item of plant.

The tendered rates shall include full compensation for all cost items including overheads, head-office expenses and profits as described in subclause 6.5 of the general conditions of contract and shall be subject to contract price adjustment as provided for in the contract.

The mark-ups on daywork items in accordance with the Appendix to the Tender shall not be applicable on daywork items listed in the bill of quantities in terms of the above specifications. In the event of new daywork rates being requested for items not appearing in the bill of quantities, then the provisions of the general conditions of contract and the Appendix to the Tender shall apply.

Prior to the commencement of any work by the labourers described under item B18.01, the contractor must obtain written consent from the engineer regarding the classification and composition of all labourers in terms of "unskilled" and "skilled" labourers required for the work as ordered by the engineer."

1900 : MECHANICAL SAW CUTTING

Note: This is a new section added to the Standard Specifications.

Add the following section:

B1901 SCOPE

This section covers the saw cutting of various types of in-situ material with a mechanical saw cutting machine.

B1902 PLANT

Saw cutting machines shall be power driven saws suitable and capable to cut accurately to required depths and alignment in various materials as specified. Skilled operators shall be required for operating the sawing machines. Operators shall be equipped with suitable safety equipment (e.g. industrial goggles, suitable boots as well as clothing) for operating the sawing machines.

B1903 PREPARATION PRIOR TO SAW CUTTING

Before saw cutting may commence the cut line shall be accurately pre-marked to the specified dimensions in terms of the drawings or as instructed by the engineer.

B1904 CONSTRUCTION TOLERANCES

Mechanical saw cutting shall be undertaken within the following dimensional tolerances:

(a) Horizontally

The maximum deviation from the specified line shall not be more than 5mm.

(b) Vertically

The cut depth shall never be less than the specified depth but shall not exceed the specified depth by more than 25mm".

B1905 MEASUREMENT AND PAYMENT

ITEM		UNIT
B19.01	**Establishment of suitable saw cutting machine on site**	number (No.)

The unit of measurement shall be the number of saw cutting machines provided on the instruction of the engineer.

The tendered rate shall include full compensation for the provision of the saw cutting machine including transport to and from the site. No payment shall be made for providing substitute saw cutting machines for machines that have broken down. No payment shall be made for standing time of saw cutting machines and at least one saw cutting machine shall be available on the site when such a machine is required on site. Payment shall only be made once for the establishment of the saw cutting machine on site irrespective of any discontinuity in the application of the saw cutting machine on site.

ITEM		UNIT
B19.02	**Saw cutting of in situ materials (type of material and depth of saw cut indicated)**	metre (m)

The unit of measurement shall be the metre of material cut with the saw cutting machine for each

type of material and depth of saw cut. The tendered rate shall include full compensation for the saw cutting of the materials as directed as well as for all plant, labour, fuel and other incidentals necessary."

2100 : DRAINS

B2103 BANKS AND DYKES

Add the following:

"Mitre banks at culvert inlets should be considered at such a skew angle that it guides the water into the inlet with a minimum loss of velocity (energy)."

B2104 SUBSOIL DRAINAGE

(a) Materials

(i) Pipes

Delete the last sentence of the fifth paragraph and substitute it with the following:

"Perforation for 100mm pipes shall be spaced in two rows, one on each side of the vertical centre line of the pipe, and at one third of the circumference. The perforation for the 150mm pipes shall be spaced in four rows, two as described for 100mm pipes, and the other two rows at two thirds of the circumference."

(ii) Synthetic-fibre filter fabric

Add the following:

"All filter fabric shall be a non-woven needle punched type material and must be approved by the engineer. Filter fabrics shall have a minimum co-efficient of permeability of 3 x 10-3 m per second."

B2107 MEASUREMENT AND PAYMENT

Change item 21.09 to read as follows:

ITEM		**UNIT**
B21.09	**Polyethylene sheeting, 0,25mm thick, or similar approved material, for lining subsoil draining systems**	square metre (m^2)

Measurement and payment shall be as specified for item 21.09 in the standard specifications."

Add the following new items:

"ITEM		**UNIT**
B21.20	**Galvanised wire mesh 250 x 250mm, at the outlets of subsoil drainage systems. Mesh 10mm x 2,5mm wire diameter**	Number (No)

The unit of measurement shall be the number of 250mm x 200mm pieces of wire mesh, with a 10mm x 10mm mesh and 2,5mm wire diameter built into the subsurface drain outlet structure as shown on the drawings.

The tendered rate shall include for procuring, furnishing and installing the material, cutting, waste and keeping the mesh in the pipe opening clean during installation.

ITEM		**UNIT**
B21.21	**Subsoil drainage markers**	Number (No)

Measurement and payment shall be as specified for item 22.24 in the standard specifications."

2200 : PREFABRICATED CULVERTS

B2201 SCOPE

Add the following:

"All rectangular culverts with spans from 0,9m up to and including 2,4m shall be constructed with precast units.

The attention of the contractor is drawn to the fact that information given on the plans, longitudinal sections or drainage schedules may have to be altered to suit actual site conditions and, therefore, the contractor shall only construct these culverts after the engineer has verified the information on the drawings from detail surveys taken on site by the contractor as directed by the engineer.

Precast units shall be ordered by the contractor from actual measurements of length acquired on the site and not from lengths stated in the drainage schedule or from the bill of quantities.

No precast units shall be ordered until the engineer has satisfied himself that the proposed units have been manufactured to the required tolerances and loading standards. The engineer must be given the opportunity to load test units if he considers this necessary".

B2203 MATERIALS

(f) Skewed Ends

Delete the second and third paragraphs and substitute with the following:

"Precast portal and rectangular culverts placed on a skew shall be supplied with cast in situ skewed ends as shown on the drawings. In situ skew ends are to be constructed simultaneously with the wingwalls and headwalls".

B2204 CONSTRUCTION METHODS

Add the following:

"In all cases where soft founding materials is classified as suitable for culvert bedding construction, the in situ material shall be ripped, moistened and compacted to 90% or 93% modified AASHTO density. The depth of preparation and compaction of founding material shall be as indicated on the drawings or as specified by the engineer. Allowance for measurement and payment for this work is made in the bill of quantities under this section."

(c) Excavation by hand

Where circumstances prevent the use of mechanical excavators and material can be removed only by hand tools, the engineer shall authorise the supplementary payment to the contractor for such work at the tendered rates for excavation by hand should he be satisfied that the contractor had been unable to prevent the necessity for excavation by hand by proper planning and precautionary measures. The supplementary rate for excavation by hand shall not apply to minor finishing or clearing jobs in excavations which are otherwise being done by mass excavation plant.

Payment for hand excavation shall be an "extra over" payment to normal excavation as allowed for in item 22.01."

B2205 EXCAVATION FOR CONSTRUCTION BY TRENCH METHOD

Add the following subclauses:

"(c) Excavation by hand

Where circumstances prevent the use of mechanical excavators and material can be removed only by hand tools, the engineer shall authorise the supplementary payment to the contractor for such work at the tendered rates for excavation by hand should he be satisfied that the contractor had been unable to prevent the necessity for excavation by hand by proper planning and precautionary measures. The supplementary rate for excavation by hand shall not apply to minor finishing or clearing jobs in excavations which are otherwise being done by mass excavation plant.

Payment for hand excavation shall be an "extra over" payment to normal excavation as allowed for in item 22.01.

(d) Drainage of excavations

The contractor shall apply suitable, effective drainage and dewatering methods for preventing the ingress of water into the excavation and to keep them dry.

Drainage measures, with the exception of pumping, shall be maintained until the backfilling has been completed. Between various construction stages, pumping may be interrupted in consultation with the engineer.

Any draining or pumping of water shall be done in a manner as will preclude the concrete or materials or any part thereof from being carried away.

Allowance for measurement and payment for dewatering and keeping dry of culvert excavations is made in the schedule in this section".

B2210 LAYING AND BEDDING OF PREFABRICATED CULVERTS

B2210(b)(i) Cast in situ invert slabs

Replace with the following:

"In accordance with the drawings, transverse construction joints are required in cast in situ concrete invert slabs for portal culverts. In addition, longitudinal construction joints as shown on the drawings between the invert slabs of each of the barrels of multiple culverts are required. Allowance for measurement and payment for a Class F1 surface finish and soft board in these joints is made in the bill of quantities. No payment shall be made for formwork on the outside edges of invert slabs (closest to excavated face).

All culverts (precast as well as in situ) shall be constructed with an in situ reinforced concrete floor laid on a 75mm concrete screed".

Delete subclause B.2210(b)(ii) : "Prefabricated floor slabs."

B2211 BACKFILLING OF PREFABRICATED CULVERTS

Change the last sentence in the fourth paragraph to read "90% or 93% as shown on the drawings or as directed by the engineer."

B2212 INLET AND OUTLET STRUCTURES, CATCHPITS AND MANHOLES

(b) Concrete work

Add the following:

"The type of surface finish for in situ concrete in the culverts shall be as indicated on the drawings.

Generally all exposed faces shall be of Class F2 formwork and faces covered by backfill shall be Class F1. The top of parapet walls and wingwalls shall be finished to a Class U2 surface finish."

(h) Prefabricated inlet and outlet structures

Add the following:

"The use of precast concrete inlets and outlets as described in clause 2212(h), shall not be allowed under any circumstances. Cast in situ concrete wingwall type inlets and outlets shall be constructed as indicated on the drawings and shall be in accordance with section 6000 of the Standard Specifications. Allowance for measurement and payment for wingwall type inlets and outlets is made in the schedule in this section."

B2218 MEASUREMENTS AND PAYMENT

Add the following:

"ITEM			**UNIT**
B22.01	(c)	Extra over subitem B22.01(a) for excavation by hand using hand tool	cubic metre (m^3)

Measurement shall be as specified for pay item 22.01 of the standard specifications.

The tendered rate shall include full compensation for carrying out the excavations by hand where circumstances prevent the use of mechanical excavators.

ITEM			**UNIT**
B22.07	**(f)**	**Formwork for joints in cast in situ concrete invert slabs**	
	(i)	Transverse construction joints (type indicated)	square metre (m^2)
	(ii)	Longitudinal joints (as per drawing)	metre (m)

Measurement and payment shall be as specified in item 22.07 of the standard specifications with the exception that formwork for construction joints in cast in situ invert slabs in trench conditions as indicated on the drawings, shall be measured and paid for in accordance with section 6200 of the standard specifications. No payment shall be made for formwork to the outside edges of invert slabs (closest to excavated face)."

Add the following to pay item 22.08:

"In addition to the requirements for measuring concrete backfill to rectangular culverts as specified for item 22.08, the following shall apply:

Concrete backfill shall be measured to the actual dimensions of the precast units, i.e. actual volumes between ribs and haunches shall be taken into account. For the purpose of calculating concrete backfill quantities, the horizontal dimensions of the concrete backfill on the outside of the culvert(s) (closest to excavated face), shall be taken as 100mm maximum irrespective of what type or make of precast portal is used or the actual width of the excavation.

The width of the concrete backfill between portals in the case of multiple culverts, shall be taken as 80mm for precast units with a leg height of 1500mm and 100mm for precast units with a leg height exceeding 1500mm. The vertical dimensions, in both cases, shall be equal to the height of the portal".

Add the following new items:

"ITEM			UNIT
B22.29		**Tie bars for joining in situ concrete invert slabs to inlet and outlet structures, as indicated on the drawings (Type, diameter and length indicated)**	Number (No.)

The unit of measurement shall be the number of tie bars installed as specified and indicated on the drawings.

The tendered rate shall include full compensation for supply and installation of the tie bars.

ITEM			UNIT
B22.30	a)	Preparation and compaction of in-situ bedding material to 90% of Mod. AASHTO density (depth indicated)	cubic metre (m^3)
	b)	Extra over sub-item B22:30(a) for compaction to 93% of Mod. AASHTO density (depth indicate)	cubic metre (m^3)

The unit of measurement shall be the cubic metre of material ripped and compacted as specified.

The tendered rate shall include full compensation for the ripping of the in-situ material to the specified width and depth, wetting of the material to such an extent that the specified density can be achieved.

ITEM **UNIT**

B22.31 Dewatering and keeping dry of culvert excavations

The unit of measurement shall be the number of culverts constructed. The tendered rate shall be full compensation for dewatering and keeping dry of the culvert excavations until the backfill is completed.

Payment shall be as follows:

(i) 80% of the payment shall be made after the barrel of the culvert has been constructed and backfilled.

(ii) Remaining 20% of the payment shall be made after the wingwalls have been constructed and backfilled.

ITEM **UNIT**

B22.32 Cutting of concrete pipes

a) Diameter indicated Number (No.)

The unit of measurement shall be the number of pipes that have been cut. The tendered rate shall be full compensation for the cutting, by means of mechanical saw (angle grinder) and finishing off of the pipes for the specific angle of skew at which the pipes must be laid.

Cutting of pipes shall only be paid for if the headwall of the wingwalls are at such a skew angle in respect to the centre line of the pipes that cutting is required and where non-standard lengths are required. The maximum skew angle at which pipes are allowed to be cut shall be 30 degrees and the minimum length of pipe, measured along the shortest side, shall be 1,5m."

Classification of soft/hard materials as well as all quantities shall be agreed upon and finalised as the work progresses.

2300 : CONCRETE KERBING, CONCRETE CHANNELLING, CHUTES AND DOWNPIPES AND CONCRETE LININGS FOR OPEN DRAINS

B2301 SCOPE

Add the following:

"The position and length of the following types of concrete kerbs and channels are indicated on the geometric layout plans, typical drawings and on the drainage plans.

Type A	:	In situ concrete channel, 0,8m wide on fills
Type B	:	Precast concrete kerbing, semi-mountable (SABS 927-1969)
Type C	:	In situ concrete kerbing at intersections
Edge beam	:	In situ concrete kerbing at farm access and bus stops
Type E, F1 & F2	:	In situ concrete "V"-shaped channels in side drains and open drains."

B2302 MATERIAL

Add the following new subclauses:

(e) Metal pipes

"Metal pipes down side slopes shall comply with the requirements of clause 2203 of the standard specifications."

B2304 CONSTRUCTION

(d) Slip form kerbing

Add the following:

"Slip-form kerbing shall under no circumstances be allowed."

(e) Cast in situ kerbs and channels

Add the following:

"Forming and templates used to form joints between alternate sections shall be of steel plate of which the thickness shall not be less than 5mm."

Add the following new subclauses:

(i) Construction sequence

Replace paragraphs (i), (ii) and (iii) with the following:

"In all cases where kerbing and/or channelling adjoin the bituminous surface of the road, the kerbing and/or channelling may only be constructed after the bituminous surface has been completed.

Before commencing with the kerbing and/or channelling, the surfacing and the base, shall be accurately cut to line with a mechanical saw to a minimum depth of 75mm. After excavation the concrete shall then be cast against the cut surface without formwork. All material outside the cut line must be carefully removed to the required thickness of concrete without damaging the edge before commencing with the casting of the concrete. No payment shall be made for repair work as instructed by the engineer to damage caused by the cutting/excavating process of surfacing and base layers. Any concrete spilt onto the surfacing shall immediately be removed and cleaned.

Where so required by the engineer, the contractor shall, without any additional compensation, paint emulsion over the stained surface.

Add the following subclause:

(k) Formwork and finish

"Formwork and finish of concrete kerbs shall comply with the requirements of section 6200. All visible edges on the sides or at joints of cast in situ concrete kerbs or channels shall be rounded with a rounding tool."

3100 : BORROW MATERIALS

B3102 NEGOTIATIONS WITH OWNERS AND AUTHORITIES

Add the following to sub-clause 3102(a):

"Arrangements regarding to access to borrow pits and the alignment of haul roads shall be made between the contractor and the owners of the land on which borrow pits are situated. The engineer's representative on site shall be present at all such negotiations, which shall be confirmed in writing by the contractor. All costs involved with such negotiations as well as the requirements contained in clause 3102 and clause 1225 of the specifications shall be borne entirely by the contractor."

B3103 OBTAINING BORROW MATERIALS

(a) General

Add the following:

"The expropriation and compensation for land from which borrow materials is obtained shall be negotiated and paid for by the employer."

(b) Use of borrow materials

Add the following to the second paragraph of this subclause:

"Compensation to owners (only on private land) and arrangements with owners for taking material from alternative borrow pits proposed by the contractor shall be the contractor's responsibility and entirely at his own expenses."

B3104 OPENING AND WORKING BORROW PITS AND HAUL ROADS

(c) Excess overburden

Add the following:

"All excess overburden removed at borrow pits shall be replaced over the entire area of the borrow pit after initial shaping has been undertaken in an even layer. Payment for this requirement shall be deemed to be included in pay item 31.01

(f) Protecting borrow pits

Add the following:

"It is a requirement of the contract that each borrow pit or pits shall be provided with fencing around the perimeters, including a access gate, of the borrow areas, including the supply of danger warning signage fixed to the fencing, visible at all sides approaching the borrow pit area. The fencing shall be erected prior to entering the land for borrowing purposes and shall on final finishing of the borrow areas as specified by the employer, be dismantled and removed or left in-place as instructed by the employer. Payment for fencing around borrow pits shall be made in accordance with the stipulations of section 5500 in these specifications."

In addition to fencing, Security Guards shall be supply on a 24 hour, 7 days a week basis, with full time communication to the Site Manager or site camp for the duration of the contract and activities at the borrow pits."

Add the following new subclause:

"(h) Haul roads

Haul roads to designated borrow pits along the road shall be constructed along alignments as instructed by the engineer and shall be maintained at the contractor's own cost to the satisfaction of the engineer."

B3105 FINISHING-OFF BORROW AREAS AND HAUL ROADS

Add the following to this clause:

"Should the employer, engineer or any other authority approved by the engineer, require a higher standard of shaping and finishing off of borrow pits than specified in the standard specifications, measurement and payment for such extra work shall be made using daywork items as scheduled under this section."

B3108 MEASUREMENT AND PAYMENT

Change item 31.01 to read as follows:

"ITEM			**UNIT**
B31.01	**Excess overburden :**		
	(a)	Depth up to and including 0,5m	cubic meter (m^3)
	(b)	Depth exceeding 0,5m and up to 1,0m	cubic meter (m^3)

Measurement and payment shall be as specified for item 31.01 of the standard specifications with the abovementioned depth ranges applicable."

Add the following new item:

"ITEM			**UNIT**
B31.04	**Compensation to landowners:**		
	(a)	Prime cost sum for compensation to landowners	prime cost (PC) sum
	(b)	Handling cost and profit in respect of sub-item B31.04(a) above	percentage (%)

Measurement and payment shall be in accordance with the provisions of clause 6.6 of the general conditions of contract. Payment to the landowner shall be made within fourteen (14) days after such order has been given by the engineer. The contractor shall provide detailed proof of payment before payment shall be certified to the contractor.

The tendered percentage is an extra over percentage on the amount actually spent under sub-item B31.04(a) which shall include full compensation for the handling costs and profit of the contractor."

3200 : SELECTION, STOCKPILING AND BREAKING-DOWN THE MATERIAL FROM BORROW PITS, CUTTINGS AND EXISTING PAVEMENT LAYERS, AND PLACING AND COMPACTING THE GRAVEL LAYERS

B3204 BREAKING-DOWN THE MATERIAL

(a) Initial breaking-down of the material in cuttings, borrow pits and existing pavement layers

Add the following to the table in the second paragraph of this subclause:

"Pioneer layers - 500mm maximum dimension

Not more than 20% of pioneer layer material shall pass through the 2,0mm sieve."

(b) Further breaking-down of pavement material

Add the following:

"Material used for the construction of selected, and wearing course layers shall be broken down by means of normal grid-rolling or additional normal grid-rolling to such an extent that the compacted pavement layer shall contain material of which 95% of the aggregate size shall not exceed 65mm. All oversize material, after breaking-down, shall be removed".

B3209 PLACING AND COMPACTING THE MATERIALS IN LAYER THICKNESSES IN EXCESS OF 200mm AFTER COMPACTION

Add the following new subclause:

(d) Pioneer layer

"The maximum size rock used in pioneer layers shall be 500mm and the layer thickness before compaction shall not be more than one-and-a-half times the maximum actual size of the rock. Not more than 20% of pioneer layer material shall pass through the 2,0mm sieve. Pioneer layer processing and compaction shall be as specified in subclause 3307(c) of the standard specifications".

3300 : MASS EARTHWORKS

B3305 TREATING THE ROADBED

(a) Removing unsuitable material

Add the following to the third paragraph:

"For the purpose of this contract, excavation and removal of in-situ clayey material over areas where the road is in a fill condition, shall be classified as removal of unsuitable material, irrespective of the stability or moisture condition of the in-situ material".

(c) Preparing and compacting the roadbed

Delete the last sentence of the first paragraph "If necessary, roadbed.....depth of compaction" and replace as follows:

"Where demarcated by the engineer, prior to the roadbed being scarified, the excess in situ material forming part of the present roadway, and within the limits of the roadbed, and in close proximity of the layer works, but falling within the limits of the layerworks, shall be bladed to controlled level in order to achieve the required level and necessary depth of compaction."

B3307 FILLS

(c) Constructing a pioneer layer

Add the following to the first paragraph:

"For the purpose of this contract, pioneer layers shall be completed by means of eight-pass roller compaction using vibratory rollers as specified in subclause 3304(b) of the standard specifications."

(d) Benching

Add the following:

"Benching of fill and pavement layer material is required to be undertaken into the existing fill embankments and pavement layers. No additional payment shall be made over and above the normal pay items applicable to earthworks and pavement layers where benching is required for widening of the existing road formation. Benching shall be undertaken as shown on the drawings.

It is a requirement that benching shall always be started at the bottom of the existing fill progressing to the top of the formation. The dimensions and details of benching are shown on the drawings."

B3308 FINISHING THE SLOPES

(d) General

Add the following:

"Where existing cut and fill slopes are excessively eroded or where slippages occurred in slopes, the slopes are to be reinstated by means of backfilling with suitable gravel material. All loose material and vegetation shall first be removed from the eroded cut and fill slopes before backfilling may commence from the bottom of the cut or fill. The backfill material shall be benched into the existing slopes and compacted to 90% of modified AASHTO density, using suitable small compaction equipment e.g. Bomag walk-behind rollers or hand-held compaction tools. Benching shall be executed to the dimensions shown on the drawings. Upon completion of the backfilling operation the cut and fill slopes shall be neatly finished as specified."

B3312 MEASUREMENT AND PAYMENT

Add the following sub-item to item 33.10:

"ITEM			**UNIT**
B33.10	(e)	Extra over sub-items 33.10(a), (b) and (d) for blading to controlled levels (existing road)	cubic metre (m^3)

The unit of measurement in respect of the material bladed as specified in subclauses 33.05 (c) shall be the cubic metre of material bladed, measured in the original position before blading, in accordance with the method of average end areas.

The tendered rate shall include full compensation for blading of such material to level.

Only material bladed on the instruction of the engineer for exposing the underlying roadbed material for treatment will be measured and paid for as described above."

3400 : PAVEMENT LAYERS OF GRAVEL MATERIAL

B3402 MATERIALS

(a) General

Add the following:

"Material requirements for gravel pavement layers are in accordance with TRH4 and shall be indicated on the drawings."

B3405 CONSTRUCTION TOLERANCES

(e) Cross-section

Delete the second paragraph and replace with the following:

"The normal crossfall of the road wearing course where the road is in a straight horizontal alignment, is specified as 3% as shown on the drawings.

At any cross-section the measured crossfall between any two points shall at least be 2,8% and not more than 3,5%. At any cross-section the actual level at any point shall not be higher than 10mm above the computed level from the cross-section as specified and the actual level, if lower than the computed level, shall not be lower by more than that derived from the specifications for longitudinal grade and crossfall deviations."

(f) Surface regularity

Add the following:

"Where transverse construction joints in base layers are made between newly and previously constructed sections, the contractor shall exercise level control at such joints by installing level poles at 5m intervals on either side of the joint of the layer covering at least a 30m length into the newly constructed section."

B3406 QUALITY OF MATERIALS AND WORKMANSHIP

Add the following:

"Test results and measurements shall be assessed by the engineer according to the provisions of Section 8300 of the standard specifications".

5200 : GABIONS

B5201 SCOPE

Add the following paragraph

"This section also covers the removal, dismantling and stacking of existing gabion work, and the reuse of these materials where authorised by the engineer."

B5203 CONSTRUCTION OF GABION CAGES

(a) General

Add the following new sub-clause:

"(iii) Reno mattresses or similar may be used as alternative to gabion boxes. These Reno mattresses are to be manufactured of 80mm x 100mm mesh (2,5mm diameter wires, diaphragm spacing 0,6m).

B5204 CONSTRUCTING GABIONS

(c) Assembly

Delete and substitute with:

(c) Assembly, erection and stretching

(i) Assembly

"Prior to assembly, the gabion material shall be opened out flat on the ground and stretched to remove any kinks and bends. The gabion boxes shall then be assembled individually by raising the sides, ends and diaphragms ensuring that all creases are in the correct position and that the tops of all four sides are even. The four corners of the gabion boxes shall be laced first followed by the edges of internal diaphragms to the sides. In all cases lacing shall commence at the top of the box by twisting the end of the lacing wire around the selvages. It shall then be passed round two edges being joined, through each mesh in turn and securely tied off at the bottom. The ends of all lacing wire shall be turned to the inside of the box on completion of each lacing operation.

(ii) Erection

Only assembled boxes, or groups of boxes, shall be positioned in the structure. The side, or end, from which work is to proceed, shall be secured to either completed work or by rods or stakes driven into the ground at the corners. These must be secured and reach at least to the top of the gabion box. Further gabions shall then be positioned in the structure as required, each being securely laced to the preceding one at all corners and diaphragm points.

(iii) Stretching

On completion of erection of a suitable length of gabion, the gabion boxes shall be stretched using a wire strainer or winch of at least one ton capacity firmly secured to the free end of the assembled gabion boxes.

Whilst under tension the gabion boxes shall be securely laced along edges (top, bottom and sides) and at diaphragm points, to all adjacent boxes and shall thereafter be filled."

(d) Rock filling

Add the following new sub-sub-clause:

(iii) General

"Filling shall be carried out only whilst gabion boxes are under tension. Filling material shall consist of rock of size not less than 120mm and not greater than 250mm so placed to produce a neat face and line with a minimum of voids.

Internal horizontal bracing wire shall be provided at 500mm vertical centres or such spacing to ensure a ratio of four to every 1m³ of filling. These bracing wires shall be wrapped around two mesh wires and extended from front to back so positioned to ensure a neat face and line free of excessive bulges and depressions. Gabion boxes shall be filled in stages and horizontal bracing wires inserted as filling is brought up.

Similar bracing wires used vertically shall be provided in 0,5mm deep gabions at 330mm horizontal centres where water falls directly onto gabions or where a neat face is required.

Tension on the gabion boxes shall be released only when sufficiently full to prevent the mesh from slackening.

Gabion boxes shall be overfilled by 20 to 50mm above their tops to allow subsequent settlement of the filling."

Add the following new sub-clauses:

(e) Final wiring

"Closing and wiring down of lids shall proceed as soon as possible after filling operations and certainly in the likelihood of storms or floods during construction. The wiring down shall consist of wrapping around wire at such intervals as required or specified.

Lids shall be stretched tight over the filling with bars and wired down securely through each mesh along all edges, ends and diaphragms. The ends of all tying and bracing wires shall be turned into the gabion box on completion of all lacing operations.

Tightness of mesh, well packed filling and secure lacing is essential in all structures."

(f) Removal, dismantling and stacking of gabions

"Existing gabions, either damaged or not, that require to be removed or moved to a new location shall be dismantled. Material not required for re-assembly or unsuitable for re-use shall be neatly stacked at approved locations in accordance with the engineer's instructions. Payment will be made only for gabions removed in accordance with the written instruction of the engineer.

Where gabions require moving, or as declared suitable by the engineer are re-usable, the contractor shall re-use all the material, plus supply such new materials as may be required to re-assemble the gabion again to the standard specification for new gabions."

B5205 MEASUREMENT AND PAYMENT

Add the following new items:

"ITEM		**UNIT**
B52.05	**Removal and dismantling of existing damaged gabions**	Cubic metre (m³)

The unit of measurement for the removal and dismantling of existing damaged gabions shall be the cubic metre of each type of gabion removed and dismantled on the instruction of the engineer.

The tendered rate shall include full compensation for removing and dismantling gabions, and stacking all the materials. The tendered rate shall further include for the disposal of unsuitable material.

ITEM			UNIT
B52.06	**Gabions constructed from re-usable materials**		
	a)	Galvanised gabion boxes:	
		(i) 4m x 1m x 1m	Cubic metre (m^3)
		(ii) 3m x 1m x 1m	Cubic metre (m^3)
		(iii) 2m x 1m x 1m	Cubic metre (m^3)
	b)	Galvanised gabion mattresses	
		(i) 0.3m Deep	Cubic metre (m^3)

The unit of measurement for re-assembling gabions from re-usable materials shall be the cubic metre of rock filled cages for each type of gabion that is re-usable and approved by the engineer, as specified in the standard specification.

The tendered rate shall include full compensation for using the existing wire cages and rock fill, and for supplying new binding and connecting wires, the assembling and filling of the cages, and any other work for the re-construction of the gabions to conform to the specifications."

5600 : ROAD SIGNS

B5601 SCOPE

"This section also covers the supply and erection of permanent danger plates at culverts and bridges at the locations indicated on the drawings or as directed by the engineer."

B5603 MANUFACTURING OF ROAD SIGN BOARDS AND SUPPORTS

(a) Road signboards

Add the following:

"The contractor shall make every effort to ensure that signboards are correct in all respect and before dispatching the boards from the manufacturer's factory shall provide the Engineer with a 100mm x 150mm colour photograph of each sign face for approval of the correctness of the legend. Such approval will not imply final acceptance of the board. If the Contractor is in any doubt as to the correctness of the sign detail, the sign designer shall be contacted for verification."

(a) (ii) Steel profile road signboards

Add the following:

"Where the letter or legends cross the horizontal joints of the sign panels, the letter shall be cut on the joint and both ends folded around the radius.

Retro-reflective material to adjoining Chromadek panels on a sign shall be practical visual match of the specified colour."

B5604 ROAD SIGN FACES AND PAINTING

Add the following new subclause:

"(e) Application of retro-reflective material

All sign faces shall be faced with class 1 grade retro-reflective material. Painted front sign faces shall not be used.

Where applied to Chromadek sections, retro-reflective material shall be applied as specified for aluminium section in Clause 5603(d) of the Standard Specification, and of Clause B5603(a)(ii) of this project Specification. All sign lettering and symbols are to be class 1 retro-reflective material with the exception of direction signs which is to be Class III retro-reflective material.

For W405, W406, R1 and W409 signs, the sign faces shall be Class III retro-reflective material and the lettering and symbols shall be Class III retro-reflective material."

B5605 STORAGE AND HANDLING

Add the following:

"The following shall not be allowed on the sign face:

Drilling of holes, except for the fastening of overlays
Application of any form of adhesive
Cleaning with any chemicals that are not specifically approved by the manufacturer of the retro-reflective material
Covering the sign face with an impermeable material that does not allow free circulation of air."

B5606 ERECTING ROAD SIGNS

(c) Erection

Add the following:

"After erection the signboard shall be thoroughly cleaned with a cleaning agent approved by the retro-reflective material's manufacturer.

All vegetation obstructing the new or replaced sign board shall be removed and disposed of as instructed by the Engineer."

B5608 DISMANTLING, STORING AND RE-ERECTING EXISTING ROAD SIGNS

Add the following:

"Existing overhead and ground mounted road signs that are being replaced by new signs shall be dismantled and disposed of by the Contractor. Where possible the dismantling of the signs shall not be before the replacement sign is erected and displayed. Where dismantling of the sign is required before erection of the replacement sign, the dismantling shall not take place until immediately before work is to commence on the replacement, and the replacement shall be completed and the new sign displayed as soon as possible thereafter (within 72 hours).

Dismantling shall include sign panels and ground mounted sign supports.

Ground mounted sign supports shall be cut off just below ground level. Material excavated for removal of buried poles shall be replaced, and any depression made good using excess material from excavation for new signs.

Pay items are provided in the Bill of Quantities. Payment will differentiate between different types of sign panels."

B5609 MEASUREMENT AND PAYMENT

ITEM		**UNIT**
B56.01	Road sign boards with painted or coloured semi-matt background. Symbols, lettering, and borders in diamond grade retro-reflective material, where the sign board is constructed from: Amend the last two lines of the second paragraph to read: "completion, delivery, installation of the road sign board complete as specified, and the removal and disposal of all vegetation obstructing the motorists' view of the new or replaced sign board.	

Add the following pay items:

"ITEM		UNIT
B56.10	**Danger plates at culverts/structures**	
(a)	Type A at stormwater culverts (size indicated)	number (No.)
(b)	Type B at bridges (size indicated)	number (No.)

The unit of measurement shall be the number of danger plates provided and erected in accordance with the drawings.

The tendered rate shall include full compensation for all labour and material, painting, posts, excavation, backfilling with soil etc., as may be necessary for completing the work in accordance with the details shown on the drawings."

"ITEM		UNIT
B56.11	**Replace marker boards on existing kilometre posts**	number (No)

The unit of measurement shall be the number of reference marker boards provided and attached to existing kilometer posts in accordance with the drawings.

The tendered rate shall include full compensation for the manufacturing and supplying of the completed marker boards, for attaching the marker board to existing posts along the route and for all materials equipment, labour, nuts and bolts necessary for attaching the marker board as specified."

The tendered rate shall include full compensation for all the labour and material, painting, retro-reflective material, posts, excavation, backfilling, etc. as may be necessary for completing the work in accordance with the details shown on the drawings."

5700 : ROAD MARKINGS

B5706 SETTING OUT THE ROAD MARKINGS

Add the following:

"Where road markings are to be replaced after milling/overlay seal, it is essential that all existing barrier lines and other road marking lines be accurately referenced before commencement of milling or other operations which will obliterate the existing road markings. The position of barrier lines shall be re-assessed on site by the Engineer before the Contractor commences with the road marking."

B5707 APPLYING THE PAINT

Add the following:

"The Contractor's establishment on site and general obligation shall be deemed to fully include the establishment of the road-marking team, irrespective of the number of times the road-marking team is required to be onsite or is required to move within the site."

B5711 GENERAL

Insert the following into the last sentence of the last paragraph between "black paint" and "or chemical paint remover":

", bituminous emulsion, slurry"

Add the following to the last paragraph:

"Where black paint is used, it shall be matt."

Add the following new clause:

"B5715 REMOVAL OF EXISTING ROAD STUDS

The existing road studs shall be removed from the road surface prior to milling."

B5714 MEASUREMENT AND PAYMENT

ITEM		UNIT
B57.06	**Setting out and pre-marking the lines (excluding traffic island markings, lettering and symbols)**	

Add the following:

"Referencing of existing barrier lines and other road marking lines prior to milling and other operations, shall be included in the tendered rate for setting out and pre-marking."

ITEM **UNIT**

B57.05 Roadstuds

Add the following after the first sentence of the second paragraph:

"No additional payment will be made should temporary or permanent road studs be replaced if lost or broken during the construction period or the maintenance period."

5800 : LANDSCAPING AND PLANTING GRASS

B5802 MATERIALS

(c) Grass seeds

Add the following:

"The seed mixture to be used for borrow pit areas shall be:

Eragrostis Curvula "Selected"	:	3kg/ha
Eragrostis Tef	:	2kg/ha
Chloris Gayana	:	9kg/ha
Cynodon Dactylon	:	5kg/ha
Pioneer seed	:	10kg/ha
		29kg/ha

The seed mixture to be used on cut and fill slopes shall be:

Eragrostis Curvula "Selected"	:	3kg/ha
Eragrostis Tef	:	2kg/ha
Cynodon Dactylon	:	7kg/ha
Chloris Gayana	:	5kg/ha
Cenchrus Ciliaris	:	5kg/ha
Digitaria Eriantha	:	4kg/ha
Pioneer seed	:	10kg/ha
		36kg/ha

The 10kg of pioneer seed specified shall consist of the following mixture of seeds:

Aristida Adscensionis	:	2kg/ha
Chloris Virgata	:	2kg/ha
Eleusine Coracana Subsp. Africana	:	2kg/ha
Melinis Repens Subsp. Repens	:	2kg/ha
Urochloa Panicoides	:	2kg/ha

The contractor shall make his own arrangements to obtain the specified seed mixtures. Should specific species not be available, alternative seeds may be proposed by the contractor for consideration by the engineer at tender stage."

5900 : FINISHING THE ROAD AND ROAD RESERVE AND TREATING OLD ROADS

B5902 FINISHING THE ROAD AND ROAD RESERVE

Add the following to the first paragraph:

"The contractor shall pay special attention to the collection and removal of all waste materials originating from the construction activities. All materials trimmed or excavated from the road shall be collected and removed from the road reserve to the satisfaction of the engineer.

This requirement shall be deemed to be incorporated in the tendered rates for item 59.01 of the bill of quantities or such other items as the contractor may decide upon.

The engineer may order additional finishing of the road reserve which will entail the collection and disposal of loose rocks etc. Payment for this work will be made under daywork items included in section 5900 of the bill of quantities as described in section 1800 of these project specifications."

6100 : FOUNDATIONS FOR STRUCTURES

B6106 FOUNDING

Add the following paragraph :

"Where founding takes place in soils or at "founding level" before the placing of foundation fill the in-situ material in the bottom of the excavation shall be compacted to a density of 90% or 93% of modified AASHTO density as directed by the engineer. The depth of preparation and compaction of founding material shall be specified by the engineer. Allowance for measurement and payment for this work is made in the bill of quantities under this section."

B6108 BACKFILL AND FILL NEAR STRUCTURES

(a) General

Add the following:

(iv) "During backfilling within 1,0m of any concrete structure, or as directed by the Engineer, only hand operated mechanical compaction equipment shall be used to achieve the required density."

B6109 FOUNDATION FILL

Add the following after the 3rd paragraph:

"Granular foundation fill shall be constructed from selected subgrade material.

Add the following after the 6th paragraph:

Concrete screeds shall extend 200mm beyond the horizontal dimensions of all footings to facilitate the placing of formwork, unless otherwise directed by the engineer.

In the case of structures where excessive ground water is encountered, the screed shall extend over the full plan area of the base of the excavation. Payment shall be made for the quantity of concrete calculated as the product of the specified thickness of the screed and the actual area of screed specified by the engineer up to a maximum area of the product of the neat footing length plus 750mm and the neat footing width plus 750mm."

B6115 MEASUREMENT AND PAYMENT

Add the following new items:

"ITEM			UNIT
B61.51	(a)	Preparation and compaction of in situ founding material to 90% Mod. AASHTO density (depth indicated)	cubic metre (m^3)
	(b)	Extra over item B61.51(a) for compaction to 93% of Mod. AASHTO density (depth indicated)	cubic metre (m^3)

The unit of measurement shall be the cubic metre of founding material prepared and compacted to the density as specified in accordance with Clause B6106 of these project specifications.

The tendered rates shall include full compensation for shaping, scarifying, mixing of in-situ and imported material if required, and preparing and compacting the material as specified."

6400: CONCRETE FOR STRUCTURES

B6402 MATERIALS

(a) Cement

Replace this sub-section with the following:

"Refer to section 1142 for specification of cement."

CEM I 32,5, CEM II A-S 32,5, CEM II/A-V 32,5, or CEM III A may be used for the manufacture of reinforced concrete members.

B6404 CONCRETE QUALITY

(b) Strength concrete

Add the following paragraph:

"The cement content for any class of structural concrete or mass concrete used in structures shall not be less than 300kg/m³ of concrete.

The contractor must provide the engineer with complete mix designs and materials for strength concrete at least six (6) weeks before the first concrete is cast on the project".

B6405 MEASURING THE MATERIALS

(c) Aggregates

Add the following:

"All concrete for structures shall be manufactured by mechanical mass batching unless authorised otherwise by the engineer for minor concrete structures or for labour-intensive methods."

B6407 PLACING AND COMPACTING

(a) General

Add the following after the third paragraph:

"Concrete shall only be placed up to 20:00 at the latest. Under exceptional circumstances the Engineer may allow night work on condition that proper lighting arrangements can be made and a new and rested shift for night work is provided and ambient temperatures are such as to not adversely affect the setting of the concrete."

B6408 CONSTRUCTION JOINTS

(a) General

Add the following:

"No construction joints other than those indicated on the drawings will be permitted without the written approval of the engineer".

B6409 CURING AND PROTECTING

Add the following:

The surface area of bridge and culvert floor slabs and decks shall be cured as follows:

(i) The area of freshly cast and finished concrete surface shall be immediately covered as specified in clause 6409(e).

(ii) After the concrete has set sufficiently the entire area shall be treated with an approved curing compound as specified in clause 6409(f)."

B6414 QUALITY OF MATERIALS AND WORKMANSHIP

(a) Criteria for compliance with the requirements

Add the following:

"Quality control shall be carried out by the engineer as specified in Section 8200: Quality Control (Scheme 1)."

Add the following new paragraph:

(d) Concrete cores - strength requirements

"Cores will only be drilled if authorised by the engineer. This will only be considered if the contractor's own cubes, when crushed by the engineer, attained the required 28-day cube strength."

B6416 MEASUREMENT AND PAYMENT

ITEM		**UNIT**
B64.01	**Cast in situ concrete:**	cubic metre (m^3)

Add the following after the first paragraph:

"Where foundation slabs are set directly against the face of excavations, the volume of concrete measured for payment shall include the total volumes of concrete placed, allowing for up to a maximum over the neat footing dimensions of 200mm where in the opinion of the engineer accurate excavation to neat lines and levels indicated on the drawings is not possible. (No formwork to the footing shall be measured when the concrete is cast against the face of the excavations)."

B18. SECTION 8100: TESTING MATERIALS AND WORKMANSHIP

ADD THE FOLLOWING CLAUSE:

B8118 TESTS ON RETRO-REFLECTIVE MATERIAL FOR USE ON ROAD SIGNS

On site testing of the retro-reflective properties of road signs shall be done with a field retro-reflectometer measuring at an entrance angle of 5,0° and an observation angle of 0,33°. The coefficient of retro-reflection so determined shall not be less than the relevant values given in Table B 8118/1 below. The coefficients of retro-reflection are expressed in candellas per lux per square metre (cd/(lux/m²)).

TABLE B 8118/1 COEFFICIENTS OF RETRO-REFLECTION

1	2	3	4	5	6	7	8	9	10	11
Class	Observation angle (degrees)	Entrance angle (degrees)	Coefficient of retro-reflection for different colours of material when measured with Standard Illuminant A* (cd/(lux/m²)) minimum							
			Red	Orange	Yellow	Green	Blue	Purple	White	Brown
I	0,33	5	10	20	35	7	3	2	50	3
II	0,33	5	20	40	70	14	6	4	100	6
III	0,33	5	30	60	105	21	9	6	150	9

*See CIE

Publication 15 (E-1.3.1)' "

C3.4 EXPANDED PUBLIC WORKS PROGRAMME (EPWP) LABOUR INTENSIVE SPECIFICATION (*Read with SANS 1914 -5 2002 and Guidelines for the implementation of Labour-Intensive Infrastructure Projects under the Expanded Public Works Programme (EPWP) third edition 2015)*

8.1 Labour intensive competencies of supervisory and management staff

Contractors having a CIDB Contractor grading designation of 5CE and higher only shall engage supervisory and management staff in labour intensive works who have either completed, or for the period 1 April 2004 to 30 June 2006, are registered for training towards, the skills programme outlined in Table 1.

Table 1: Skills programme for supervisory and management staff

Personnel	NQF level	Unit standard titles	Skills programme description
Foreman/ supervisor	4	Implement labour Intensive Construction Systems and Techniques or the equivalent QCTO qualification	This unit standard must be completed, **and**
		Use Labour Intensive Construction Methods to Construct and Maintain Roads and Stormwater Drainage or the equivalent QCTO qualification	any one of these 3 unit standards
		Use Labour Intensive Construction Methods to Construct and Maintain Water and Sanitation Services or the equivalent QCTO qualification	
		Use Labour Intensive Construction Methods to Construct, Repair and Maintain Structures or the equivalent QCTO qualification	
Site Agent / Manager (i.e. the Contractor's most senior representative that is resident on the site)	5	Manage Labour Intensive Construction Processes or the equivalent QCTO qualification	Skills Programme against this single unit standard or part qualification

8.2 Employment of unskilled and semi-skilled workers in labour-intensive works

8.2.1 Requirements for the sourcing and engagement of labour.

8.2.1.1 Unskilled and semi-skilled labour required for the execution of all labour intensive works shall be engaged strictly in accordance with prevailing legislation and SANS 1914-5, Participation of Targeted Labour.

8.2.1.2 The minimum rate of pay set for the EPWP is R 111-77 per day.

8.2.1.3 Tasks established by the Contractor must be such that:

a) the average worker completes 5 tasks per week in 40 hours or less; and
b) the weakest worker completes 5 tasks per week in 55 hours or less.

8.2.1.4 The Contractor must revise the time taken to complete a task whenever it is established that the time taken to complete a weekly task is not within the requirements of 5.2.1.3.

8.2.1.5 The Contractor shall, through all available community structures, inform the local community of the labour intensive works and the employment opportunities presented thereby. Preference must be given to people with previous practical experience in construction and / or who come from households:

a) where the head of the household has less than a primary school education;
b) that have less than one full time person earning an income;
c) where subsistence agriculture is the source of income;
d) those who are not in receipt of any social security pension income

8.2.1.6 The Contractor shall endeavor to ensure that the expenditure on the employment of temporary workers is in the following proportions:

a) 60% women;
b) 55% youth who are between the ages of 18 and 25; and
c) 2% on persons with disabilities.

8.2.2 Specific provisions pertaining to SANS 1914-5

8.2.2.1 Definitions

Targeted labour: Unemployed persons who are employed as local labour on the project.

8.2.2.2 Contract participation goals

There is no specified contract participation goal for the contract. The contract participation goal shall be measured in the performance of the contract to enable the employment provided to targeted labour to be quantified.
The wages and allowances used to calculate the contract participation goal shall, with respect to both time-rated and task rated workers, comprise all wages paid and any training allowance paid in respect of agreed training programmes.

8.2.2.3 Terms and conditions for the engagement of targeted labour

Further to the provisions of clause 3.3.2 of SANS 1914-5, written contracts shall be entered into with targeted labour.

8.2.2.4 Variations to SANS 1914-5

The definition for net amount shall be amended as follows:
Financial value of the contract upon completion, exclusive of any value added tax or sales tax which the law requires the employer to pay the Contractor.

The schedule referred to in 5.2.2.3 shall in addition reflect the status of targeted labour as women, youth and persons with disabilities and the number of days of formal training provided to targeted labour.

8.2.2.5 Training of targeted labour

a) The Contractor shall provide all the necessary on-the-job training to targeted labour to enable such labour to master the basic work techniques required to undertake the work in accordance with the requirements of the contract in a manner that does not compromise worker health and safety.

b) The cost of the formal training of targeted labour, will be funded by the provincial office of the Department of Labour. This training should take place as close to the project site as practically possible. The Contractor, must access this training by informing the relevant provincial office of the Department of Labour in writing, within 14 days of being awarded the contract, of the likely number of persons that will undergo training and when such training is required. The employer must be furnished with a copy of this request.

c) A copy of this training request made by the Contractor to the DOL provincial office must also be faxed to the EPWP Training Director in the Department of Public Works– Cinderella Makunike, Fax Number 012 328 6820 or email cinderella.makunike@dpw.gov.za Tel: 083 677 4026.

d) The Contractor shall be responsible for scheduling the training of workers and shall take all reasonable steps to ensure that each beneficiary is provided with a minimum of six (6) days of formal training if he/she is employed for 3 months or less and a minimum of ten (10) days if he she is employed for 4 months or more.

e) The Contractor shall do nothing to dissuade targeted labour from participating in training programmes.

f) An allowance equal to 100% of the task rate or daily rate shall be paid by the Contractor to workers who attend formal training, in terms of d above.

g) Proof of compliance with the requirements of b to f must be proven.

8.3 Typical construction work to be executed applying labour intensive principles

8.3.1. Erection of fencing for site camp.
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Labour Intensive Specification in the Guidelines pertaining to "Earth works": GENERIC LABOUR-INTENSIVE SPECIFICATION

The Generic Labour-intensive specification below is the same as SANS 1921-5,

Construction and management requirement for works contracts- Part 5: Earth works activities which are to be performed by hand and should be included in the scope of works without amendment or modification as set out below.

SCOPE

This specification establishes general requirements for activities which are to be executed by hand involving the following:

a) Trenches having a depth of less than 1.5 metres

b) Storm water drainage

PRECEDENCE

Where this specification is in conflict with any other standard or specification referred to in the Scope of Works to this Contract, the requirements of this specification shall prevail.

HAND EXCAVATEABLE MATERIAL

Hand excavateable material is material:

a) Granular materials:

   i) whose consistency when profiled may in terms of table 1 be classified as very loose, loose, medium dense, or dense; or

   ii) where the material is a gravel having a maximum particle size of 10mm and contains no cobbles or isolated boulders, no more than 15 blows of a dynamic cone penetrometer is required to penetrate 100mm;

b) Cohesive materials:

   i) whose consistency when profiled may in terms of table 1 be classified as very soft, soft, firm, stiff and stiff / very stiff; or

   ii) where the material is a gravel having a maximum particle size of 10mm and contains no cobbles or isolated boulders, no more than 8 blows of a dynamic cone penetrometer is required to penetrate 100mm;

Note:

1) A boulder, a cobble and gravel is material with a particle size greater than 200mm, between 60 and 200mm.

2) A dynamic cone penetrometer is an instrument used to measure the insitu shear resistance of a soil comprising a drop weight of approximately 10 kg which falls through a height of 400mm and drives a cone having a maximum diameter of 20mm (cone angle of 60° with respect to the horizontal) into the material being used.

Table 1: Consistency of materials when profiled

GRANULAR MATERIALS		**COHESIVE MATERIALS**	
CONSISTENCY	**DESCRIPTION**	**CONSISTENCY**	**DESCRIPTION**
Very loose	Crumbles very easily when scraped with a geological pick.	Very soft	Geological pick head can easily be pushed in as far as the shaft of the handle.
Loose	Small resistance to penetration by sharp end of a geological pick.	Soft	Easily dented by thumb; sharp end of a geological pick can be pushed in 30-40 mm; can be moulded by fingers with some pressure.
Medium dense	Considerable resistance to penetration by sharp end of a geological pick.	Firm	Indented by thumb with effort; sharp end of geological pick can be pushed in up to 10 mm; very difficult to mould with fingers; can just be penetrated with an ordinary hand spade.
Dense	Very high resistance to penetration by the sharp end of geological pick; requires many blows for excavation.	Stiff	Can be indented by thumbnail; slight indentation produced by pushing geological pick point into soil; cannot be moulded by fingers.
Very dense	High resistance to repeated blows of a geological pick.	Very stiff	Indented by thumbnail with difficulty; slight indentation produced by blow of a geological pick point.

TRENCH EXCAVATION

All hand excavateable material in trenches having a depth of less than 1,5 metres shall be excavated by hand.

COMPACTION OF BACKFILLING TO TRENCHES (AREAS NOT SUBJECT TO TRAFFIC)

Backfilling to trenches shall be placed in layers of thickness (before compaction) not exceeding 100mm. Each layer shall be compacted using hand stampers

a) to 90% Proctor density;

b) such that in excess of 5 blows of a dynamic come penetrometer (DCP) is required to penetrate 100 mm of the backfill, provided that backfill does not comprise more than 10% gravel of size less than 10mm and contains no isolated boulders, or

c) Such that the density of the compacted trench backfill is not less than that of the surrounding undisturbed soil when tested comparatively with a DCP.

EXCAVATION

All hand excavateable material including topsoil classified as hand excavateable shall be excavated by hand. Harder material may be loosened by mechanical means prior to excavation by hand.

The excavation of any material which presents the possibility of danger or injury to workers shall not be excavated by hand.

CLEARING AND GRUBBING

Grass and small bushes shall be cleared by hand.

SHAPING

All shaping shall be undertaken by hand.

LOADING

All loading shall be done by hand, regardless of the method of haulage.

HAUL

Excavation material shall be hauled to its point of placement by means of wheelbarrows where the haul distance is not greater than 150 m.

MAKHADO MUNICIPALITY
Coherent Health & Safety Specifications

APPOINTMENT OF PRINCIPAL CONTRACTOR FOR UPGRADING LUVHALANI TO DZANANWA ACCESS ROAD FROM GRAVEL TO PAVED ROAD

BID NUMBER: PM 65 of 2023

FOREWORD

These health & safety specifications have been compiled in terms of the Occupational Health & Safety Act no. 85 of 1993 and Construction Regulations of 7 February 2014 as amended. It must be clear that this document is a management tool and should be used by the Principal Contractor and Contractors in order to comply with the aforementioned Act and regulations.

Should there be any contradiction between this document and the Act; the Act must take preference except where explicitly stated.

Similarly, where this document is silent on a specific health & safety requirement, the Act must be used as the minimum requirement.

Should you be unclear about anything set out in this document, please contact this office. These specifications are site specific and include all works to be done by the principal contractor. The principal contractor will be responsible for all the work on site.

COHERENT HEALTH AND SAFETY SPECIFICATIONS FOR UPGRADING LUVHALANI TO DZANANWA ACCESS ROAD FROM GRAVEL TO PAVED ROAD

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1. INTRODUCTION AND BACKGROUND

1.1 Background to the Health and Safety Specifications

The Construction Regulations (February 2014) places the onus on the MAKHADO Municipality to prepare coherent health & safety specifications, highlighting risks not successfully eliminated during design. The MAKHADO Municipality also has the opportunity to set the tone and standard of occupational health & safety on the construction site.

1.2 Responsibility and Accountability

It is imperative to understand the process of determining legal accountability, as the OHS-Act is the only criminal Act still administered by the Department of Labour. It *assumes* that the CEO is overall accountable even though he may delegate some of his responsibilities. This principal is entrenched in Section 37(1) of the Act. This is generally referred to as the REASONABLE MAN TEST. SECTION 37: Acts or omissions by employees or Mandataries

1.3 Purpose of the Health and Safety Specifications

The purpose of this specification document is to provide the relevant Principal Contractor (and sub-contractor) with any information other than the standard conditions pertaining to construction sites which might affect the health and safety of persons at work and of persons in connection with the use of plant and machinery during Construction work.

1.4 Implementation of the Health and Safety Specifications

To brief the Principle and Sub Contractor on the significant health and safety requirements and aspects of the project. This shall include the provision of the following information and requirements namely:

a) *safety considerations affecting the site of the project and its environment;*
b) *health and safety aspects of the associated structures and equipment;*
c) *required submissions on health and safety matters from the Principal Contractor (and Sub Contractor);*
d) *the Principal Contractor's (Sub - Contractors) health and safetyplan.*

To serve to ensure that the Principal Contractor (and Sub Contractors) is fully aware of what is expected from them with regards to the Occupational Health and Safety Act, 85 of 1993 and the Regulations made there-under including the applicable safety standards, and in particular in terms of Section 8 and 44 of the Act.

To inform the Principal Contractor that the Occupational Health and Safety Act, 85 of 1993 in its entirety shall apply to the contract to which this specification document applies. The Construction Regulations promulgated on 7 February 2014 and incorporated into the above Act by Government Notice R 84, published in Government Gazette 37305 shall specifically apply to all persons involved in the construction work pertaining to this project.

"Purpose of the Act" –To provide for the health and safety of persons at work and the health and safety of persons in connection with the use of plant and machinery; the protection of persons other than persons at work against hazards to health and safety arising out of or in connection with the activities of persons at work; to establish an advisory council for occupational health and safety; and to provide for matters connected therewith.
"Agent" –means a competent person who acts as a representative for a Makhado Municipality;
"Client" –means any person for whom construction work is performed; **"Construction manager"** means a competent person responsible for the management of the physical construction processes and the coordination, administration and management of resources on a construction site; **"Construction site"** means a work place where construction work is being performed;
"Construction supervisor" means a competent person responsible for supervising construction activities on a construction site;
"Construction work" means any work in connection with –

a) The construction, erection, alteration, renovation, repair, demolition or dismantling of or addition to a building or any similar structure; or 6
b) The construction, erection, maintenance, demolition or dismantling of any bridge, dam, canal, road, railway, runway, sewer or water reticulation system; or the moving of earth, clearing of land, the making of excavation, piling, or any similar civil engineering structure or type of work;

"Contractor" means an employer who performs construction work;

"Designer" means-

a) A competent person who-
Prepares a design;
Checks and approves a design;
Arranges for a person at work under his or her control to prepare a design, including an employee of that person where he or she is the employer; or Designs temporary work, including its components;
b) An architect or engineer contributing to, or having overall responsibility for a design;
c) A building services engineer designing details for fixed plant;
d) A surveyor specifying articles or drawing up specifications;
e) A contractor carrying out design work as part of a design and building project; or an interior designer, shop-fitter or landscape architect;

"Health and Safety File" –means a file, or other record containing the information by the Construction Regulations;
"Health and Safety Plan" –means a site, activity or project specific documented plan in accordance with the Makhado Municipality's health and safety specification; **"Health and Safety Specification"** –means a site, activity or project specific document prepared by the Makhado Municipality pertaining to all health and safety requirements related to construction work;
"Method Statement" –means a document detailing the key activities to be performed in order to reduce as reasonably as practicable the hazards identified in any risk assessment;

"Principal contractor" means an employer appointed by the MAKHADO Municipality to perform construction work;
"Risk Assessment" –means a program to determine any risk associated with any hazard at a construction site, in order to identify the steps needed to be taken to remove, reduce or control such hazard.

1.5 Abbreviations:

GMR: General Machinery Regulations
OHS Act: Occupational Health & Safety Act. Act 85 of 1993 Constr Reg: Construction Regulation 2014
ORHVS: Operating Regulations for High Voltage Systems PPE: Personal Protective Equipment

2. OCCUPATIONAL HEALTH & SAFETY MANAGEMENT

2.1 ROLES

Makhado Municipality/ Agent

a) Prepare a baseline risk assessment and issue a health and safety specification to the Principal Contractor, Designer and include the specification in tender documentation.
b) The Makhado Municipality or the appointed Makhado Municipality Agent will appoint each Principal Contractor for this project or phase/section of the project in writing for assuming the role of Principal Contractor as intended by the Construction Regulations.
c) The Makhado Municipality or the appointed Makhado Municipality Agent shall discuss, negotiate and approve the contents of the specified project health and safety plan submitted by the Principaland Sub Contractor.
d) The Makhado Municipality or his Agent will take reasonable steps to ensure that the health and safety plan of the Principle and Sub Contractor is correctly implemented and maintained. Monthly audits shall be conducted to monitor the compliance.
e) In the event of design changes the Makhado Municipality or the appointed Agent on his behalf will ensure that enough resources will be provided to implement the work safely.
f) The Makhado Municipality or his appointed Agent on his behalf, will prevent the Principal Contractor and/or the Contractor from commencing or continuing with construction work should the Principal Contractor and/or the Contractor at any stage in the execution of the works be found to:

have failed to have complied with any of the administrative measures required by the Construction Regulations in preparation for the construction project or any physical preparations necessary in terms of the Act;
have failed to implement or maintain their health and safety plan;
have executed construction work which is not in accordance with their health and safety plan;
have acted in any way which may pose a threat to the health and safety of any person(s) present on the site of the works or in its vicinity, irrespective of him/them being employed or legitimately on the site of the works or in its vicinity.

Designer

- Must take into account the health and safety specifications of the Makhado Municipality.
- Before the tender process, the designer must make available a report to the Makhado Municipality about:

    - All the relevant health and safety information about the design of the relevant structure that might affect the pricing of the construction work.
    - The geotechnical –science aspects, where appropriate.
    - The loading that the structure is design to withstand.

- Inform the Makhado Municipality in writing of any known or anticipated dangers or hazards related to the project.
- Make available all relevant information required for the safe execution of the work upon being designed or when the design is subsequently altered.
- During the design take into account the hazards relating to any subsequent maintenance to be performed with the minimum risk.
- During the design stage cognizance of ergonomic design principals must be applied in order to minimize ergonomic related hazards in all phases of the life cycle of a structure.

2.2 Implementation of the Health and Safety Specifications (Drafting of the coherent Health & Safety Plan)

These health & safety specifications document forms an integral part of the contract, and the Principal Contractor is expected to use it when compiling its project-specific coherent health & safety plan. The Principal Contractor must forward a copy of these specifications to all Contractors at their bidding stage so that they can in turn prepare coherent health & safety plans relating to their operations.

3. OCCUPATIONAL HEALTH & SAFETY MANAGEMENT SYSTEM ELEMENTS

3.1 Scope of the Project

These Specifications set out the requirements for eliminating or if this is not possible, for minimizing as far as reasonably practicable, the risk of incidents and injuries occurring at Makhado Municipality. **This document covers work to be undertaken of the project and sets out the rules and procedures for engagement on the project.** The scope also addresses legal compliance, Makhado Municipality standards, hazard identification and risk assessment, risk control, and the promotion of a health and safety culture amongst those working on the project. The health & safety specifications also make provision for the protection of those persons other than employees.

3.2 The Extent of the works:

Proposed scope of works for the construction of urinal diversion VIP toilets for Mankweng

- Establishment of Contractors Camp Site

- Excavation for VIP pit.
- Foundations and brickwork lining
- Concrete slabs for superstructure
- Procurement and installation of top structure
- Construction of soak-away

3.3 Interpretations

3.3.1 Application

This specifications document is a legal compliance document compiled in terms of the OHS Act & Construction Regulations 2014 and is therefore binding. The document must be read in conjunction with other relevant legislation.

3.3.2 Definitions

The definitions as listed in the OHS Act 85/1993 and Construction Regulations (February 2014) shall apply.

3.4 Minimum Administrative Requirements

3.4.1 Notification of Intention to Commence Construction Work

The Principal Contractor must notify the Provincial Director of the Department of Labour in writing before construction work commences. A copy of this notification must be held in the Principal Contractor's health & safety file on site. The fax transmission slip will serve as proof of notification.

See attached **Annexure "F"**

3.4.2 Assignment of the Principal Contractor's / Contractors' Responsible Persons to Supervise and Co-ordinate Health and Safety on Site

The Principal Contractor and all Contractors must make supervisory appointments as well as other relevant appointments in writing (as stipulated by the OHS Act and Construction Regulations 2014). See attached **Annexure 'B'** for more detail on what health & safety management appointments are relevant on this project.

3.4.3 Competence of the Principal Contractor's / Contractors' Appointed Competent Persons

The Principal Contractor and Contractors' competent persons for the various risk management portfolios must fulfil the criteria as stipulated in terms of the definition 'Competent' in accordance with the Construction Regulations (February 2014).

3.4.4 Compensation for Occupational Injuries and Diseases Act 130 of 1993 (COIDA)

The Principal Contractor must have in its possession a letter of good standing issued by its Compensation Assuror as proof of registration. Contractors must also hold proof of workman's compensation assurance registration in the form of a letter of good standing and forward a copy to the Principal Contractor before they begin work on site. Contractors must be in good standing at all times while carrying out work on site.

3.4.5 Health and Safety Organogram

Including all appointed risk management competent persons. In cases where appointments have not yet been made, the organogram shall reflect the intended positions.

The organogram must be updated when there are changes in the Site Management Structure, and dated accordingly. The organogram merely serves as a quick reference to who is responsible for what risk portfolio in what area.

3.4.6 Preliminary Hazard Identification and Risk Assessments, Progress Hazard Identification and Risk Assessments Reviews.

The Principal Contractor must cause preliminary hazard identification and risk assessment to be performed under the leadership of a competent person before commencement of construction work. On this project detailed task- specific risk assessments based on the proposed sequence of work (method of work) must be compiled. Generic risk assessments will not be accepted.

The assessed risks, together with written safe work procedures for the 'medium & high-risk' rated activities must form part of the coherent site specific health and safety plan submitted for approval by House of Safety. The risk assessments must include:

a) A list of hazards identified as well as potentially hazardous tasks;
b) The risks which may result based on the list of hazards and tasks;
c) A set of safe work procedures to be implemented with the aim of eliminating or if this is not possible, reducing and/or controlling the risks as far as reasonably practicable to ALARP (as low as reasonably practicable);
d) A monitoring and review procedure of the risk assessments as they change i.e. how will the risk assessments be reviewed, when will they be reviewed and by whom.

The Principal Contractor must ensure that all Contractors inform, instruct and train their workers regarding any hazards, the associated risks and the related safe work procedures to be implemented before any work commences and thereafter at regular intervals as the risks change and as new risks develop. This training should be carried out in the form of toolbox health & safety talks. Contractors must conduct their own toolbox talks and submit proof of these talks in the form of attendance registers to the Principal Contractor at least every two weeks. Every worker on site must undergo such toolbox safety talks with the attendance registers kept in the Principal Contractor's safety file.

Contractors must conduct their own hazard identifications and risk assessments specific to their operations and forward a copy to the Principal Contractor.
The Principal Contractor when required must report on the status of these Contractor risk assessments to the MAKHADO Municipality i.e. at audits.

3.4.7 General Record Keeping

The Principal Contractor and all Contractors must keep and maintain all the necessary Health and Safety records to demonstrate compliance with these Coherent Specifications, the OHS Act 85/1993, and the Construction Regulations (February 2014). The Principal Contractor must also ensure that all records of incidents/injuries, emergency procedures, training, planned maintenance inspections, monthly contractor audits, etc. are kept in the health & safety file(s) held in the site office. The Principal Contractor must ensure that every Contractor keeps its own health & safety file, maintains the file and makes it available on request (the file must include the Contractor's health & safety plan and all relevant records). Such 'Contractor safety files' must be audited by the Principal Contractor on a monthly basis with audit reports kept as proof.

3.4.8 Injury / Incident Reporting and Investigation

Injuries are to be categorized into first aid; medical; disabling (lost day); and fatal. When reporting injuries to the MAKHADO Municipality, these categories must be used. The Principal Contractor must investigate all injuries. All Contractors must report injuries to the Principal Contractor immediately and the Principal Contractor must inform the MAKHADO Municipality immediately. All incidents reportable in terms of the provisions of Section 24 of the OHS Act must be reported to the local Dept. of Labour in the prescribed manner.

3.4.9 Consolidation of Health & Safety Documentation

It is the duty of the Principal Contractor to ensure that all documentation required to be kept or generated during the construction phase is consolidated into one set of documents that must be handed over to the MAKHADO Municipality upon completion of the construction work. This consolidated safety file(s) should include instructions from the design team that will be required for the continued safe operation and maintenance of the new structure(s).

3.4.10 Offences and Penalties

Penalties may be imposed on the Principal Contractor and Contractors for ongoing non-compliance with the provisions of the MAKHADO Municipality's coherent health & safety specifications, the Principal Contractor's coherent health & safety plan, site health & safety procedures and rules. Non- compliances identified during safety agent audits and visits will be categorised into one of three levels based on severity. These will be as follows: Life threatening situation - a prohibition order will be issued by means of a written instruction in the site instruction book or an explanation in an audit report. This activity must be seized immediately and corrective measures taken. Serious injury possible – a contravention notice will be issued with a time frame for

compliance stipulated. Minor or no injury may result – an improvement notice will be issued. The corrective measures stipulated in the audit report must be taken. The methodology used to decide the above levels will be directly linked to the risk assessments of the Principal Contractor and contractors, MAKHADO Municipality Standards. The decision of the safety Agent will be final.

3.5 Principal Contractors, Contractors and Sub-contractors

3.5.1 Principal Contractor's and Contractors' Requirements

The Principal Contractor must ensure that all Contractors appointed by them comply with these Specifications, the Principal coherent health & safety plan as well as the OHS Act, Construction Regulations (February 2014), and other relevant legislation that may relate to the activities directly or indirectly. A Contractor, when appointing other Contractors as 'Sub-contractors', shall mutatis mutandis ensure compliance as if it was the Principal Contractor.

The Principal Contractor may only allow a Contractor to begin work on site after receiving a coherent health & safety plan which must include a project specific hazard identification, risk assessments and safety measures. The Principal Contractor must test competency and finally approve his sub – contractor coherent site specific health and safety plan. The Principal Contractor must audit each of its contractors on a monthly basis, with audit reports kept in the health & safety file on site. The audit must include an administrative assessment as well as a physical inspection of the contractor's site activities.
The Principal Contractor must stop any Contractor from carrying out construction work that is not in accordance with the Principal Contractor's and/or Contractor's health & safety plan or if there is an immediate threat to the health and safety of persons.

The Principal Contractor shall take all reasonable steps necessary to ensure co-operation between all contractors to enable each of those contractors to comply with the provisions of the Construction Regulations;

The Principal Contractor shall take all reasonable steps to ensure that each contractor's coherent health and safety plan is implemented and maintained on the construction site: Provided that the steps taken shall include periodic audits at intervals mutually agreed upon between the Principal Contractor and contractors, but at least once every month;

The Principal Contractor must ensure that where changes are brought about to the design and construction, that sufficient health and safety information and appropriate resources are made available to contractors so as to allow them to execute the work safely;

The Principal Contractor must ensure that every contractor is registered and in good standing with a recognized compensation fund or with a licensed compensation insurer prior to work commencing on site;

The Principal Contractor must ensure that potential contractors submitting tenders have made provision for the cost of health and safety measures during the construction process;

The Principal Contractor shall discuss and negotiate with the contractor the contents of the coherent health and safety plan and shall finally approve that plan for implementation;

The Principal Contractor shall hand over a consolidated health and safety file to the MAKHADO Municipality upon completion of the construction work and shall include a record of all drawings, designs, materials used and other similar information concerning the completed structure;

The Principal Contractor may only appoint a contractor to perform construction work when such Principal Contractor is reasonably satisfied that the contractor he or she intends to appoint, has the necessary competencies and resources to perform the construction work safely and that the contractor is an approved MAKHADO Municipality contractor.

3.5.2 Principal Contractor / Contractor Competency Assessment

The Principal Contractor must be reasonably satisfied that the contractors it intends to appoint have the necessary competencies and resources to safely conduct the work they will be appointed for. This should be established at tender stage and before appointments are made. One of the preferred ways of determining whether a contractor is competent is to make sure the contractor is an accredited contractor for MAKHADO Municipality. Once the contractor is appointed, but before it begins work on site a site- specific safety plan must be discussed and negotiated with the Principal Contractor. Such safety plan must be approved for implementation by the Principal Contractor.

The Principal Contractor and Contractors should submit the following documentation for perusal and verification by the MAKHADO Municipality and Principal Contractor respectively:

- Coherent health & safety plan as compiled for this project; (including Risk assessments, safe work procedures, fall protection plan, PTW Issuer/PTW Holder certificates
- Management Structure as envisaged at tender (organogram);
- Letter of Good Standing with the Compensation Commissioner or FEM;
- Proof of health & safety training and other related training; (CV and certificates) Legislative appointment letters
- Notification of Construction work; (proof notification was done)

3.5.3 Pricing for Occupational Health & Safety Compliance All parties bidding to do work on this construction project must ensure that they have made provision for the cost of complying with this Specifications document as well as with the OHS Act and incorporated Regulations as a minimum requirement in their tender documentation. It must also be taken into consideration that time is money, which implies that sufficient time must be allowed for the implementation of the minimum OHS standards. No additional claims will be entertained at a later stage should a compliance requirement be prescribed in the OHS Act, incorporated regulations or in this Specifications document.

3.5.4 Contractors' Coherent Health & Safety Plans [Construction Regulations 7]

1. Introduction:

The Construction Regulations (2014) aims to improve overall management and co-ordination of Health, Safety and Welfare throughout the Construction Phase and reduce the large number of serious and fatal injuries and cases of ill health, which occur every year in the Construction Industry.

In terms of the Construction Regulations (2014), the Principal Contractor is required to develop a Health and Safety Plan before work commences on site and review it throughout the Construction Phase. The degree of detail required in the Health and Safety Plan and the time and effort in preparing it should be in proportion to the nature, size and level of Health and Safety risks involved in the project. Projects involving minimal risks will call for simple, straightforward plans. Large projects or those involving significant risks such as this project will need much more detail.

2. What should the construction health & safety plan cover?

The Construction Health and Safety Plan should set out the arrangements for ensuring the Health and Safety of everyone carrying out the construction work as well as all other persons who may be affected by it. The index of this plan must be in line with Annexure:

3.5.5 Communication and Management of the work

The Principal Contractor must indicate in its health and safety management plan that it has made provision for the following:

a. Management structure and responsibilities
b. Health and Safety goals for the project and arrangements for monitoring and review of Health and Safety performance i.e. safety meetings; contractor meetings; risk assessment review, etc.
c. Arrangement for:

   i. Regular liaison between parties on site i.e. meetings
   ii. Consultation with the work force i.e. toolbox talks
   iii. The exchange of design information between the MAKHADO Municipality, designers, and Contractors on site
   iv. Selection and control of Contractors i.e. selection criteria; inspections; audits, etc.
   v. Site health & safety induction and onsite training i.e. toolbox talks
   vi. Welfare facilities, first aid, emergency planning and fire prevention strategy
   vii. The reporting and investigation of injuries and incidents including near misses what the intended system will be
   viii. The production, approval and review of risk assessments, safe work procedures and method statements and how does the company's risk assessment system work.

d. Site specific rules and procedures.

3.6 Makhado Municipality identified Hazards and Potentially Hazardous Situations

See attachment.

Other possible risks you need to consider.

1. Existing services
2. Interface with the public
3. Hazardous chemical such as solvents, cleaning agents, cement, fuels, oils, epoxies, etc.
4. Site security and access control issues
5. Relocation and protection of existing services
6. Finishing trades

3.6.1 Unforeseeable Hazards

The Principal Contractor must immediately notify Contractors as well as the Makhado Municipality, in writing, of any hazardous or potentially hazardous situations that may arise during the performance of construction activities so that the necessary precautions may be taken before such work begins.

3.7 Site Operational Requirements

3.7.1 Health and Safety Representative(s)

The Principal Contractor and all Contractors must ensure that Health and Safety Representative(s) are appointed under consultation with the employees. The H&S representatives must be competent to carry out their functions. The appointments must be in writing. The Health and Safety Representatives should carry out monthly inspections, keep records of the inspections and report all findings to the Responsible Person or safety officer forthwith and at monthly health & safety committee meetings. At least one Health & safety representatives are required by all Employers on site.

3.7.2 Health and Safety Committees

The Principal Contractor must ensure that project health and safety committee meetings are held monthly with minutes kept. Meetings must be chaired by the Principal Contractor's Responsible Person [CR 7(1) person]. All Contractors' Responsible Persons and Health & Safety Representatives must attend the Principal Contractor's monthly health & safety meetings. The Principal Contractor's appointed supervisors must also attend health & safety meetings. The following topics must be tabled at meetings: management appointments and risk management portfolios; sub-contractor legal compliance issues; injuries and incidents; hazards and risk assessments (present and foreseen); safety procedures; method statements for upcoming activities; planned inspections and registers/record keeping, etc. The committee chairperson must sign off and date the minutes.

3.7.3 Health and Safety Training

3.7.3.1 Induction

The Principal Contractor must ensure that all site personnel including all sub-contractors undergo the agreed health & safety induction training session held and managed by the P/Contractor before any worker starts work on the project. A record of attendance must be kept in the health & safety file. Workers must carry proof of inductions on their person while on site i.e. identification passport cards or similar to be agreed.

3.7.3.2 Awareness

The Principal Contractor must ensure that, on site, periodic toolbox health & safety talks take place at least once every two weeks. All site personnel including all sub-contractors must attend safety talks at such intervals and keep proof thereof. These talks should deal with risks relevant to the construction work at hand i.e. they should be based on the job-specific risk assessments and safe work procedures. Records of attendance must be kept in the P/contractor's health & safety file. All contractors' employees must attend safety awareness toolbox talks carried out by their supervisors, the attendance registers must be copied to the Principal Contractor together with information on the information discussed at the session.

3.7.3.3 Competence

All competent persons must have the knowledge, experience, training, and qualifications specific to the work they have been appointed to supervise, control and/or carry out. This must be assessed on a regular basis e.g. training, evaluation, and periodic audits by the MAKHADO Municipality, progress meetings, etc. The Principal Contractor is responsible to ensure that Competent Contractors are appointed to carry out construction work on site.

3.7.4 Health & Safety Audits, Monitoring and Reporting

The Principal Contractor is obligated to conduct monthly audits on all Contractors appointed by it and keep audit reports in its health & safety file. Contractors have to audit their sub-contractors and keep records of these audits in *their* health & safety files, made available on request. The MAKHADO Municipality/Agent will conduct monthly audits on the Principal Contractors' safety management plan.

3.7.5 Emergency Procedures

The procedure must detail the response procedures including the following key elements:

List of key competent personnel;

Details of emergency services;
Actions or steps to be taken in the event of the specific types of emergencies; Evacuation procedures: including routes and exits to be available on a drawing. Emergency procedure(s) must include, but shall not be limited to: fire; spills; injury to employees; damage to material / equipment / plant; use of hazardous substances; bomb threats; major incidents/injuries; evacuation; etc. The Principal Contractor must advise the MAKHADO Municipality in writing forthwith, of any emergency situations, together with a record of action taken/action to be taken. A contact list of all service providers (Fire Department, Ambulance, Police, Medical and Hospital, etc.) must be maintained and made available to site personnel. The emergency plan will need to be reviewed from time to time as conditions/environment changes i.e. as building work increases in extent.

3.7.6 First Aid Boxes and First Aid Equipment

The Principal Contractor and all Contractors must appoint First Aider(s) in writing. The Principal Contractor must appoint at least one First Aider to start with, which first aider must be certificated. Copies of valid certificates are to be kept on site. The Principal Contractor must provide at least 1 (one) first aid box, adequately stocked at all times. Due to the nature of this project i.e. satellite work stations/areas, further first aid boxes must be provided close to the various work stations to allow for quick, effective treatment of injured persons. As the work progresses and the structure increases in height, extra first aid

3.7.7 Personal Protective Equipment (PPE) and Clothing

The Contractor must ensure that all site workers are issued with and wear the appropriate PPE as indicated in their risk assessments. The Contractors must make provision and keep adequate quantities of SANS approved PPE on site at all times according to their risk assessments. Safety harnesses are mandatory wherever work takes place in an elevated area where safe working platforms or ladders are not possible. Overalls clearly indicating the Contractor's logo must be worn and all sub-contractors must conform to this requirement. Eye protection must be worn by those working grinders, skill saws, and high pressure water cleaners. Even those workers in close proximity to these operations will also be required to wear such eye protection.

Safe footwear will be required by all workers. A high visibility vest is mandatory on a Makhado Municipality site.

3.7.8 Occupational Health and Safety (OHS) Signage

The Principal Contractor must provide adequate on-site OHS signage. Including but not limited to: 'construction work - no unauthorized entry', 'beware of overhead work', 'hard hat area', first aid – to be posted up at all work areas/zones.

Signage must also be posted up at strategic locations to warn the public of diversions, alternative through ways and other irregularities caused by construction work (pedestrians and motorists).

Signs are also required as per law e.g. scaffolding and other potential risk areas/operations such as exposed edges and openings and trenches/excavations where persons are at work. Safety signs and awareness posters will also be required in strategic locations on site such as frequently used access routes, stairways and entrances to structures and buildings where the workers will continuously be made aware of health & safety. Health & safety signage must be well maintained including weekly inspections, cleaning, replacement and repair.

3.7.9 Public and Site Visitor Health & Safety

Public walkways and roadways must be kept clean and free of construction materials so as to prevent any negative impact on the public. Public roadways and walkways will have to be cleaned on a regular basis – daily inspections to be conducted by the Principal Contractor with action to be taken without delay (daily).

Site visitors must be briefed on the hazards they may be exposed to as well as what measures are in place or should be taken to control these hazards. The Construction Regulations require that a record of these 'inductions' be kept on site. It is advised that a visitor book with site rules leaflet be kept at the reception/site office and all visitors to be directed to such point where they must read through the site safety information and sign the visitor book. It will be the Principal Contractor's prerogative to decide whether site visitors require supervision while on site. Visitor hard hats must be kept in the site office.

3.7.10 Access to Site

Where any permits are necessary from the local authorities, this will be the Principal Contractor's responsibility. The road surface of all public and private roadways and pavements/pedestrian walkways must remain in a reasonably clean state, free of excessive sand, stone, water or other construction related materials. The access gate(s) must be controlled and visitors must sign in and report to the site office for further instruction.

3.7.11 Night Work (After Hours)

No night work will be allowed within the hazardous zone on this project without prior approval from the Makhado Municipality/Makhado Municipality's Agent and the Construction Health and Safety Agent.

3.7.12 Transport of Workers

The Principal Contractor and other Contractors may not transport:
Persons together with goods or tools unless there is an appropriate area or section to store the tools or equipment; Contractors must adhere to the National Road Traffic Act.

3.7.13 Construction Health & Safety Officer

A *full-time* construction health and safety officer (in terms of Construction Regulation 8) will be required on this project. The construction officer will be required to carry out at least the following duties:

a) Health & safety audits and inspections on site including administrative and Physical audits of all Contractors' health & safety plans, files and activities, and record findings in the form of audit reports to be kept in the health & safety file; b) Assess, and finally approve contractor safety plans;

3.8 Physical Requirements

3.8.1 Earthworks (including Trenching and excavations)

The Principal Contractor and relevant Contractors must make provision in their tender for the shoring of excavations where the soil conditions warrant it or if this is not possible cut it back -excavation walls must be battered back to a safe angle, termed the safe angle of repose.

The Principal Contractor has the following options: first option is to shore or brace the excavation, should this not be practical then such excavation must be battered back to the safe angle of repose (second option). Should the first two options not be deemed necessary by the Contractor, then permission must be given in writing by the appointed competent excavation supervisor (third option). Where uncertainty pertaining to the stability of the soil exists, the decision of a professional engineer or professional technologist competent in excavations shall be decisive. Such permission must be in writing.

The following is relevant to excavations:

- Excavations/trenches are inspected before every shift and a record of these inspections is kept;
- Safe work procedures have been communicated to the workers;
- The safe work procedures are enforced and maintained by the Principal Contractor's and Contractors' responsible persons at all times;
- Excavations next to permanent or temporary roadways - ensure that no load, material, plant or equipment is placed or moved near the edge of any excavation where it is likely to cause its collapse and thereby endangering the safety of any person, unless precautions such as the provision of sufficient and suitable shoring or bracing are taken to prevent the sides from collapsing;
- Ensure that where the stability of an adjoining building, structure or road is likely to be affected by the making of an excavation, steps are taken that may be necessary to ensure the stability of such building, structure or road as well as the safety of persons
- Cause convenient and safe means of access to be provided into every excavation in which persons are required to work and such access shall not be further than 6m from the point where any worker within the excavation is working;
- Ascertain as far as is reasonably practicable, the location and nature of electricity, water, gas or other similar services which may in any way be

affected by the work to be performed. The necessary steps must then be taken to render the circumstances safe for all persons involved;

- Cause every excavation which is accessible to the public or which is adjacent to public roads or thoroughfares, or where the safety of persons may be endangered, to be
- Adequately protected by a barrier or fence of at least one meter in height and as close to the excavation as is practicable; and provided with warning illuminates or any other clearly visible boundary indicators at night or when visibility is poor;
- Cause warning signs to be positioned next to an excavation within which persons are working or carrying out inspections or tests

3.8.2 Edge Protection, Barricading and Penetrations (CR 10)

A Contractor must ensure that—

- All unprotected openings in floors, edges, slabs, hatchways and stairways are adequately guarded, fenced or barricaded or that similar means are used to safeguard any person from falling through such openings;
- No person is required to work in a fall risk position, unless such work is performed safely as contemplated in sub-regulation (2);
- A detailed Fall Arrest and Rescue Plan will be drafted and implemented on site.
- The above mentioned plan will be demonstrated on instruction of the Makhado Municipality's Agent.

3.8.3 Fall Protection – Fall Risk Positions (Construction regulation 10.)

A Contractor must—

- Designate a competent person to be responsible for the preparation of a fall protection plan; ensure that the fall protection plan contemplated in paragraph (a) is implemented, amended where and when necessary and maintained as required; and take steps to ensure continued adherence to the fall protection plan.
- A fall protection plan contemplated in sub regulation (1), must include—
- A Risk Assessment of all work carried out from a fall risk position and the procedures and methods used to address all the risks identified per location;
- The processes for the evaluation of the employees' medical fitness necessary to work at a fall risk position and the records thereof;
- A program for the training of employees working from a fall risk position and the records thereof;
- The procedure addressing the inspection, testing and maintenance of all fall protection equipment; and
- A rescue plan detailing the necessary procedure, personnel and suitable equipment required to affect a rescue of a person in the event of a fall incident to ensure that the rescue procedure is implemented immediately following the incident.

A Contractor must ensure that a construction manager appointed under regulation 10(1) is in possession of the most recently updated version of the Fall and Rescue Protection Plan.

Fall prevention and fall arrest equipment are —

- Approved as suitable and of sufficient strength for the purpose for which they are being used, having regard to the work being carried out and the load, including any person, they are intended to bear; and
- Securely attached to a structure or plant, and the structure or plant and the means of attachment thereto is suitable and of sufficient strength and stability for the purpose of safely supporting the equipment and any person who could fall; and
- Fall arrest equipment is used only where it is not reasonably practicable to use fall prevention equipment.

Fall Elimination –

The first step in work at height control is to assess the workplace and the work itself in the earliest design/ engineering stages of the project/ site and during the planned stages of all work so that potential fall hazards can be eliminated at an early stage. By doing so employees are not exposed to these potential fall hazards at any stage and work can be conducted with little exposure to fall risks and hazards.

The benefit of identifying these hazards allows for them to be included in the building phase of the job so that prevention measures are included during the construction and maintenance processes involved in the project.

Fall Prevention –

The second outlook is to assess the scope of work and potential conditions using collective protective measures. If fall hazards cannot be completely eliminated during the first step, management must take a proactive approach to the prevention of falls by improving the workplace and its conditions. In this step any hazards that arise outside of the design phase of a project are identified. This is achieved by assessing the work place and its conditions using a work at height risk assessment with the idea of implementing fall prevention measures such as guardrails, edge protection, hand rails and so forth. In this way all hazards that were not dealt with in the design phase can be addressed and a safe working environment will be achieved through the implementation of these systems.

Fall Arrest –

This is the last resort in preventing falls and individual prevention measures are assessed and implemented. In this step the condition or type of work conducted at height cannot be addressed at a design level or prevention level. In this step preventing the employee from hitting the ground is the aim, whereby systems and fall arrest equipment are used to prevent this from occurring. Equipment such as harnesses, lanyards, shock absorbers,

fall arresters, lifelines, anchorage points, and safety nets can reduce the risk of injury if a fall occurs.

Life lines –

- The lifeline shall be of no less than 12.5 millimetres steel cable, able to withstand a 2.250 kg drop maintains tensile strength integrity of the material. Where steel cable cannot be used adequate lifelines in the form of ropes are to be used in accordance with manufacturing specifications able to support the above mentioned force. If a fall is expected while attached to lifeline, that line shall be replaced.
- The lifeline shall be installed in a length not to exceed 60 meters. The lifeline ends should be attached in such a manner that the ends are wrapped around a fixture so that it is facing the work area. As it is wrapped, a softener shall be installed to keep the cable from being marred or kinked.
- The cable shall be wrapped no less than one complete wrap around a beam or fixture and secured with no less than three (3) cable clamps of suitable strength. It shall be pulled to at least 45 torque kilograms.
- During installation, and as the cable is passed through each bay, it shall be attached/ supported in increments of no more than 15 meter runs. To maintain the intended height and elevate sag, the supporting material must be affixed in such a manner to be immobile.
- The supporting material must be of at least 75 x 75 mm angle iron/ steel. Holes may be tapped through the material as long as it is evenly centred, and the inside diameter edges are smooth and rounded.
- When working on elevation where there is no means for overhead attachment, supporting material shall be attached from the same elevation in an upright manner and attached.

Safety Harnesses

- Engineering contractor and all contractors/ subcontractors will provide full body harnesses meeting SABS standards. Safety belts are not allowed for fall protection.
- Standard full body harnesses are not designed for a combined personnel and tool weight in excess of 137 kg. Personnel weight more than 137 kg, with tools, must consult project/ site SHE coordinator prior to using fall arresting equipment
- All Safety harnesses are to be stored in cool dry areas and inspected on a monthly basis. Any cuts, snags abrasions are to be reported to the site supervisor and the harness discarded immediately
- Harnesses and lanyards must be checked for the following, but this the check points are not limited to this list:
- Beginning at one end, 15 cm to 20 cm of the harness/ lanyard must be bent into a U shape. This helps reveal worn, cut, frayed, burned, or damaged fibres. Both splices and all straps along the entire length must be checked.
- Webbing must be carefully checked at attachment points to buckles and "D" rings.
- The shock-absorbing section of the lanyard must be checked for ripped stitches.

- The harness/ lanyard must be checked for broken/ frayed strands.
- Checks for rough, sharp edges; corrosion; dents or distortion; freely moving parts.

3.8.4 Deliveries, Waste Removal, Stacking/Storage of Materials

The Principal Contractor and other relevant contractors must ensure that there is an appointed stacking supervisor and all materials, formwork and all equipment is stacked and stored safely, on level, compact ground, out of access ways and no more than three times the minimum base width in height. Pallets of bricks may not be stacked more than two above each other and must be on timber pallets. No construction materials or equipment may be stacked or stored in public areas unless authorised by the Makhado Municipality and fenced off as per the Makhado Municipality's requirements. Waste materials must be kept within designated construction zones. The Principal Contractor will be responsible for co-ordinating and managing this function.

3.8.5 Fire Extinguishers and Fire Fighting Equipment

The Principal Contractor and relevant Contractors shall provide adequate, regularly serviced firefighting equipment located at strategic points on site, specific to the classes of fire likely to occur. The appropriate notices and signs must be posted up as required. A minimum of four 9 kg dry chemical powder fire extinguishers must be available in and around the site office establishment and stores. Fire extinguishers must also be placed at all work zones/areas, in strategic locations. Wherever *'hot work' is taking place, additional fire extinguishers must be on hand. Contractors are responsible for ensuring compliance with hot work procedures and must be in possession of method statements detailing the safe working procedures. *'Hot work' includes all work that generates a spark or flame and may therefore result in a fire.
Further, during the finishing stages of the construction phase when the finishing trades are on site, fire extinguishers will be required at strategic locations within the work areas – to be supplied and managed by the Principal Contractor.

3.8.6 Traffic Control

The Principal Contractor shall ensure that a fulltime traffic safety officer be appointed in writing, upon the commencement of construction activities. The traffic safety officer shall be tasked with regular inspections and movement of road traffic signs as per the approved traffic accommodation plans and will report to the safety officer.

This document must indicate the potential risk to the public or environment posed by all vehicles travelling to and from the areas of construction for the purpose of the construction work, and proposes methods to eradicate or minimize these risks. Such a plan must include the following aspects:

- Design of Traffic Management Plan
- Site specific base line risk assessment
- Protection of employees

- ☐ Protection of pedestrians
- ☐ Specific signage and distances applicable
- ☐ Applicable training
- ☐ Appointments of road safety officers
- ☐ Management after hours/weekend/adverse weather conditions
- ☐ Setup and clearing of signage

The Principal Contractor will also put in place flagmen to control the entry and exit of vehicles to and from the site onto the public road.

3.9 Plant, Machinery and Equipment

3.9.1 Construction Vehicles & Mobile Plant

"Construction Plant" includes all types of plant including but not limited to, cranes, piling rigs, excavators, construction vehicles, compaction plant, batch plants and lifting equipment.

The Principal Contractor must ensure that such plant complies with the requirements of the OHS Act, Construction Regulations (Feb 2014) and any manufacturers specifications. The Principal Contractor and all relevant contractors must inspect and keep records of inspections on construction vehicles and mobile plant used on site. Only authorized/competent persons in the possession of the necessary training certificates and in possession of a certificate of medical fitness may operate construction vehicles and mobile plant.

Appropriate PPE and clothing must be provided and maintained in good condition at all times.

Reverse alarms must be installed on construction vehicles i.e. trucks, digger loaders, etc.

Vehicles and pedestrian traffic must be safely separated, preventing any unnecessary interfacing.

Any vehicle or mobile plant using any public road must be roadworthy and carry a certificate proving this. Likewise, any operator of such construction vehicle or mobile plant will have to carry the necessary driver's license.

3.9.2 Pressure Equipment

The Principal Contractor and all relevant Contractors must comply with the Pressure Equipment Regulations, including:

Providing competency and awareness training to the operators/users; Providing the relevant PPE and clothing;

Inspecting equipment regularly (every 3 months) and keeping records of these inspections; Providing appropriate firefighting equipment (Fire Extinguishers) on hand;

Ensuring that oxygen and acetylene bottles are secured in an upright position, do not show signs of corrosion or damage and have flash back arrestors fitted on both torch & bottle ends of hoses.

3.9.3 Hired Plant and Machinery

The Principal Contractor must ensure that any hired plant and machinery used on site is safe for use and complies with the minimum legislated requirements. The necessary requirements as stipulated by the OHS Act and Construction Regulations shall apply. The Principal Contractor shall ensure that operators hired with machinery are competent and that competency and medical certificates are kept on site in the health & safety file. Any load test requirements and inspections in terms of legislation must be complied with and copies of load test certificates and inspections must be kept in the health & safety file. All relevant contractors

3.9.4 General Machinery

The Principal Contractor and relevant contractors must ensure compliance with the Driven Machinery Regulations, which includes carrying out risk assessments on the machines, inspecting machinery regularly, appointing a competent person to inspect and ensure maintenance, issuing PPE and relevant clothing, and training those who use machinery.

3.9.5 Electrical Installations and Portable Electrical Tools

The MAKHADO Municipality will ensure as far as possible that the Principal Contractor is made aware of the positions of all electrical power lines. The Principal Contractor must notify the MAKHADO Municipality should it not be sure of the location of any electrical power lines.

The Principal Contractor must comply with the Electrical Installation Regulations, the Electrical Machinery Regulations and the Construction Regulations (CR 24).

The Principal Contractor must keep a copy of the Certificate of Compliance (CoC) for its temporary electrical power supply. A revised CoC is required whenever the installation is altered or changed in any way. All temporary electrical installations must be inspected at least weekly by a competent person appointed in writing with records kept. Portable electrical tools and equipment must be visually inspected daily with records kept. It is advised that the P/Contractor appoints the electrical contractor to inspect the temporary electrical installation on a weekly basis with feedback given in a report so that any maintenance and repairs can be undertaken. Such appointed inspector must 'stop' or isolate any distribution board that is unsafe for use.

3.9.6 Cranes and Lifting equipment

Cranes and Lifting equipment will comply with OHS Act 85 of 1993, Driven Machinery Regulations (DMR) 18. Operators of mobile cranes must be in the possession of a valid PDP licence, medical certificate and training certificate.

Mobile cranes must have a valid load test certificate and must be inspected monthly by a competent person on register. All lifting equipment / tackle must have a valid load test certificate and will be inspected monthly by a competent person on register. At no stage will gas cylinders be lifted by a crane unless the cylinders are in a cradle designed to carry equipment. Cranes will be directed by a Banks man / Supervisor with sufficient communication with the crane. It will remain the responsibility of the operator to ensure that the loads are not slewed over other employees and that the mobile crane slew is barricaded with tape while the crane is in operation. Where there is a Life Threatening Fault, the Crane Operations will not start until the faults have been sufficiently repaired and the Crane was issued with a certificate to prove the crane has been fixed and where applicable, a new load test was conducted.

3.9.7 Scaffolding

No Contractor will allow any employee to work on unsafe or damaged scaffolding. Scaffolding will be inspected daily and after inclement weather by a competent appointed person.
No work will be allowed on scaffolds during inclement weather conditions. Scaffolds will be fitted with a sign at the access to the Scaffold to indicate if it is safe or unsafe to use. Scaffolds will be constructed to SANS 10085 standards and OHS Act 85 of 1993 regulations.

3.10 Occupational Health

3.10.1 Industrial Hygiene (exposure to physical and chemical stress factors)

Exposure of workers to occupational health hazards and risks is very common in any work environment, especially in construction. Occupational exposure is a major problem and all Contractors must ensure that proper health and hygiene measures are put in place to prevent exposure to these hazards. Prevent inhalation, ingestion, and adsorption through the skin of hazardous chemical substances.

3.10.1.1 Noise induced hearing loss is a highly underrated occupational condition. Occupational noise emitted by construction machinery and power tools must be controlled as far as possible by implementing engineering solutions such as noise dampening, regular maintenance, servicing and inspection, screening off the noise, and reducing the number of persons exposed. Personal protective equipment such as earmuffs and earplugs must also be used in conjunction with engineering controls so as to reduce noise exposure to below the acceptable levels.

3.10.1.2 Ergonomics is the study of how workers relate to their workstations. We advise the Principal Contractor and Contractors to take this into consideration when conducting risk assessments, thereby improving the worker-task relationship, which will in turn improve productivity and reduce chronic conditions such as back strains, joint problems and mental fatigue, amongst others.

3.10.2 Hazardous Chemical Substances (HCS)

The Principal Contractor and other relevant contractors must provide the necessary training and information as far as the use, transport, and storage of HCS. The Principal Contractor must ensure that the use, transport, and storage of HCS are carried out as prescribed in the HCS Regulations. The Principal Contractor and contractors must ensure that all hazardous chemicals on site have Material Safety Data Sheets (MSDS) on site and the users are made aware of the hazards and precautions that need to be taken when using the chemicals. The First Aiders must be made aware of the MSDS's and how to treat HCS incidents appropriately. Copies of the MSDS's must be kept in the first aid box and in the store. All containers must be clearly labelled.
Flammable substances must be stored separately, away from other materials, and in a well-ventilated area (appropriate cross ventilation). A competent person should be appointed to be in control of this portfolio.
Stores must be well ventilated, preventing the build-up of flammable and toxic gases/vapours. Should fuel storage containers be used, they must conform to the general environmental legislation and Environmental Management Plan (if a requirement on this site). The necessary safety signage must to be posted up
– 'no naked flames', 'no smoking'. Two 9 kg DCP fire extinguishers must be placed near to the fuel containers, but not within 5 m of the containers. These extinguishers are over and above the minimum four required for the offices and stores.

3.10.3 Welfare Facilities

The Principal Contractor must supply sufficient toilets (1 toilet per 30 workers), clean, lockable changing facilities, hand washing facilities, soap, toilet paper, and hand drying material. Waste bins must be strategically placed around site and emptied regularly. Workers must not be exposed to hazardous materials/substances while eating and must be provided with adequate, sheltered eating areas complete with benches and tables. Stores may not double up a change rooms or mess areas.

3.10.4 Alcohol and other Drugs

No alcohol and/or other drugs will be allowed on site. No person may be under the influence of alcohol or any other drugs while on the construction site. Any person on prescription medication must inform his/her superior, who shall in turn report this to the Principal Contractor forthwith. Any person suffering from any illness/condition that may have a negative effect on his/her /anyone else's health or safety performance must report this to his/her superior, who shall in turn report this to the Principal Contractor forthwith. Any person suspected of being under the influence of alcohol or other drugs must be sent home immediately, to report back the next day for a preliminary inquiry. The Contractor concerned must follow a full disciplinary procedure and a copy of the disciplinary action must be forwarded to the Principal Contractor for its records.

PRIMARY HEALTH AND SAFETY COMPLIANCE
Project: **Upgrading of Luvhalani to Dzananwa access road from gravel to paved road**

ANNEXURE A

The Principal Contractor and Contractors must submit compliance with Annexure 'A' before commencing on work on site. **Compliance with Annexure 'A' must be maintained and proven to the Safety Agent at audits.**

HSS Item no.	Requirement	Legal Reference	Compliance required:
A1	Health & Safety Plan (H & S Plan)	Constructions Regs.	Withing one weeks of receipt of these specifications
A2	Notification of intention to commence construction / building work	Complete schedule 1 (Construction Regs.)	Before commencement on site
A3	Assignment of responsible persons to supervise construction work	OHS Act ~ Section 16(2) appointee ~ all written appointments under the construction regulations 2014	Before commencement on site
A4	Competence of responsible persons in the form of CV's related work history of appointees	OHS Act ~ Section 16(2) appointee ~ all written appointments under the construction regulations 2014	Together with H & S Plan
A5	Compensation for occupational injuries and diseases – proof of registration and in good standing	COIDA or FEMA	Together with H & S Plan
A6	Health and safety organogram showing all safety management portfolios and positions	MAKHADO Municipality requirement	Together with H & S Plan
A7	Initial hazard identification and risk assessment document	Construction regulations	Together with H & S Plan
A8	Fall protection plan (first draft) as defined in the construction regulations also, see	Construction regulations	Together with H & S Plan

HSS = health & safety specifications
OHS Act = occupational health & safety Act CR
= construction regulations
COIDA = compensation for occupational injuries and diseases Act

ASSIGNMENT OF PRINCIPAL CONTRACTOR'S AND CONTRACTORS' RESPONSIBLE PERSONS

Project: **Upgrading of Luvhalani to Dzananwa access road from gravel to paved road**

ANNEXURE B

The Principal Contractor must make all the management appointments as set out below. Compliance with annexure 'B' to be maintained and proven to the safety agent at audits (Further appointments could become necessary as the project progresses).

Item no.	Appointment	Legal Reference	Requirement
B1	CEO Assignee	Section 16(2)	A competent person to assist the CEO in achieving compliance with the OHS Act – P/Contractor's / Contractor's Responsible person
B2	Construction Work Manager	CR 8(1)	A full time competent person to Supervise and be responsible for health & safety related issues on site. The person is appointed by the Section 16(2)
B3	Assistant Construction Work Manager	CR 8(2)	A full time competent person(s) to assist the CR 8(1) appointee with daily supervision of construction work safety. One of the CR8(2) appointees must be designated to fulfill the role of the CR6(1) when such person is not on site. Make this clear in the appointment letter
B4	Health & Safety Representative(s)	Section 17	A competent person(S) to be appointed to represent the workforce in H & S matters. Reps may attend safety meetings, conduct monthly site audits, attend incident / injury investigations and make recommendations as far as H&S goes.
B5	Health & Safety Committee Member(s)	Sectin 19	H&S reps, site supervisors / foreman and the safety officer should make up the committee, with the CR8(1) appointee chairing the committee.
B6	Incident Investigator	GAR 9	A competent person to head up the investigation team and co-ordinate incident / injury investigation ons site.
B7	Risk assessment co-ordinator	CR9	A competent person to co-ordinate the drafting / reviewing / distribution of risk assessments on behalf of the principal contractor. The same applies to contractors. NQF Level 5
B8	Fall protection plan co-ordinator	CR10	A competent person to co-ordinate the drafting / reviewing / distribution of Fall Protection Plan. The same applies to contractors. NQF Level 4

B9	Emergency plan co-ordinator	Contractor Needs to be in line with service stationERP	A competent person to co-ordinate the drafting / reviewing / distribution of the site emergency procedures / evacuation plan. Such person must be fulltime on site so as to take charge of emergency situations.
B10	First Aider(s)	GSR 3	A certified person to address first aid situations and take charge of injuries. Level 1 certificate
B11	Lifting machine and lifting tackle supervisor	DMR 18	A competent P/Contractor employee to co-ordinate the management of lifting machines and tackle, ensuring that such equipment is safe for use at all times, inspected when necessary and repaired when required. The operators, banks men and contractors to liases with this person
B12	Scaffolding inspector	SANS 10085 – 2004	A competent person to inspect scaffolding before use and every time after bad weather, etc.
B13	Scaffold supervisor (P/Contractor	SANS 10085 – 2004	A competent P/Contractor employee to supervise all scaffolding on site, ensuring that scaffolds are safe for use, inspected, extended / altered, repaired when required and that all trades are co- ordinated and authorised to work on such scaffolds
B14	Scaffoldieng erector	SANS 10085 – 2004	A competent person(s) to erect scaffolding – leader of the scaffold team
B15	Formwork & support work supervisor (Temporary Works)	CR12	A competent person to supervise all formwork & support work erection & dismantling. This person must also ensure that the equipment is safe and that all the necessary inspections (pre, during, post & every day thereafter) are carried out & records kept by the competent inspectors. Desigh drawings must be available to this supervisor.
B16	Excavation supervisor / inspector	CR13	A competent person to supervise & inspect excavation work (daily) and ensure that excavations are safe. Records of inspections must be kept by this person.
B17	Ladder inspector	GSR13A	A competent person to inspect ladders daily and ensure they are safe for use, keeping monthly record.
B18	Stacking supervisor	CR28	A competent person to supervise all stacking and storage operations

B19	Explosive powered tools inspector / supervisor	CR21	A competent person to inspect & clean the tool daily, store the tool in a safe location, ensure that cartridges are signed out and in, and control all operations thereof.
B20	Temporary electrical installations inspector	CR24	A competent person to inspect all temporary electrical installations. Including weekly inspections and record keeping.
B21	Portable Electrical Tool Inspector	CR 24	A competent person to co-ordinate / inspect portable electrical tools, leads and plugs.
B22	Fire-fighting equipment inspector	CR29	A competent person to co-ordinate & inspect fire fighting equipment. Including ad-hoc checks and monthly inspections with records kept.
B23	Construction vehicles & mobile plant supervisor	CR23	A competent person(s) to co-ordinate the safety of all construction vehicles & mobile plant. Ensuring that daily inspections are done and records kept, that safety measures are in place, that operators are certified and authorised to operate and that maintenance and services are carried out when required.
B24	Construction safety officer	CR6(6)	A competent person to fulfill the functions as set out in these HSS

GENERAL COMPLIANCE REQUIREMENTS

Project: **Upgrading of Luvhalani to Dzananwa access road from gravel to paved road**

ANNEXURE C

The Principal Contractor and Contractors must comply with but not be limited to the requirements tabled below: Prove compliance with annexure 'C' at audits conducted by the safety agent.

Item no.	What	When	Output	Reviewed by MAKHADO Municipality Agent
C1	Construction – phase Health & Safety Plan	Monthly review	Principal Contractor to indicate the status of Contractors health & safety plans	
C2	Health & Safety File(s)	Open file when construction begins and maintain throughout	Have file on hand at audits. Contractors to report on their file at monthly health & safety audits by the Principal Contractor.	
C3	OHS Act and relevant Regulations	Monthly review	To be kept in the health & safety file on site.	
C4	Health & Safety Induction training, PTW Procedures & SKM Passport System	Every worker before he/she starts work	Attendance registers to be kept	
C5	Awareness Training (Tool Box Talks)	At least once a week	Attendance registers to be kept	
C6	Health & Safety Meetings	Monthly	Meeting minutes to be kept	
C7	Health & Safety Reports & PI / NM	Monthly	**Report covering:** • Incidents / injuries and investigations • Non conformances by employees & Contractors – reports • Internal H&S audit reports	

C8	Audits on contractors	Monthly	**Report covering:** • H&S File / Plan • WCA status • Appointment letters • Section 37(2) agreements • Risk assessment & safe work procedures • Physical site inspection • Any other contractor specific requirements	
C9	Emergency procedured	Monthly evaluation of procedure	Compile written procedure as well as tel. Numbers	
C10	Risk assessments & fall protection plan	Updated and signed off	Documented risk assessments to be available	
C11	Method statements	Drawn up and distributed before workers are exposed to the risks	Documented set of method statements reviewed and signed off.	
C12	General Inspections	Daily	**Report OHS Act compliance:** • Excavations • Portable electrical tools • Formwork & support work • Explosive powered tools	
C13	General Inspections	Daily	• Scaffolding • Temporary Electrical Installations	
C14	General Inspections	Monthly	• Firefighting equipment • Ladders	
C15	General Inspections	Monthly	Lifting tackle Oxy-acetylene cutting & welding sets Fall prevention and arrest equipment	
C16	General Inspections	6-Monthly	• Lifting machines	
C17	Load tests / performance tests	Annually / once erected, before use	• Lifting machines	

C18	List of Contractors	List to be updated weekly	Compile a list of contractors: Name, supervisor, company tel. Numbers and trade.	
C19	Workman's Compensation	Ongoing	Compile a list of Contractors Workman's Compensation proof of good standing.	
C20	Construction site rules & Section 37(2) Mandatary Agreements	Ongoing	Compile a list of all signed up Mandataries. Proof of agreement documents to be kept in H&S file.	

OCCUPATIONAL HEALTH & SAFETY – HEALTH & SAFETY COSTS TO BE INCLUDED IN THE PRINCIPAL CONTRACTOR'S / CONTRACTORS' PRICE

Project: **Upgrading of Luvhalani to Dzananwa access road from gravel to paved road**

ANNEXURE D

In terms of the Construction Regulations (2014), it is the MAKHADO Municipality's duty to ensure that the cost for health & safety has been provided for by the Principal Contractor, before appointment.
Acting on behalf of our MAKHADO Municipality, we require the following health & safety costs to be included by the Principal Contractor. It must be made very clear that these are just some of the health & safety costs to be included in your tender price. It is the duty of the Principal Contractor and Contractors to ensure that all aspects of the Occupational Health & safety Act 85/1993 and Construction Regulations are catered for.
Pricing for Occupational Health and Safety measures should include the following if applicable:

ITEM	DESCRIPTION
1	**Supply of all items of Personal Protective Clothing/Equipment & ensure use thereof for full compliance**
1.1	Steel toe capped safety boots
1.2	Overalls
1.3	Reflective vests(high visibility)
1.4	Hard hats
1.5	Dust masks
1.6	Hearing protection
1.7	Hand gloves
1.8	Any other :Principal Contractor to specify
2	**Supply and provision of Equipment for working at Heights & ensure use thereof for full compliance**
2.1	Fall protection equipment (Safety Harness)
2.2	Double lanyard harness
2.3	Fall protection plan
2.4	Scaffolding access ladders/toe boards/hand rails
2.5	Portable Ladders
2.6	Any other: Principal Contractor to specify :
3	**Barricading: Supply & install, including removal upon completion to ensure full compliance to legislation**
3.1	Rigid type barricading
3.2	Temporary fence barricading along perimeter of excavated area
3.3	Danger tape pre-warning tape
3.4	Any other: Principal Contractor to specify :
4	**Related Training**
4.1	First Aid Training
4.2	Health and Safety Representative training
4.3	Emergency Rescue training(Height)
4.4	Hazard Identification Training
4.5	Training of Personnel working at heights

4.6	Construction Plant Training
4.7	Legal Liability(OHSACT) Training
4.8	COID ACT Training
4.9	Scaffold Erector and Inspector Training
4.10	Any other: Contractor to specify : Working at elevated
5	Occupational Health and Safety Administration
5.1	Develop of a Site Specific Health and Safety Plan and Hazard and Risk Assessment by Competent person.
5.2	Develop of Fall Protection and Rescue Plan by a Competent Fall Protection Plan Developer.
5.3	Competent Occupational Health and Safety Officer/Consultant.
6	Medical Surveillance
6.1	Medical Certificates of fitness for all Employees by an Occupational Health Practitioner.
6.2	Medical Certificates of fitness for all EPWP Employees by an Occupational Practitioner during the duration of the Construction Project.
7	Facilities and Equipment
7.1	Sanitary facility for each sex and for every 30 workers.
7.2	Changing facilities for each sex.
7.3	Sheltered eating areas
7.4	First aid boxes
7.5	Fire extinguishers
7.6	Waste bins
8	Safety Signage
8.1	Sufficient and adequate safety signage on constructions site and at all flammable stores.

ANNEXURE E

The Occupational health and Safety File must consist out of the following documentation:

INDEX

1	Appointment Letter from Makhado Municipality.
2	Notification of Construction work.
3	Letter of Good standing - COID
4	Copy of Public Liability Insurance Policy and UIF Registration
5	Health and Safety Specifications
6	Scope of Work
7	Tool and Machinery list
8	Method Statement of all work that will be conducted.
9	Risk Assessment Guide / Procedure
10	Baseline Risk Assessments
11	Safe Work Procedures for all Risks
12	Health and Safety Information from Designer
13	Medical Certificates
14	All Health and Safety Related Policies
15	Section 37.2 Agreements
16	Induction Training Information
17	Site Specific Emergency numbers and Emergency Plan
18	Site Specific Fall Protection and Rescue Plan
19	Site Specific Health and Safety Plan
20	Incident / Accident Management Control
21	Traffic Management Plan
22	Contractor Control Procedures
23	Environmental Management
24	Hazardous Chemical Substance Register and MSDS
25	Example of Monthly Health and Safety Report
26	Health and Safety Organogram
27	Occupational Health and Safety (Construction) Appointments – With Competencies
28	Certificates for all lifting equipment
29	Sample of all registers that will be used on site.
30	Copy of Construction Building Plans (A4)
31	Copy of the Occupational Health and Safety Act and Construction Regulations 2014

ANNEXURE F

OCCUPATIONAL HEALTH AND SAFETY ACT, 1993
(Regulation 4 of the Construction Regulations. 2014) NOTIFICATION

OF CONSTRUCTION WORK

1. (a) Name and postal address of principal contractor:

_____

(b) Name and tel. No of principal contractor's contact person:

_____

2. Principal contractor's compensation registration number:

_____

3. (a) Name and postal address of MAKHADO Municipality:

_____

(b) Name and tel. No of MAKHADO Municipality's contact person or agent:

_____

4. (a) Name and postal address of designer(s) for the project:

_____

(b) Name and tel. No of designer(s) contact person:

_____

5. Name and telephone number of principal contractor's construction supervisor on site appointed in terms of regulation 8(1).

_____

6. Name/s of principal contractor's sub-ordinate supervisors on site appointed in terms of regulation 8(2).

_____

7. Exact physical address of the construction site or site office:

_____

8. Nature of the construction work:

_____

_____

_____

9. Expected commencement date: _____

10. Expected completion date: _____

11. Estimated maximum number of persons on the construction site.

Total:_____Male:_____ Female: _____

12. Planned number of contractors on the construction site accountable to principal Contractor: __

13. Name(s) of contractors already selected.

_____

_____

_____

_____ _____ Principal Contractor Date

_____ _____ MAKHADO Municipality's Agent
(where applicable) Date

_____ _____ MAKHADO Municipality
Date

☐ THIS DOCUMENT IS TO BE FORWARDED TO THE OFFICE OF THE DEPARTMENT OF LABOUR **PRIOR TO COMMENCEMENT** OF WORK ON SITE.

☐

Copies:

1. Original to **Department of Labour 2.**

BASELINE RISK MATRIX	HAZARD EFFECT / CONSEQUENCE				
Loss Type	1 **Insignificant**	2 **Minor**	3 **Moderate**	4 **Major**	5 **Catastrophic**
Timeline	No impact on overall project timeline	May result in overall project timeline overrun of less than 5%	May result in overall project timeline overrun of between 5% and less than 20%	May result in overall project timeline overrun of between 20% and less than 50%	May result in overall project timeline overrun of 50% or more
Budget	No impact on the budget of the project	May result in overall project budget overrun of less than 5%	May result in overall project budget overrun of between 5% and less than 20%	May result in overall project budget overrun of between 20% and less than 50%	May result in overall project budget overrun of 50% or more
Investment Return – NPV loss	Less than R5m	R5m to less than R50m	R50M to less than R500m	R500m to R5b	R5b or more
Quality	No impact on quality	Minimal quality issues that can be addressed in a short timeframe with minimal interactions	Some quality issues that requires immediate management action	Significant quality issues that requires senior project management interaction	Significant quality issues that requires sponsorship intervention with significant resource and cost implications for rework
Safety / Health	First aid case / Exposure to minor health risk	Medical treatment case / Exposure to major healt h risk	Lost time injury / Reversible impact on health	Single fatality or loss of quality of life / Irreversible impact on health	Multiple fatalities / Impact on health ultimately fatal
Environment	Minimal environmental harm – L1 incident	Material environmental harm – L2 incident remediable short term	Serious environment al harm – L2 incident remediable within LOM	Major environmental harm – L2 incident remediable post LOM	Extreme environmental harm – L3 incident irreversible
Legal & Regulatory	No legal impact	Minor legal concerns with minor impact	Some legal concerns with manageable level of impact	Serious legal concerns and significant impact on operations	Legal non compliance with risk of shutdown of operations with significant cost impacts
Reputation / Social / Community	Slight impact - public awareness may exist but no public concern	Limited impact - local public concern	Considerable impact - regional public concern	National impact - national public concern	Int ernational impact - international public attention
LIKELIHOOD	**RISK RATING**				

5 Almost Certain	The unwanted event has occurred frequently; has a 90% and higher probability of reoccurring	11 Medium	16 Significant	20 Significant	23 High	25 High
4 Likely	The unwanted event has a probability of between 60% and less than 90% of occurring	7 Medium	12 Medium	17 Significant	21 High	24 High
3 Possible	The unwanted event has a probability of between 30% and less than 60% of occurring	4 Low	8 Medium	13 Significant	18 Significant	22 High
2 Unlikely	The unwanted event has a probability of between 1% and less than 30% of occurring	2 Low	5 Low	9 Medium	14 Significant	19 Significant
1 Rare	The unwanted event has never occurred, has a probability of less than 1% of occurring	1 Low	3 Low	6 Medium	10 Medium	15 Significant

BASELINE RISK ASSESSMENT

NO	HAZARD/ITEM	RISK ASSOCIATED WITH HAZARD	CONSEQUENCES	RR	HOW IS HAZARD TO BE DEALT	BY WHOM	BY WHEN
1.	**PRE CONSTRUCTION - SITE ESTABLISHMENT**						
	Incompetent persons Uncontrolled site establishment activities Incorrect stacking procedures	• Injuries during off loading • Damage to property and or vehicles • Cuts and burns • Rushed activities • Incorrect supervision • Management team not identifying existing services • Trip and fall • Cuts • Collapsing of stacks • Incorrect manual handling – back injuries	• Hand and back injuries • Dropping of equipment • Physical injuries • Incorrect manual handling • Potentially fatal accidents • Loss of limbs • Lost time injuries • Medical treatment cases • Financial claims	12	• The principal contractor must ensure that site is established at the correct location as identified by the Client. • Principal contractor's OHS file must be approved prior to site establishment begins – aligned to New Construction Regulation 2014 • All workers on site must be declared medically fit by an Occupational Health Practitioner. (Annexure 3) • Site –induction must be given to all employees to	– Construction Supervisor – Contractor Safety Officer – Construction Supervisor	Before construction commences

					make them aware of the specific hazards • Proof of this should be placed on the OHS File. • Before the commencement of this phase a site-specific risk assessment must be conducted by a competent risk assessor. • All the employees involved must be inducted on the risks; proof of this would be signing off on these risks. • Site specific safe work procedures must be followed during these activities. • Relevant toolbox talks must also be held wit h employees. • The contractor must ensurethat the correct serviceable tools		

					are available during this phase. • Employees must be issued with correct PPE before works begin		
	Offloading heavy equipment and containers with mobile cranes.	• Defective mobile crane can cause accidents • Damage lifting tackle • Unsecure offloading area could cause accidents • Damage to property	• Serious injury and fatalities • Standing time • Lost time injuries • 1st Aid medical treatment cases • Financial implications	13	• All lifting equipment including the mobile crane must be checked before allowed on site. • Ensure that the correct mobile crane to be used for the offloading process. • Safe Working Load must be clearly displayed on the crane. • Load test certificate will be submitted to the client. • Rope and or sling certificates must be submitted to the client. • Only competent	– Construction Supervisor – Lifting tackle Inspector – Construction OHS officer	During site establishment

					operators will be allowed to operate the mobile crane. • Daily checks as per checklist by operator. • Should a service provider be used these documentation must be approved by the principal contractor's OHS Officer. • Copies must be put on the OHS file • Lifting tackle to be inspected daily. • Material to be stacked on firm and level ground. • Stacking to be supervised by a competent supervisor. • Adequate storage area to be provided • All unstable stacks to be		

					dismantled and stacked over, in pre-determined area		
	Site security and fencing: – Fence with lockable gates –24 security deployed – Fire prevention – All required OHS signage – Accommodation of offices	• Theft of property • Fires • Unsafe conduct by visitors	• Financial losses • Loss of equipment / documentation • Lost time due to theft • Production time lost • Injuries to visitors.	5	• All visitors must report to site office. • All visitors must also be inducted. • Checklist signed by supervisor and filed by safety officer	– Construction Supervisor. – Security	During Site Establishment / Ongoing
	Housekeeping:	• Inadequate storing facilities. • Damage to material and equipment. • Accumulation of waste. • Environment pollution. • Facilities for employees. • Electrical installations	• Serious injuries • Electrocution • Environmental impact • Personal injuries • Lost time in production • Damage to equipment and material. • Injuries to occupants and visitors of Olympic Towers	9	• Use site establishment checklist to ensure compliance with all items • Toilet facilities & staff welfare as per Construction Reg 2014 • Toilets 1:30(regular service) • Correct storing facilities for hazardous chemicals.	– Construction Supervisor – Staff Welfare Inspector – Safety Officer – Qualified Electrician.	During Site Establishment / Ongoing

					• Correct signage for all storage of hazardous materials • Proper storing facilities fortool and equipment. • Adequate waste bins available. • Regular cleaning of these bins • Waste recycling is encouraged. • A COC certificate for temporary electrical installations by a register competent electrician.		
2. CONSTRUCTION							
NO	**HAZARD/ ITEM**	**RISK ASSOCIATED WITH HAZARD**	**CONSEQUENCES**	**RR**	**HOW IS HAZARD TO BE DEALT**	**BY WHOM**	**BY WHEN**
1	Excavations and Trenches	• Excavate with excavator to the specific level • Trip and fall • Collapsing soil • Machine struck employees • Hand injuries by excavation by hand	• Fatalities • Serious injuries • Lost times injuries • Accidents due to defective machines • Damaging	18	• Method statements • Issue base risk assessments • Employees must be visible always • Direct supervision. • Well trained	• Construction Supervisor • Excavation Supervisor • Construction OHS Officer	

		• Incorrect manual handling	services • Over excavation • Dust • Electrocution when damaging electrical services • Damage to services • Employees not visible to machine operator • Material falling in excavations while employees are working in excavations • Inadequate access and exit points • Employees may strain muscles to get into or out of excavations		operators • Level on survey profiles clearly indicated • Proper communication between supervisor and operators • Induct employees on safe working procedures • All excavations must be inspected daily • Provide ladders ever 6 m for access in and out of excavations deeper than 1.5 m • Excavated material to be placed away from side of excavation • Sides of excavation to be shored (if necessary) and barricaded immediately • Excavations should be		

					backfilled as soon as possible after excavation • Keep area barricaded with hard barricading until backfill is done.		
2	Excavation Filling Trenches	• Hard rock material • Risk of collapsing excavations • Seepage of subterranean water • Employees inhaling dangerous fumes • Skin contact with hazardous substances	• Manual handling injuries • Lost time injuries • First aid treatments	18	• Method statements • Issue base risk assessments • Inspections by excavation supervisor • Proper train operators • Location of services • Construction supervisor	- Construction supervisor - Construction OHS Officer - Excavation Supervisor - Civil Engineer - Hazardous Chemical Supervisor	
3	Traffic Accommodation	• High volume of traffic • Accidents while placing road signage • Pedestrian injuries & fatalities • Injury/fatality while setting out signs/ measurement s • Workers fatality	• High speed vehicles could lead to fatalities • Injury/fatality to flagmen • Injury/fatality to workers measuring lay-out & placement of signs	18	• Approval of road traffic management plan • Emergency procedures must be included in the traffic management plan. • workers/personnel on road	– Construction Supervisor – Traffic Control Officer – Flagmen – Qualified Operators	

			• Road traffic accidents to poor visibility or wrong traffic signage • Lost Time Injuries due to event of accident • 1st Aid medical treatment cases • Damage to road signage • Incompetent flagmen could lead to major incidents or fatalities		traffic management plan • Induct all workers on R/A and SWP • Appoint designated competent traffic control officer • This appointment must be a full time employee. • Toolbox Talk on traffic control • Correct signage as per traffic management plan • Correct setting out of traffic signage • Training of flag personnel • High visibility of all workers • Monitoring programme • Daily checks of signage • Emergency plan for incident to be		

					communicated man-job specification		
4	Regulating Traffic – Flagmen Operations : Partial Lane Closure	• Serious injuries/ fatalities • Heat exposure to workers • Hit & run accidents • Flying objects form loose stones • Damage to construction vehicles • Damage to traffic signage • Working positions of flag personnel. • Not proper communications between traffic officials.	• Poor visibility could lead to vehicles ignoring traffic signs • Poor lay -out of signs could lead to traffic accidents (major) or fatalities • Standing time • Flagmen ran over by speeding traffic could lead to fatality • Flag personnel not on designated passions due to tiredness. • Lack of proper communication s can lead to accidents.	21	• Installation of road traffic signs & regulating according to installation inventory • Trained flagmen • Flagmen working in shifts • Insure good visibility at all times • Radio communication between flagmen • Implement: Advance warning are, transition area; buffer zone; work zone termination area • Correct high visibility vests & PPE • Correct symbolic signage • Correct appointments of relevant	• Construction Supervisor • Flagmen: Qualified • Traffic control officer • 1st Aider • Emergency Coordinator	

					personnel during these operations. • Planned Job Observations • Daily start-up procedures & closure • Replacement of broken traffic signs & traffic cones		
5	Working at heights (general)	• Fatalities • Serious injuries • Damage to equipment and material. • Production lost • No barricading at drop zone	• Serious injuries when falling from one level to a another level • Equipment and material could be damage when dropped from a height. • Public and employees could be affected should they enter the drop zone • Non- adherence to FPP could lead to major and serious injuries • Employees not	21	• A site and task specific fall protection plan including rescue plan must be in place. • This fall protection plan must be drawn up by a competent appointed Fall Protection Plan Developer. • The Clients Agent must approve the fall protection plan. • The fall protection plan must be inducted to all employees	• Site Supervisor • Fall Protection plan implementer • OHS Officer	Ongoing

			trained to work at heights		working at heights. • All employees working at heights should have working at heightstraining. • All the necessary registers and inspection checklist mustbe in place and checked regularly. • All employees working atheight should have a valid working at height medical in place. • All employees working atheight must wear the correct specific for task personal protective clothing. • All hard hats of employees working at height must have chin straps. • Proper		

					procedures must be in place to gain access to tools and materials. • No tools and material may be dropped from any height. • Adequate area identified for a drop zone. • This drop zone must be properly barricaded with all the necessary warning signs.		
6	Fire Protection	• Inadequate and wrongly placed fire equipment can cause delay in dealing with fire should it occur • Poor housekeeping • Falling objects • Hand Injuries • Back Injuries • Strains • Non-availability of fire equipment's • Untrained personnel using wrong type of	• LTI • Medical Cases/ 1st Aid Cases • May result in overall project overrun • Trip slip and falls • Serious injuries or possible fatalities when fire gets out of control • Damage to property • Medical	18	• Adequate fire equipment to be provided and placed at suitable location • Monthly checklist of all fire equipment's • Provide training and have fire drills periodically • Store material in demarcated areas • Cigarettes to be extinguished properly and	• Construction Supervisor • Foreman • Fire Fighting Team • First Aider • Fire prevention supervisor	Ongoing

		equipment to extinguish the fire delays in searching for fire extinguisher • Fire alarm not functional or inaudible • Access blocked an people trapped inside, firefighting team not able to obtain access • Shortage or non-operation of firefighting equipment • Overcrowding an exit point during fire	treatment • Bruises, cuts, broken limb • 1st aidcase treatment • Loss of life		thrown into rubbish bins • Ashtrays and waste bins to be emptied daily • Fire escape routes and assembly points to be determined and clearly marked • All workers must use appropriate PPE, • Close supervision • Discuss risk assessment with work ers • Induction training • Toolbox talks training		
7	Ergonomic	• Repetition movements resulting in MSD'S • Grip force with hands, wrist ,arms resulting in muscle fatigue and inflammation of the muscles and tendons • Lift /lower force activities that could result in lower back	• Lost time injury • Medical treatment incidents • Body injuries • Heat exhaustion	18	• Employees trained to recognise MSD symptoms • Encourage early reporting of MSD symptoms • Re-evaluate work procedures • Ensure regular resting periods • Employees need proper training in	• Constructio n Supervisor • Constructio n OHS Officer • All employees • First aider	Ongoing

		injuries • Working in awkward positions • Extreme temperatures • Activities that result in hand arm vibration that could result in MSD and white fing er syndrome •			lifting practises • Job task observations • Mechanical lifting where possible • Redesigned tasks • Trained first aider • Sufficient fresh water hourly (600 ml) • Sunscreen should also be available • Equipment with lowest vibration be used • Proper maintenance schedules must be in place • Proper medical surveillance program in place • Vibrating reducing hand gloves must be used.		

MAKHADO LOCAL MUNICIPALITY

PROJECT DESCRIPTION: UPGRADING OF LUVHALANI TO DZANANWA ACCESS ROAD FROM GRAVEL TO PAVED ROAD

C4: SITE INFORMATION

C4.1 LOCALITY PLAN

C4.2 BID DRAWING

MAKHADO LOCAL MUNICIPALITY

LUVHALANI TO DZANANWA ACCESS ROAD

19 Gen.Joubert
POLOKWANE
0699

Tel: (015) 291-4769
Fax: (015) 291-3440
info@tshino.co.za

TENDER DRAWINGS

May 2023

ISSUED TO:

MAKHADO LOCAL MUNICIPALITY
PRIVATE BAG X2596
MAKHADO
0920

Tel.: (015) 519-3000
Fax.: (015) 516-6145

ORIGINAL ON A1

LUVHALANI TO DZANANWA ACCESS ROAD
BOOK OF DRAWINGS

DRAWING No.	TITLE	SIZE	REV.
	GENERAL		
TC/MLM/LDAR/Dip/00	DRAWING INDEX	A1	0
	KEY PLAN		
TC/MLM/LDAR/kp/01	LOCALITY PLAN	A1	0
TC/MLM/LDAR/kp/02	GENERAL LAYOUT PLAN	A1	0
	ROAD LONGITUDINAL SECTIONS		
TC/MLM/LDAR/Ls/01	LAYOUT PLAN WITH LONGITUDINAL SECTION Ch 0,000 TO Ch 700,000	A1	0
TC/MLM/LDAR/Ls/02	LAYOUT PLAN WITH LONGITUDINAL SECTION Ch 700,000 TO Ch 1400,000	A1	0
TC/MLM/LDAR/Ls/03	LAYOUT PLAN WITH LONGITUDINAL SECTION Ch 1400,000 TO Ch 2100,000	A1	0
TC/MLM/LDAR/Ls/04	LAYOUT PLAN WITH LONGITUDINAL SECTION Ch 2100,000 TO Ch 2800,000	A1	0
TC/MLM/LDAR/Ls/05	LAYOUT PLAN WITH LONGITUDINAL SECTION Ch 2800,000 TO Ch 3141,111	A1	0
TC/MLM/LDAR/Ls/06	ACCESS LAYOUT PLAN WITH LONGITUDINAL SECTION Ch 0,000 TO Ch 131,634	A1	0
	ROAD MARKINGS AND SETTING OUT PLANS		
TC/MLM/LDAR/Rs/01	ACCESS ROAD MARKINGS AND SETTING OUT PLAN	A1	0
	ROAD CROSS SECTIONS PLANS		
TC/MLM/LDAR/Xs/01	TYPICAL ROAD CROSS SECTIONS AND CONCRETE TRAPEZOIDAL DRAIN DETAILS	A1	0
TC/MLM/LDAR/Xs/02	ROAD CROSS SECTIONS (SHEET 1 OF 6)	A1	0
TC/MLM/LDAR/Xs/03	ROAD CROSS SECTIONS (SHEET 2 OF 6)	A1	0
TC/MLM/LDAR/Xs/03	ROAD CROSS SECTIONS (SHEET 3 OF 6)	A1	0
TC/MLM/LDAR/Xs/04	ROAD CROSS SECTIONS (SHEET 4 OF 6)	A1	0
TC/MLM/LDAR/Xs/05	ROAD CROSS SECTIONS (SHEET 5 OF 6)	A1	0
TC/MLM/LDAR/Xs/06	ROAD CROSS SECTIONS (SHEET 6 OF 6)	A1	0
TC/MLM/LDAR/Xs/07	ACCESS ROAD CROSS SECTIONS (SHEET 1 OF 1)	A1	0
	STORMWATER KEY PLAN		
TC/MLM/LDAR/Sw/01	STORMWATER KEY PLAN	A1	0

LUVHALANI TO DZANANWA ACCESS ROAD
BOOK OF DRAWINGS

DRAWING No.	TITLE	SIZE	REV.
	ROAD STANDARD DETAILS		
TC/MLM/LDAR/SD/01	TYPICAL SPEED HUMP DETAIL	A1	0
TC/MLM/LDAR/SD/02	ROAD MARKINGS: REGULARITY, WARNING AND GUIDANCE SYMBOLS	A1	0
TC/MLM/LDAR/SD/03	ROAD MARKINGS: MANDATORY DIRECTION ARROWS AND DIRECTION ARROWS AHEAD	A1	0
TC/MLM/LDAR/SD/04	ROAD TRAFFIC SIGNS SUPPORTS, FOUNDATIONS AND DETAIL OF GROUND MOUNTED ROAD SIGN FACE	A1	0
TC/MLM/LDAR/SD/05	GENERAL ROAD SIGN DETAILS	A1	0
TC/MLM/LDAR/SD/06	TYPICAL DETAILS OF HAZARD PLATE AT CULVERT AND EMERGENCY ACCESS POINT	A1	0
TC/MLM/LDAR/SD/07	GENERAL GUARDRAIL DETAILS	A1	0
TC/MLM/LDAR/SD/08	SINGLE CARRIAGEWAY PLACING OF GUARDRAILS DETAIL AT BRIDGES	A1	0
TC/MLM/LDAR/SD/09	NAMEBOARD DETAILS	A1	0
	ROAD WORKS DETAILS		
TC/MLM/LDAR/SD/10	ROAD CLOSURE SIGN DETAILS, STANDARDS FOR DIVERSIONS, SIGN MOUNTING AND REINFORCEMENT DETAILS FOR ROAD SIGNS	A1	0
TC/MLM/LDAR/SD/11	TEMPORARY ROAD TRAFFIC MANAGEMENT FOR 2-LANE SINGLE CARRIAGEWAY ROADS STOP / GO OPERATION AND SHOULDER CONSTRUCTION	A1	0
TC/MLM/LDAR/SD/12	TEMPORARY ROAD TRAFFIC MANAGEMENT FOR 2-LANE SINGLE CARRIAGEWAY-BEGINNING AND END OF DEVIATION	A1	0
TC/MLM/LDAR/SD/13	TEMPORARY ROAD TRAFFIC MANAGEMENT FOR 2-LANE SINGLE CARRIAGEWAY ROADS	A1	0
	STORMWATER DETAILS		
TC/MLM/LDAR/DD/01	BEDDING DETAILS FOR PIPE CULVERTS SHEET 1	A1	0
TC/MLM/LDAR/DD/02	BEDDING DETAILS FOR PIPE CULVERTS SHEET 2	A1	0
TC/MLM/LDAR/DD/03	DETAIL FOR PRECAST BOX CULVERT BASES SHEET 1	A1	0
TC/MLM/LDAR/DD/04	DETAIL FOR PRECAST BOX CULVERT BASES SHEET 2	A1	0
TC/MLM/LDAR/DD/05	STONE PITCHING AND GABION PROTECTION	A1	0
TC/MLM/LDAR/DD/06	GABION PROTECTION AT CULVERT OUTLET	A1	0
TC/MLM/LDAR/DD/07	PIPE CULVERTS 90° TO ROAD (450 TO 1200 DIA. PIPES) CONCRETE DETAILS	A1	0
TC/MLM/LDAR/DD/08	PIPE CULVERTS SKEW TO THE ROAD (450 TO 1200 DIA. PIPES) CONCRETE DETAILS	A1	0
TC/MLM/LDAR/DD/09	PIPE CULVERTS - 90° & SKEW TO ROAD (450 TO 900 DIA. PIPES) REINFORCEMENT DETAILS	A1	0
TC/MLM/LDAR/DD/10	PIPE CULVERTS 90° & SKEW TO ROAD (1050 & 1200 DIA. PIPES) REINFORCEMENT DETAILS	A1	0
TC/MLM/LDAR/DD/11	PRECAST PORTALS 90 TO ROAD (300 TO 1500 HIGH) CONCRETE DETAILS	A1	0
TC/MLM/LDAR/DD/12	PRECAST PORTALS SKEW TO ROAD (300 TO 1500 HIGH) CONCRETE DETAILS	A1	0
TC/MLM/LDAR/DD/13	PRECAST PORTALS 90° AND SKEW TO ROAD (300 TO 900 HIGH) REINFORCEMENT DETAILS SHEET 1	A1	0
TC/MLM/LDAR/DD/14	PRECAST PORTALS 90° AND SKEW TO ROAD (300 TO 900 HIGH) REINFORCEMENT DETAILS SHEET 2	A1	0
TC/MLM/LDAR/DD/15	PRECAST PORTALS 90° AND SKEW TO ROAD PRECAST PORTALS 90° AND SKEW TO ROAD REINFORCEMENT DETAILS SHEET 1	A1	0
TC/MLM/LDAR/DD/16	PRECAST PORTALS 90° AND SKEW TO ROAD PRECAST PORTALS 90° AND SKEW TO ROAD REINFORCEMENT DETAILS SHEET 2	A1	0

No.	DATE	REVISION	REVISED BY	DATE

DESIGNED BY

TSHINO CONSULTING ENGINEERS
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POLOKWANE
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Fax: (015) 291-3440
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DESIGNED P.M.	CONSULTANT	RECOMMENDED
DESIGN CHECKED P.M.	..... for CONSULTING ENGINEER	..... for HEAD OF DEPARTMENT
DRAWN P.M.	DATE:	DATE: .....
DRAWING CHECKED P.M.		

MAKHADO
Private Bag X 2596
MAKHADO
0920
TEL: (015) 519-3000
FAX: (015) 516-6145

SCALE: N.T.S.

REVISION: 0

CLIENT: MAKHADO LOCAL MUNICIPALITY

TYPE OF PLANNING: TENDER

PROJECT TITLE: LUVHALANI TO DZANANWA ACCESS ROAD

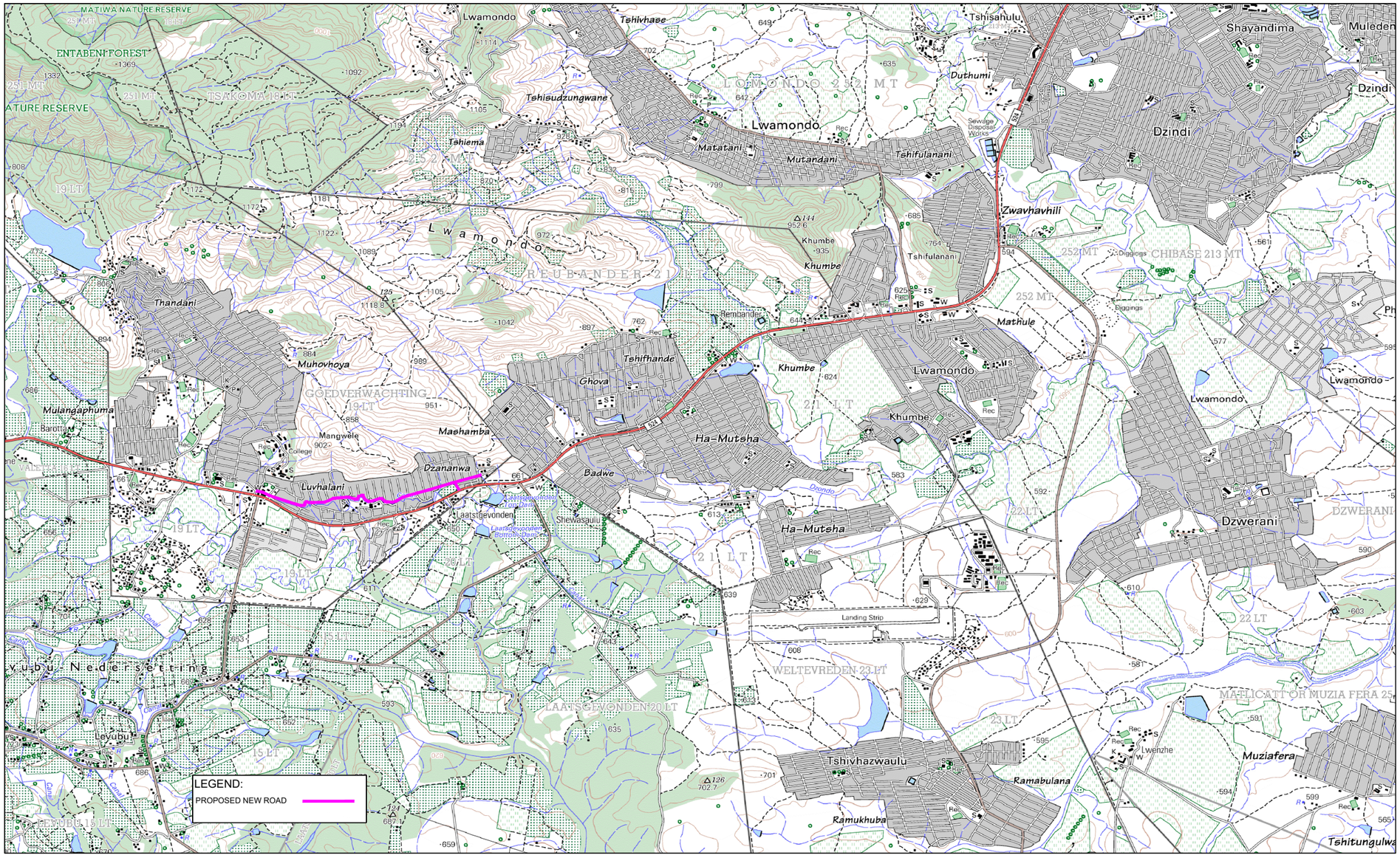
DRAWING TITLE: BEDDING DETAILS FOR PIPE CULVERTS SHEET 1

TENDER No.: -

SHEET 1 OF 1

DRAWING No.: TC/MLM/LDAR/Dip/00

ORIGINAL ON A1



No.	DATE	REVISION	REVISED BY	DATE

DESIGNED BY

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DESIGNED P.M.	CONSULTANT	RECOMMENDED
DESIGN CHECKED P.M.	.....	.....
DRAWN P.M.	for CONSULTING ENGINEER	for HEAD OF DEPARTMENT
DRAWING CHECKED P.M.	DATE:	DATE: .....

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SCALE 1:50 000

REVISION 0

CLIENT MAKHADO LOCAL MUNICIPALITY

TYPE OF PLANNING TENDER

PROJECT TITLE

LUVHALANI TO DZANANWA ACCESS ROAD

DRAWING TITLE LOCALITY PLAN

TENDER No. -

SHEET 1 OF 1

DRAWING No. TC/MLM/LDAR/Kp/01

			CONSULTING FIRM:	DESIGNER:	EMPLOYER:	PROJECT NAME:	SCALE
			TSHINO CONSULTING ENGINEERS	NAME: E.MUDAU	MAKHADO LOCAL MUNICIPALITY	LUVHALANI TO DZANANWA ACCESS ROAD	1.1
			(015) 291 4769 FAX : (015) 291 3440	SIGNATURE:	CIVIC CENTRE CORNER KROGH & ERASMUS STREET		
			19 GEN.JOUBERT	ENGINEER:	MAKHADO	DRAWING NAME:	DRAWING No
			POLOKWANE	NAME: P.MUDAU	0920	LAYOUT PLAN	TC/MLM/LDAR/kp/02
		FOR TENDER	0699	SIGNATURE:	TEL: 015 519 3000		
		AMENDMENTS	e-mail : info@tshino.co.za				

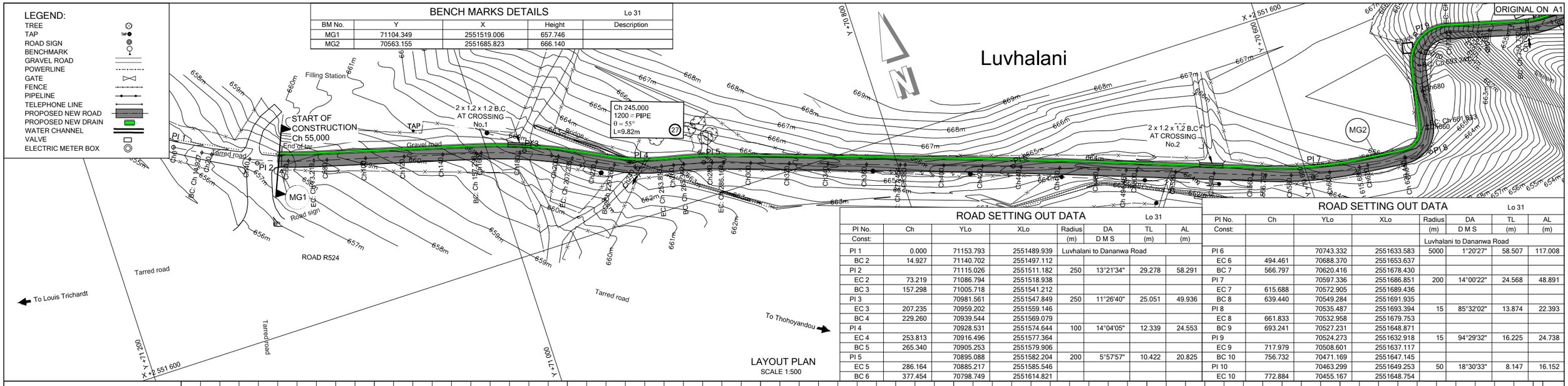
Rev No
0

ORIGINAL ON A1

LEGEND:
- TREE
- TAP
- ROAD SIGN
- BENCHMARK
- GRAVEL ROAD
- POWERLINE
- GATE
- FENCE
- PIPELINE
- TELEPHONE LINE
- PROPOSED NEW ROAD
- PROPOSED NEW DRAIN
- WATER CHANNEL
- VALVE
- ELECTRIC METER BOX

BENCH MARKS DETAILS — Lo 31

BM No.	Y	X	Height	Description
MG1	71104.349	2551519.006	657.746	
MG2	70563.155	2551685.823	666.140	



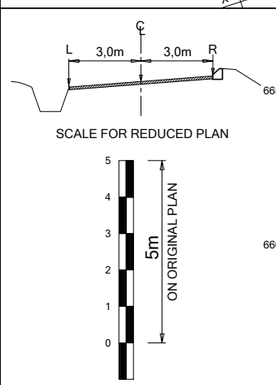
LAYOUT PLAN
SCALE 1:500

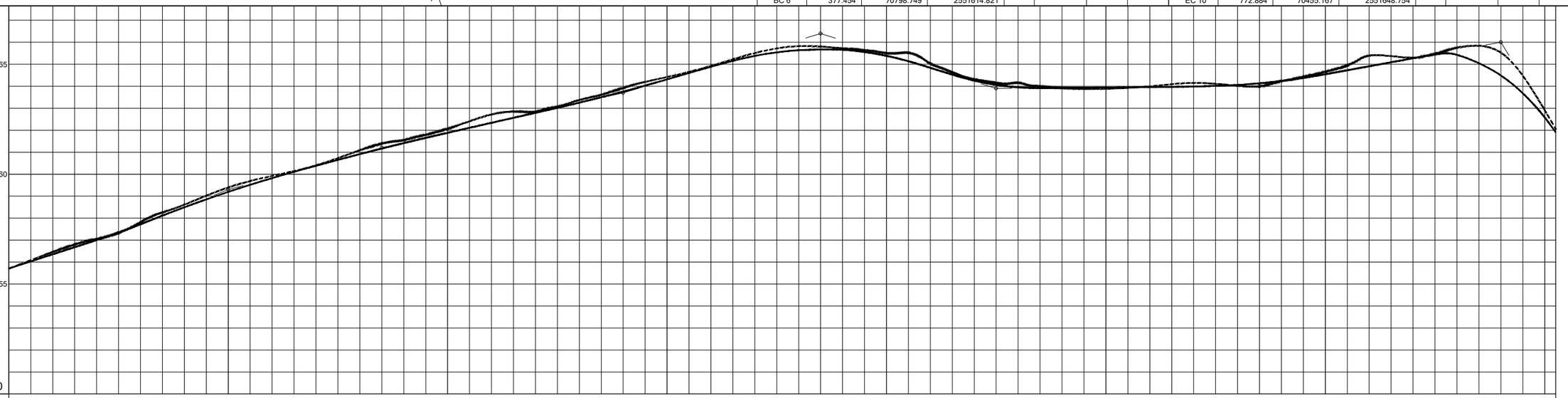
ROAD SETTING OUT DATA — Lo 31

PI No.	Ch	YLo	XLo	Radius	DA	TL	AL
Const:				(m)	D M S	(m)	(m)
PI 1	0.000	71153.793	2551489.939	Luvhalani to Dananwa Road			
BC 2	14.927	71140.702	2551497.112				
PI 2		71115.026	2551511.182	250	13°21'34"	29.278	58.291
EC 2	73.219	71086.794	2551518.938				
BC 3	157.298	71005.718	2551541.212				
PI 3		70981.561	2551547.849	250	11°26'40"	25.051	49.936
EC 3	207.235	70959.202	2551559.146				
BC 4	229.260	70939.544	2551569.079				
PI 4		70928.531	2551574.644	100	14°04'05"	12.339	24.553
EC 4	253.813	70916.496	2551577.364				
BC 5	265.340	70905.253	2551579.906				
PI 5		70895.088	2551582.204	200	5°57'57"	10.422	20.825
EC 5	286.164	70885.217	2551585.546				
BC 6	377.454	70798.749	2551614.821				

ROAD SETTING OUT DATA — Lo 31

PI No.	Ch	YLo	XLo	Radius	DA	TL	AL
Const:				(m)	D M S	(m)	(m)
				Luvhalani to Dananwa Road			
PI 6		70743.332	2551633.583	5000	1°20'27"	58.507	117.008
EC 6	494.461	70688.370	2551653.637				
BC 7	566.797	70620.416	2551678.430				
PI 7		70597.336	2551686.851	200	14°00'22"	24.568	48.891
EC 7	615.688	70572.905	2551689.436				
BC 8	639.440	70549.284	2551691.935				
PI 8		70535.487	2551693.394	15	85°32'02"	13.874	22.393
EC 8	661.833	70532.958	2551679.753				
BC 9	693.241	70527.231	2551648.871				
PI 9		70524.273	2551632.918	15	94°29'32"	16.225	24.738
EC 9	717.979	70508.601	2551637.117				
BC 10	756.732	70471.169	2551647.145				
PI 10		70463.299	2551649.253	50	18°30'33"	8.147	16.152
EC 10	772.884	70455.167	2551648.754				





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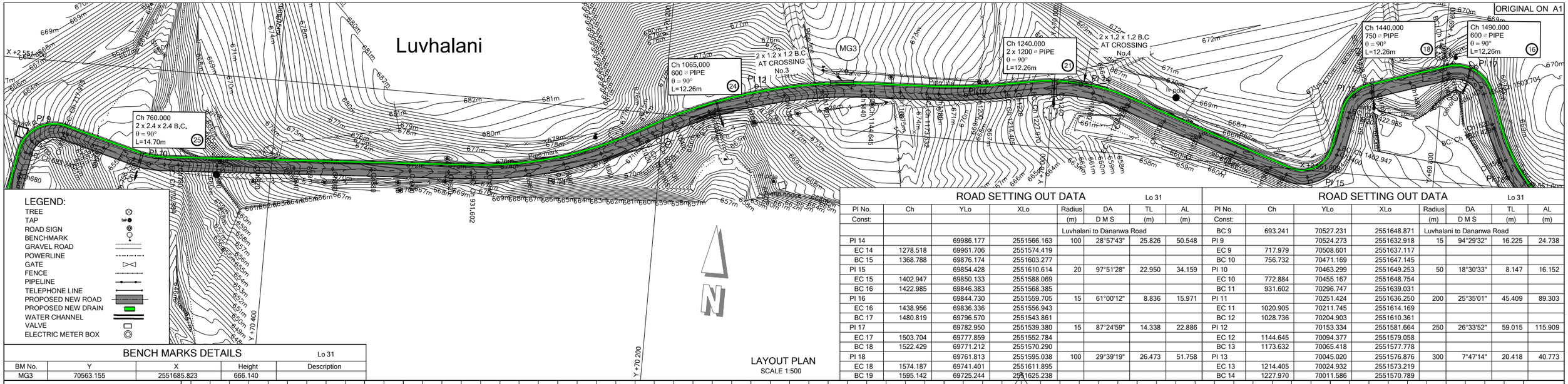
ORIGINAL ON A1



LEGEND:

- TREE
- TAP
- ROAD SIGN
- BENCHMARK
- GRAVEL ROAD
- POWERLINE
- GATE
- FENCE
- PIPELINE
- TELEPHONE LINE
- PROPOSED NEW ROAD
- PROPOSED NEW DRAIN
- WATER CHANNEL
- VALVE
- ELECTRIC METER BOX

LAYOUT PLAN
SCALE 1:500

BENCH MARKS DETAILS

Lo 31

BM No.	Y	X	Height	Description
MG3	70563.155	2551685.823	666.140	

ROAD SETTING OUT DATA

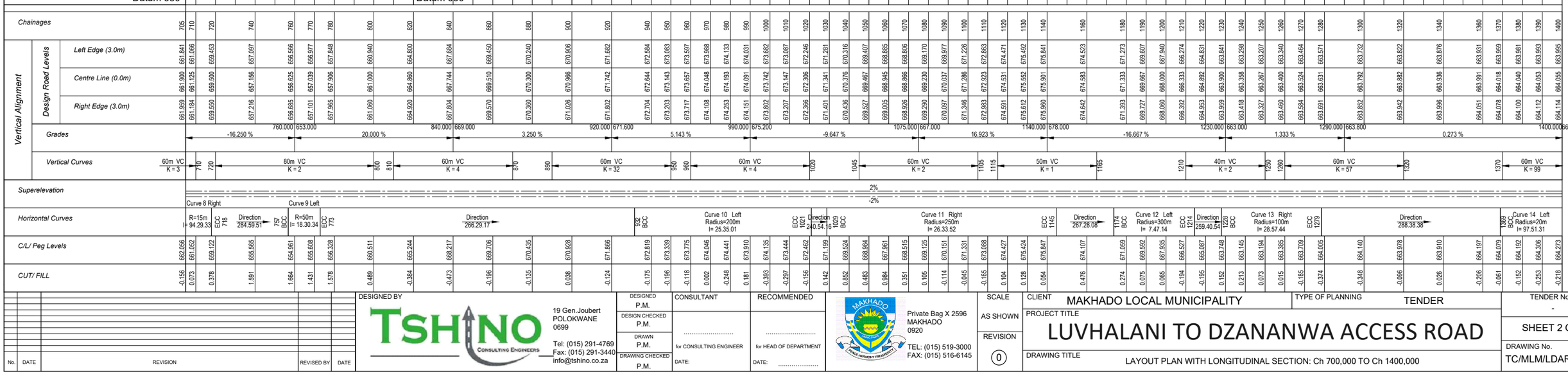
Lo 31

PI No.	Ch	YLo	XLo	Radius	DA	TL	AL
Const:				(m)	D M S	(m)	(m)
				Luvhalani to Dananwa Road			
PI 14		69986.177	2551566.163	100	28°57'43"	25.826	50.548
EC 14	1278.518	69961.706	2551574.419				
BC 15	1368.788	69876.174	2551603.277				
PI 15		69854.428	2551610.614	20	97°51'28"	22.950	34.159
EC 15	1402.947	69850.133	2551588.069				
BC 16	1422.985	69846.383	2551568.385				
PI 16		69844.730	2551559.705	15	61°00'12"	8.836	15.971
EC 16	1438.956	69836.336	2551556.943				
BC 17	1480.819	69796.570	2551543.861				
PI 17		69782.950	2551539.380	15	87°24'59"	14.338	22.886
EC 17	1503.704	69777.859	2551552.784				
BC 18	1522.429	69771.212	2551570.290				
PI 18		69761.813	2551595.038	100	29°39'19"	26.473	51.758
EC 18	1574.187	69741.401	2551611.895				
BC 19	1595.142	69725.244	2551625.238				

ROAD SETTING OUT DATA

Lo 31

PI No.	Ch	YLo	XLo	Radius	DA	TL	AL
Const:				(m)	D M S	(m)	(m)
BC 9	693.241	70527.231	2551648.871	Luvhalani to Dananwa Road			
PI 9		70524.273	2551632.918	15	94°29'32"	16.225	24.738
EC 9	717.979	70508.601	2551637.117				
BC 10	756.732	70471.169	2551647.145				
PI 10		70463.299	2551649.253	50	18°30'33"	8.147	16.152
EC 10	772.884	70455.167	2551648.754				
BC 11	931.602	70296.747	2551639.031				
PI 11		70251.424	2551636.250	200	25°35'01"	45.409	89.303
EC 11	1020.905	70211.745	2551614.169				
BC 12	1028.736	70204.903	2551610.361				
PI 12		70153.334	2551581.664	250	26°33'52"	59.015	115.909
EC 12	1144.645	70094.377	2551579.058				
BC 13	1173.632	70065.418	2551577.778				
PI 13		70045.020	2551576.876	300	7°47'14"	20.418	40.773
EC 13	1214.405	70024.932	2551573.219				
BC 14	1227.970	70011.586	2551570.789				



No.	DATE	REVISION	REVISED BY	DATE

DESIGNED BY

TSHINO CONSULTING ENGINEERS

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DESIGNED	CONSULTANT	RECOMMENDED
P.M.		
DESIGN CHECKED	.....	.....
P.M.	for CONSULTING ENGINEER	for HEAD OF DEPARTMENT
DRAWN	DATE:	DATE: .....
P.M.		
DRAWING CHECKED		
P.M.		

MAKHADO LOCAL MUNICIPALITY

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TEL: (015) 519-3000
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SCALE: AS SHOWN

REVISION: 0

CLIENT: MAKHADO LOCAL MUNICIPALITY

TYPE OF PLANNING: TENDER

TENDER No.: -

PROJECT TITLE

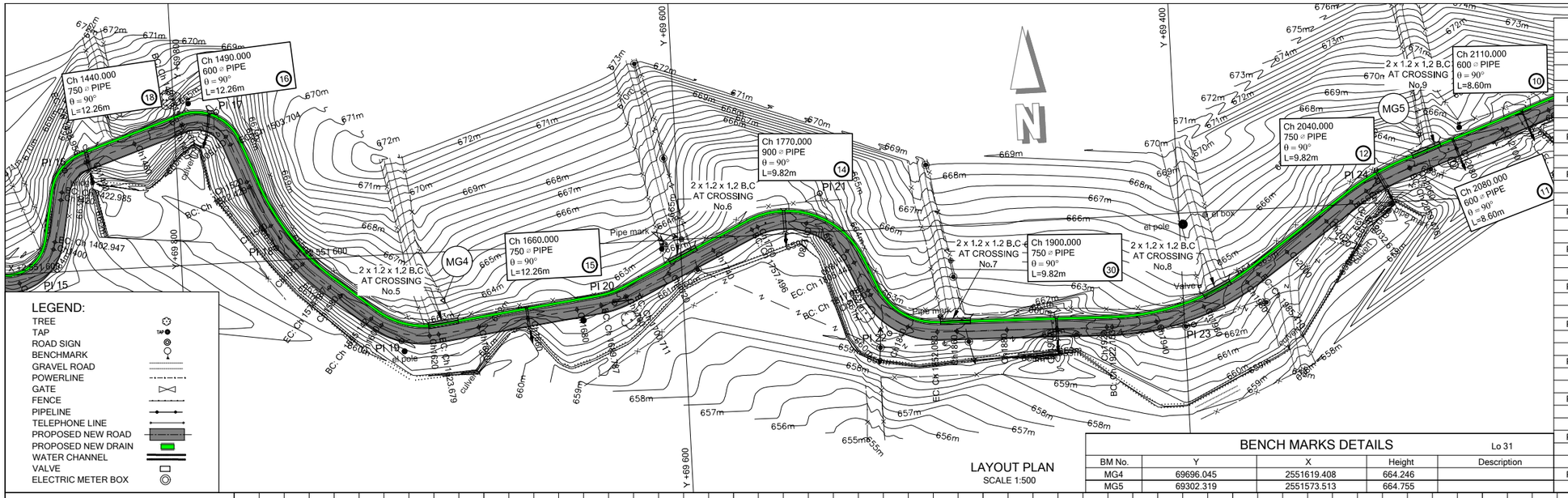
LUVHALANI TO DZANANWA ACCESS ROAD

SHEET 2 OF 5

DRAWING TITLE: LAYOUT PLAN WITH LONGITUDINAL SECTION: Ch 700,000 TO Ch 1400,000

DRAWING No.: TC/MLM/LDAR/Ls/02

ORIGINAL ON A1



LEGEND:

- TREE
- TAP
- ROAD SIGN
- BENCHMARK
- GRAVEL ROAD
- POWERLINE
- GATE
- FENCE
- PIPELINE
- TELEPHONE LINE
- PROPOSED NEW ROAD
- PROPOSED NEW DRAIN
- WATER CHANNEL
- VALVE
- ELECTRIC METER BOX

LAYOUT PLAN
SCALE 1:500

ROAD SETTING OUT DATA

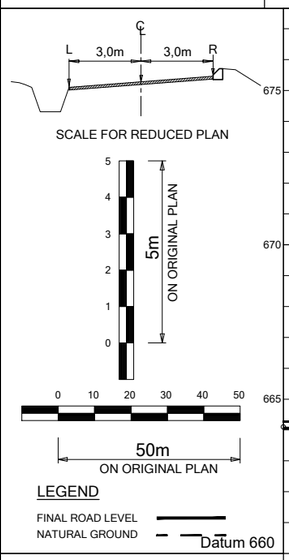
Lo 31

Pl No.	Ch	YLo	XLo	Radius	DA	TL	AL
Const:				(m)	D M S	(m)	(m)
				Luvhalani to Dananwa Road			
Pl 15		69854.428	2551610.614	20	97°51'28"	22.950	34.159
EC 15	1402.947	69850.133	2551588.069				
BC 16	1422.985	69846.383	2551568.385				
Pl 16		69844.730	2551559.705	15	61°00'12"	8.836	15.971
EC 16	1438.956	69836.336	2551556.943				
BC 17	1480.819	69796.570	2551543.861				
Pl 17		69782.950	2551539.380	15	87°24'59"	14.338	22.886
EC 17	1503.704	69777.859	2551552.784				
BC 18	1522.429	69771.212	2551570.290				
Pl 18		69761.813	2551595.038	100	29°39'19"	26.473	51.758
EC 18	1574.187	69741.401	2551611.895				
BC 19	1595.142	69725.244	2551625.238				
Pl 19		69713.589	2551634.863	35	46°42'58"	15.115	28.537
EC 19	1623.679	69698.592	2551632.977				
BC 20	1689.787	69633.000	2551624.731				
Pl 20		69627.536	2551624.044	35	17°53'03"	5.507	10.925
EC 20	1700.711	69622.547	2551621.712				
BC 21	1757.496	69571.103	2551597.670				
Pl 21		69543.169	2551584.614	30	91°34'18"	30.834	47.947
EC 21	1805.443	69530.885	2551612.896				
BC 22	1817.959	69525.898	2551624.376				
Pl 22		69518.259	2551641.964	30	65°10'19"	19.175	34.124
EC 22	1852.083	69499.089	2551642.416				
BC 23	1922.153	69429.039	2551644.067				
Pl 23		69396.321	2551644.838	100	36°14'38"	32.727	63.257
EC 23	1985.410	69369.477	2551626.116				
BC 24	2032.612	69330.762	2551599.114				
Pl 24		69319.678	2551591.384	100	15°23'31"	13.513	26.864
EC 24	2059.476	69306.940	2551586.873				
BC 25	2127.453	69242.863	2551564.180				
Pl 25		69217.700	2551555.268	2500	1°13'25"	26.694	53.387
EC 25	2180.839	69192.352	2551546.896				

BENCH MARKS DETAILS

Lo 31

BM No.	Y	X	Height	Description
MG4	69696.045	2551619.408	664.246	
MG5	69302.319	2551573.513	664.755	



| | | | |

ORIGINAL ON A1

Dzananwa

LEGEND:
TREE
TAP
ROAD SIGN
BENCHMARK
GRAVEL ROAD
POWERLINE
GATE
FENCE
PIPELINE
TELEPHONE LINE
PROPOSED NEW ROAD
PROPOSED NEW DRAIN
WATER CHANNEL
VALVE
ELECTRIC METER BOX

ROAD SETTING OUT DATA

Pl No.	Ch	YLo	XLo	Radius	DA	TL	AL
Const:				(m)	D M S	(m)	(m)
BC 25	2127.453	69242.863	2551564.180	Luvhalani to Dananwa Road			
Pl 25		69217.700	2551555.268	2500	1°13'25"	26.694	53.387
EC 25	2180.839	69192.352	2551546.896				
BC 26	2575.597	68817.512	2551423.089				
Pl 26		68802.935	2551418.274	250	7°01'41"	15.352	30.665
EC 26	2606.262	68787.878	2551415.279				
BC 27	2620.929	68773.493	2551412.417				
Pl 27		68757.650	2551409.266	250	7°23'37"	16.153	32.261
EC 27	2653.190	68742.345	2551404.102				
BC 28	2726.504	68672.878	2551380.665				
Pl 28		68631.636	2551366.750	2500	1°59'42"	43.526	87.043
EC 28	2813.547	68589.935	2551354.280				

Ch 2110.000 600 ⌀ PIPE θ = 90° L=8.60m (10)
Ch 2080.000 600 ⌀ PIPE θ = 90° L=8.60m (11)
Ch 2180.000 600 ⌀ PIPE θ = 77° L=12.26m (9)
Ch 2285.000 600 ⌀ PIPE θ = 85° L=12.26m (8)
Ch 2605.000 1,2 x 1.2 B.C θ = 90° L=8.40m (5)
Ch 2705.000 1200 ⌀ PIPE θ = 81° L=12.26m (3)
2 x 1.2 x 1.2 B.C AT CROSSING No.9
2 x 1.2 x 1.2 B.C AT CROSSING No.10
2 x 1.2 x 1.2 B.C AT CROSSING No.11
2 x 1.2 x 1.2 B.C AT CROSSING No.12
2 x 1.2 x 1.2 B.C AT CROSSING No.13
2 x 1.2 x 1.2 B.C AT CROSSING No.14
2 x 1.2 x 1.2 B.C AT CROSSING No.15
2 x 1.2 x 1.2 B.C AT CROSSING No.16
Pl 25
Pl 26
Pl 27
Pl 28
MG6
MG7
Access Road
Stream
Pipe mark
el pole
el box
Valve

BENCH MARKS DETAILS

Lo 31

BM No.	Y	X	Height	Description
MG6	68895.167	2551457.597	666.884	
MG7	68609.489	2551348.337	676.698	
MG8	68299.958	2551270.907	674.719	

LAYOUT PLAN
SCALE 1:500

L 3,0m 3,0m R

SCALE FOR REDUCED PLAN

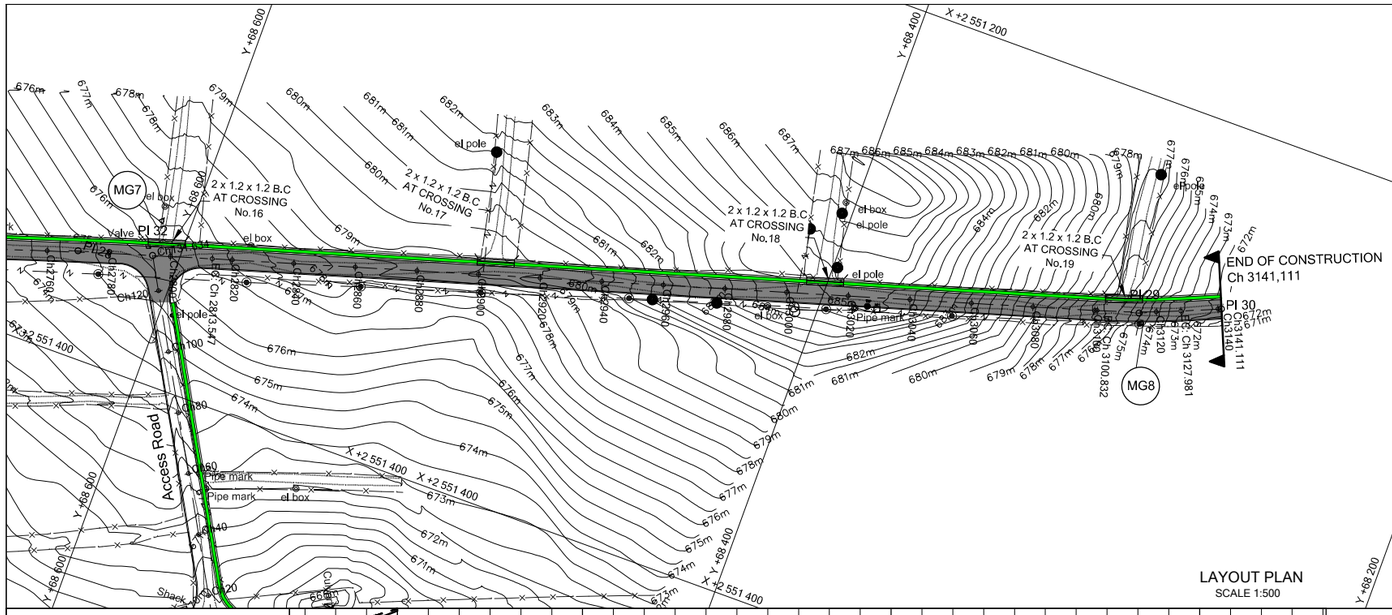
5m ON ORIGINAL PLAN

50m ON ORIGINAL PLAN

LEGEND
FINAL ROAD LEVEL
NATURAL GROUND
Datum 660

| | | | |

ORIGINAL ON A1



LAYOUT PLAN
SCALE 1:500

N

LEGEND:

- TREE
- TAP
- ROAD SIGN
- BENCHMARK
- GRAVEL ROAD
- POWERLINE
- GATE
- FENCE
- PIPELINE
- TELEPHONE LINE
- PROPOSED NEW ROAD
- PROPOSED NEW DRAIN
- WATER CHANNEL
- VALVE
- ELECTRIC METER BOX

BENCH MARKS DETAILS

Lo 31

BM No.	Y	X	Height	Description
MG7	68609.489	2551348.337	676.698	
MG8	68299.958	2551270.907	674.719	

ROAD SETTING OUT DATA

Lo 31

PI No.	Ch	YLo	XLo	Radius	DA	TL	AL
Const:				(m)	D M S	(m)	(m)
				Luvhalani to Dananwa Road			
PI 28		68631.636	2551366.750	2500	1°59'42"	43.526	87.043
EC 28	2813.547	68589.935	2551354.280				
BC 29	3100.832	68314.693	2551271.971				
PI 29		68301.675	2551268.078	250	6°13'19"	13.588	27.149
EC 29	3127.981	68289.156	2551262.797				
PI 30	3141.111	68277.058	2551257.694				

Vertical Alignment

Chainages		2805	2810	2820	2840	2860	2880	2900	2920	2940	2960	2980	3000	3020	3040	3060	3080	3100	3110	3120	3141
Design Road Levels	Left Edge (3.0m)	676.098	676.332	676.777	677.521	678.071	678.451	678.807	679.343	680.241	681.500	682.940	684.380	685.090	684.338	682.126	679.225	676.622	675.445	674.354	673.393
	Centre Line (0.0m)	676.158	676.392	676.837	677.581	678.131	678.511	678.867	679.403	680.301	681.560	683.000	684.440	685.150	684.398	682.186	679.285	676.680	675.505	674.414	673.443
	Right Edge (3.0m)	676.218	676.452	676.897	677.641	678.191	678.571	678.927	679.463	680.361	681.620	683.060	684.500	685.210	684.458	682.246	679.345	676.739	675.565	674.474	673.493
Grades			4.692 %		2840.000 677.800	1.778 %			2930.000 679.400	7.200 %			3030.000 686.600	-14.714 %				3100.000 676.300	-9.642 %		
Vertical Curves			2810	60m VC K = 21	2870			2900	60m VC K = 11	2960		3000	60m VC K = 3	3060	3070	60m VC K = 12		3130			
Superelevation									2% -2%												
Horizontal Curves		Curve 27 Right Radius=2500m l= 1.59.42	ECC 2814						Direction 253.21.04									3101 BCC	Curve 28 Left Radius=250m l= 6.13.20	ECC 3128	Direction 247.07.44
C/L/ Peg Levels		676.284	676.583	677.045	677.647	678.255	678.707	679.057	679.627	680.077	682.012	683.528	684.481	685.151	684.639	682.290	679.644	676.820	675.764	674.108	672.396
CUT/ FILL		-0.126	-0.191	-0.208	-0.066	-0.124	-0.196	-0.190	-0.224	0.224	-0.452	-0.528	-0.041	-0.001	-0.241	-0.104	-0.359	-0.140	-0.259	0.306	0.047

No.	DATE	REVISION	REVISED BY	DATE

DESIGNED BY

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DESIGNED	CONSULTANT	RECOMMENDED
P.M.		
DESIGN CHECKED: P.M.	.....	.....
DRAWN: P.M.	for CONSULTING ENGINEER	for HEAD OF DEPARTMENT
DRAWING CHECKED: P.M.	DATE:	DATE: .....

MAKHADO
MAKHADO MUNICIPALITY
PEACE HARMONY PROSPERITY

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MAKHADO
0920

TEL: (015) 519-3000
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SCALE: AS SHOWN

REVISION: 0

CLIENT: MAKHADO LOCAL MUNICIPALITY

TYPE OF PLANNING: TENDER

PROJECT TITLE

LUVHALANI TO DZANANWA ACCESS ROAD

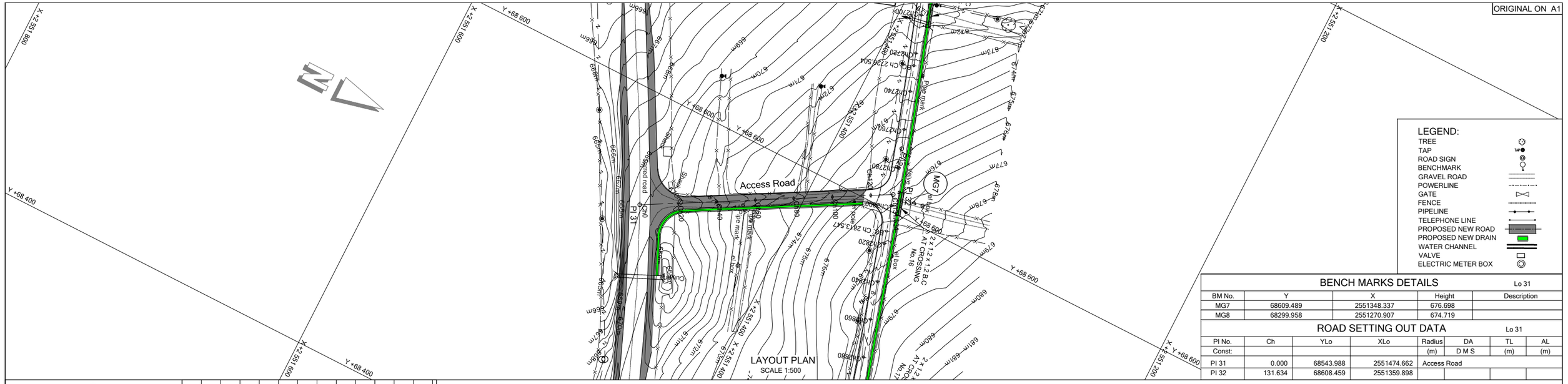
DRAWING TITLE: LAYOUT PLAN WITH LONGITUDINAL SECTION: Ch 2800,000 TO Ch 3141,111

TENDER No.: -

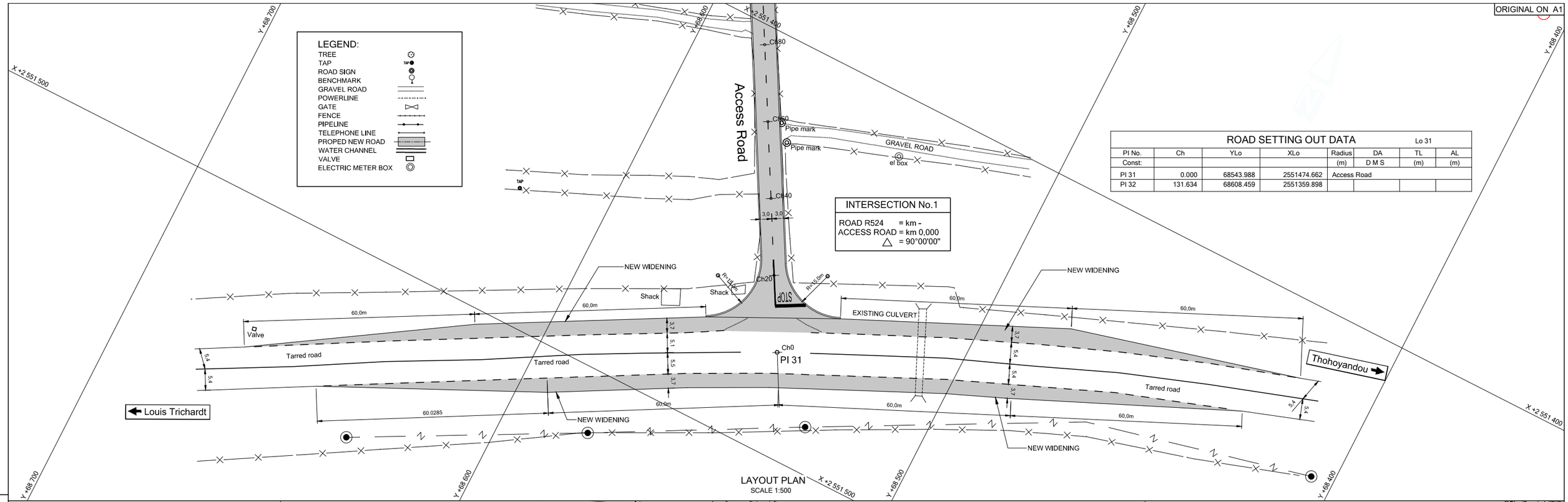
SHEET 5 OF 5

DRAWING No.: TC/MLM/LDAR/Ls/05

ORIGINAL ON A1


N
X +2 551 600
Y +68 600
Y +68 400
X +2 551 400
X +2 551 200
Access Road
Pl 31
Ch0
Ch 131.634
Ch 28/3.547
Ch 27/3.547
Ch 26/3.547
Ch 25/3.547
Ch 24/3.547
Ch 23/3.547
Ch 22/3.547
Ch 21/3.547
Ch 20/3.547
Ch 19/3.547
Ch 18/3.547
Ch 17/3.547
Ch 16/3.547
Ch 15/3.547
Ch 14/3.547
Ch 13/3.547
Ch 12/3.547
Ch 11/3.547
Ch 10/3.547
Ch 9/3.547
Ch 8/3.547
Ch 7/3.547
Ch 6/3.547
Ch 5/3.547
Ch 4/3.547
Ch 3/3.547
Ch 2/3.547
Ch 1/3.547
Ch 0/3.547
MG7
MG8
Proposed road
Existing road
Pole number
Pole number
Pole number

ORIGINAL ON A1

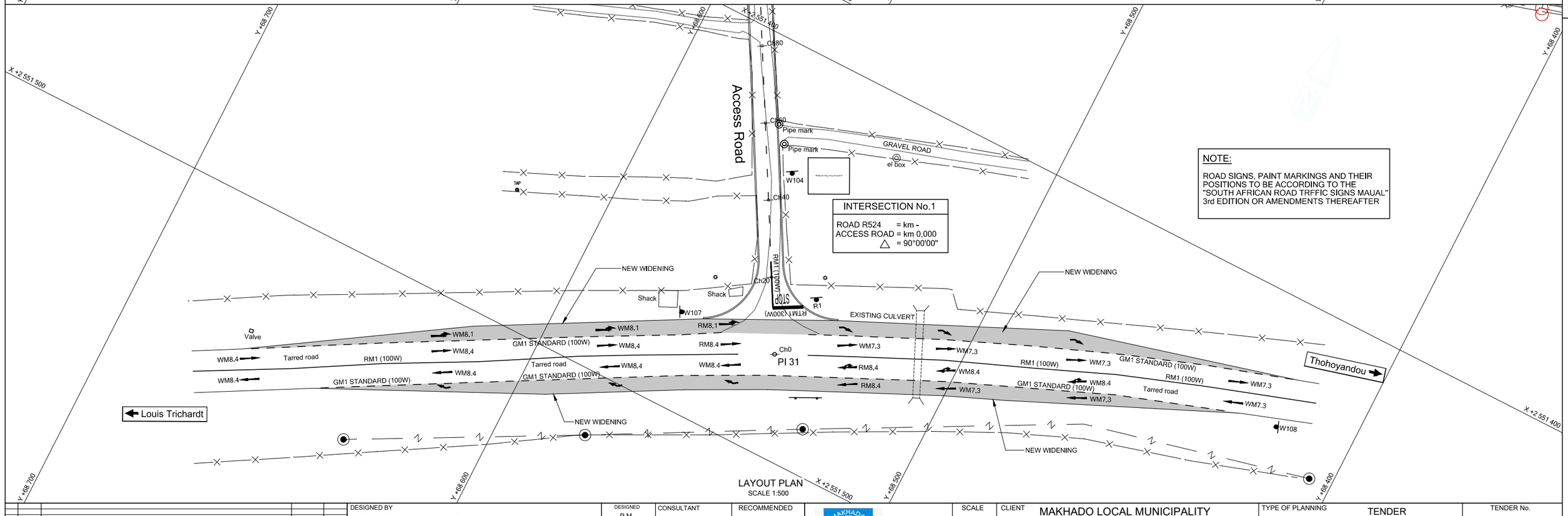


ROAD SETTING OUT DATA

Lo 31

PI No.	Ch	YLo	XLo	Radius	DA	TL	AL
Const:				(m)	D M S	(m)	(m)
PI 31	0.000	68543.988	2551474.662	Access Road			
PI 32	131.634	68608.459	2551359.898				

LAYOUT PLAN
SCALE 1:500



NOTE:

ROAD SIGNS, PAINT MARKINGS AND THEIR POSITIONS TO BE ACCORDING TO THE "SOUTH AFRICAN ROAD TRFFIC SIGNS MAUAL" 3rd EDITION OR AMENDMENTS THEREAFTER

LAYOUT PLAN
SCALE 1:500

No.	DATE	REVISION	REVISED BY	DATE

DESIGNED BY

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0699
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Fax: (015) 291-3440
info@tshino.co.za

DESIGNED P.M.	CONSULTANT	RECOMMENDED
DESIGN CHECKED P.M.	.....	.....
DRAWN P.M.	for CONSULTING ENGINEER	for HEAD OF DEPARTMENT
DRAWING CHECKED P.M.	DATE:	DATE: .....

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MAKHADO
0920
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FAX: (015) 516-6145

SCALE 1:500

REVISION 0

CLIENT MAKHADO LOCAL MUNICIPALITY

TYPE OF PLANNING TENDER

TENDER No. -

PROJECT TITLE

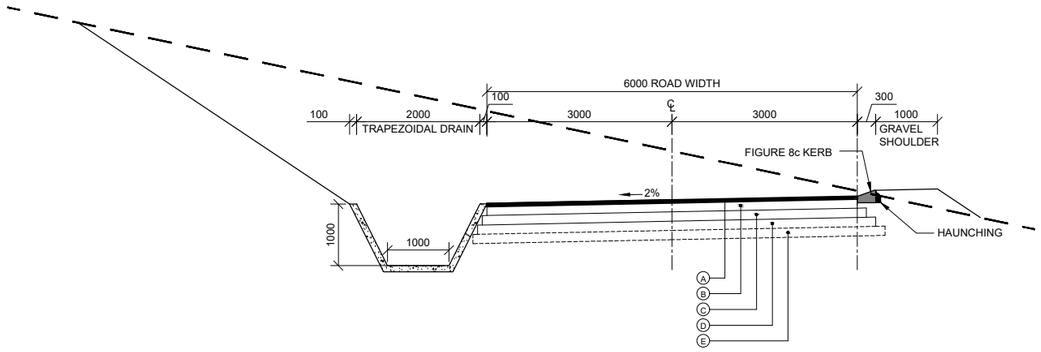
LUVHALANI TO DZANANWA ACCESS ROAD

SHEET 1 OF 1

DRAWING TITLE ACCESS ROAD MARKINGS AND SETTING OUT PLAN

DRAWING No. TC/MLM/LDAR/Rs/01

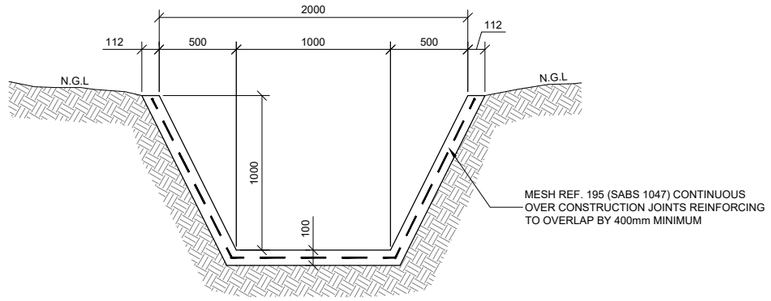
ORIGINAL ON A1



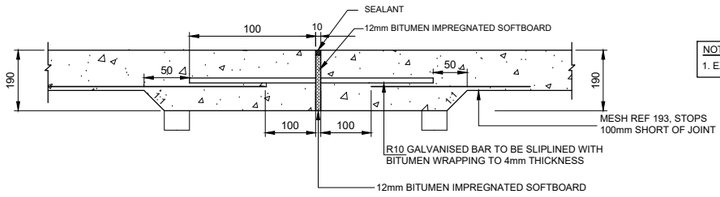
TYPICAL ROAD CROSS- SECTION
SCALE - 1:50

MAIN ROAD PAVEMENT LAYER DESIGN

- (A) 80 mm INTERLOCKING PAVING BLOCKS LAID ON 20mm BEDDING
- (B) 150 mm STABILISED NATURAL GRAVEL BASE COMPACTED TO 97 % OF MOD. AASHTO DENSITY- C4
- (C) 150 mm NATURAL GRAVEL SUBBASE COMPACTED TO 95% OF MOD. AAHSTO DENSITY- G6 (IN-SITU OR IMPORTED)
- (D) 150 mm IN SITU ROADBED COMPACTED TO 93 % OF MOD. AASHTO DENSITY
- (E) 200 mm FILL LAYERS (WHERE REQUIRED) COMPACTED TO 90% OF MOD. AASHTO DENSITY – G9

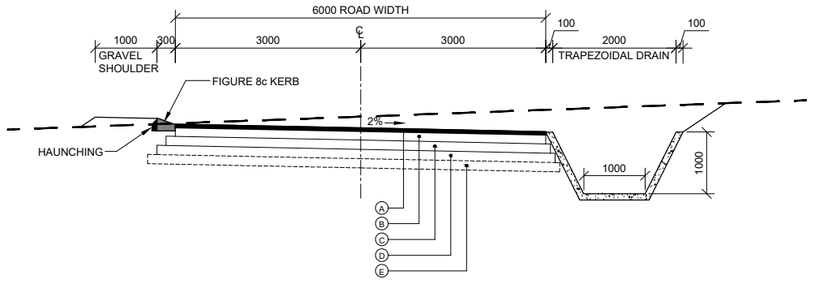


2.0 x 1.0m CONCRETE DRAIN
SCALE - 1:20



NOTES ON EXPANSION JOINTS
1. EXPANSION JOINTS AT 18m INTERVAL

DOWEL JOINT
SCALE 1:5

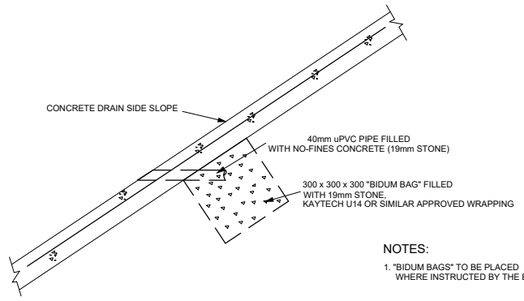


TYPICAL ROAD CROSS- SECTION
SCALE - 1:50

ACCESS ROAD PAVEMENT LAYER DESIGN

- (A) 80 mm INTERLOCKING PAVING BLOCKS LAID ON 20mm BEDDING
- (B) 150 mm STABILISED NATURAL GRAVEL BASE COMPACTED TO 97 % OF MOD. AASHTO DENSITY- C4
- (C) 150 mm NATURAL GRAVEL SUBBASE COMPACTED TO 95% OF MOD. AAHSTO DENSITY- G6 (IN-SITU OR IMPORTED)
- (D) 150 mm IN SITU ROADBED COMPACTED TO 93 % OF MOD. AASHTO DENSITY
- (E) 200 mm FILL LAYERS (WHERE REQUIRED) COMPACTED TO 90% OF MOD. AASHTO DENSITY – G9

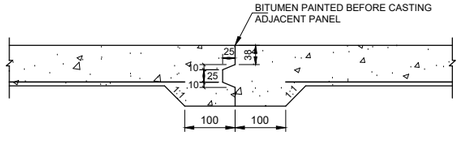
EXPANSION JOINTS



NOTE:
1. CONCRETE TO BE 25Mpa/19mm FOR DRAINS WITH STEEL TROWEL FINISH TO EXPOSED AREAS
2. EDGES ROUNDED WITH NOSING TOOL

NOTES:
1. "BIDUM BAGS" TO BE PLACED WHERE INSTRUCTED BY THE ENGINEER

"BIDUM BAGS"
SCALE 1:10



KEYED JOINT, V>2.5m/s
SCALE 1:5

NOTES ON CONSTRUCTION JOINTS
1. CONSTRUCTION JOINTS AT 3m INTERVALS MAXIMUM
2. CAST IN ALTERNATE PANELS
3. STEEL MESH REF 193 PLACED AT MID-DEPTH

CONSTRUCTION JOINTS

No.	DATE	REVISION	REVISED BY	DATE

DESIGNED BY

TSHINO CONSULTING ENGINEERS
19 Gen.Joubert
POLOKWANE
0699
Tel: (015) 291-4769
Fax: (015) 291-3440
info@tshino.co.za

DESIGNED	CONSULTANT	RECOMMENDED
P.M.	.....	.....
DESIGN CHECKED	for CONSULTING ENGINEER	for HEAD OF DEPARTMENT
P.M.	DATE:	DATE: .....
DRAWN		
P.M.		
DRAWING CHECKED		
P.M.		

Private Bag X 2596
MAKHADO
0920
TEL: (015) 519-3000
FAX: (015) 516-6145

SCALE 1:50

REVISION 0

CLIENT MAKHADO LOCAL MUNICIPALITY

TYPE OF PLANNING TENDER

PROJECT TITLE

LUVHALANI TO DZANANWA ACCESS ROAD

DRAWING TITLE TYPICAL ROAD CROSS SECTIONS AND CONCRETE TRAPEZOIDAL DRAIN DETAILS

TENDER No. -

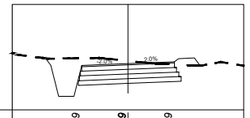
SHEET 1 OF 1

DRAWING No. TC/MLM/LDAR/Xs/01

ORIGINAL ON A1

CHAINAGE 80

H.SCALE 1:200
V.SCALE 1:100

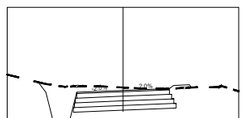


DATUM = 657

FINISHED	658.439	**658.499**	658.559
GROUND		658.585	
OFFSET	-3.000	**0.000**	3.000

CHAINAGE 60

H.SCALE 1:200
V.SCALE 1:100

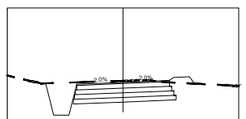


DATUM = 656

FINISHED	657.658	**657.718**	657.778
GROUND		657.813	
OFFSET	-3.000	**0.000**	3.000

CHAINAGE 40

H.SCALE 1:200
V.SCALE 1:100

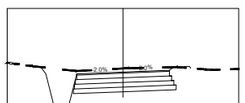


DATUM = 655

FINISHED	656.940	**657.000**	657.060
GROUND		657.048	
OFFSET	-3.000	**0.000**	3.000

CHAINAGE 20

H.SCALE 1:200
V.SCALE 1:100

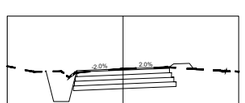


DATUM = 655

FINISHED	656.295	**656.355**	656.415
GROUND		656.466	
OFFSET	-3.000	**0.000**	3.000

CHAINAGE 0

H.SCALE 1:200
V.SCALE 1:100

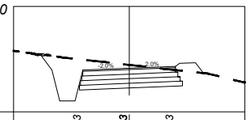


DATUM = 654

FINISHED	655.649	**655.709**	655.769
GROUND		655.709	
OFFSET	-3.000	**0.000**	3.000

CHAINAGE 180

H.SCALE 1:200
V.SCALE 1:100

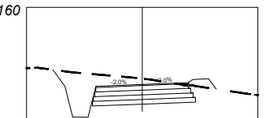


DATUM = 660

FINISHED	661.353	**661.413**	661.473
GROUND		661.524	
OFFSET	-3.000	**0.000**	3.000

CHAINAGE 160

H.SCALE 1:200
V.SCALE 1:100

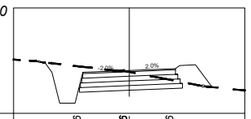


DATUM = 659

FINISHED	660.854	**660.914**	660.974
GROUND		661.100	
OFFSET	-3.000	**0.000**	3.000

CHAINAGE 140

H.SCALE 1:200
V.SCALE 1:100

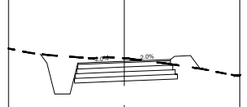


DATUM = 659

FINISHED	660.326	**660.386**	660.446
GROUND		660.339	
OFFSET	-3.000	**0.000**	3.000

CHAINAGE 120

H.SCALE 1:200
V.SCALE 1:100

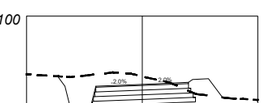


DATUM = 658

FINISHED	659.773	**659.833**	659.893
GROUND		659.931	
OFFSET	-3.000	**0.000**	3.000

CHAINAGE 100

H.SCALE 1:200
V.SCALE 1:100

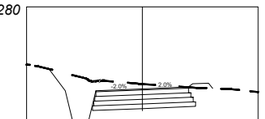


DATUM = 658

FINISHED	659.147	**659.207**	659.267
GROUND		659.462	
OFFSET	-3.000	**0.000**	3.000

CHAINAGE 280

H.SCALE 1:200
V.SCALE 1:100

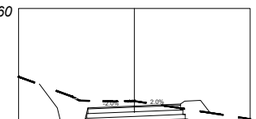


DATUM = 662

FINISHED	663.695	**663.755**	663.815
GROUND		663.909	
OFFSET	-3.000	**0.000**	3.000

CHAINAGE 260

H.SCALE 1:200
V.SCALE 1:100

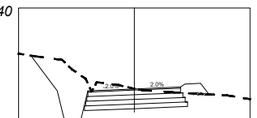


DATUM = 662

FINISHED	663.192	**663.252**	663.311
GROUND		663.406	
OFFSET	-3.000	**0.000**	3.000

CHAINAGE 240

H.SCALE 1:200
V.SCALE 1:100

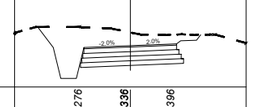


DATUM = 661

FINISHED	662.731	**662.791**	662.851
GROUND		662.800	
OFFSET	-3.000	**0.000**	3.000

CHAINAGE 220

H.SCALE 1:200
V.SCALE 1:100

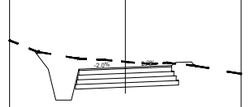


DATUM = 661

FINISHED	662.276	**662.336**	662.396
GROUND		662.767	
OFFSET	-3.000	**0.000**	3.000

CHAINAGE 200

H.SCALE 1:200
V.SCALE 1:100

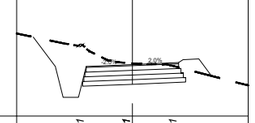


DATUM = 660

FINISHED	661.822	**661.882**	661.942
GROUND		662.061	
OFFSET	-3.000	**0.000**	3.000

CHAINAGE 380

H.SCALE 1:200
V.SCALE 1:100

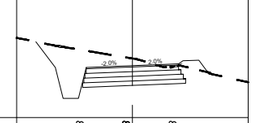


DATUM = 664

FINISHED	665.611	**665.671**	665.731
GROUND		665.706	
OFFSET	-3.000	**0.000**	3.000

CHAINAGE 360

H.SCALE 1:200
V.SCALE 1:100

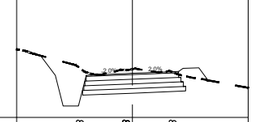


DATUM = 664

FINISHED	665.623	**665.683**	665.743
GROUND		665.919	
OFFSET	-3.000	**0.000**	3.000

CHAINAGE 340

H.SCALE 1:200
V.SCALE 1:100

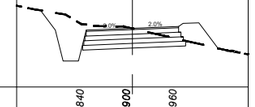


DATUM = 664

FINISHED	665.363	**665.423**	665.483
GROUND		665.561	
OFFSET	-3.000	**0.000**	3.000

CHAINAGE 320

H.SCALE 1:200
V.SCALE 1:100

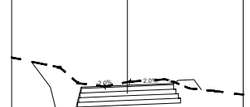


DATUM = 663

FINISHED	664.840	**664.900**	664.960
GROUND		664.892	
OFFSET	-3.000	**0.000**	3.000

CHAINAGE 300

H.SCALE 1:200
V.SCALE 1:100

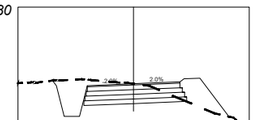


DATUM = 663

FINISHED	664.246	**664.306**	664.366
GROUND		664.408	
OFFSET	-3.000	**0.000**	3.000

CHAINAGE 480

H.SCALE 1:200
V.SCALE 1:100

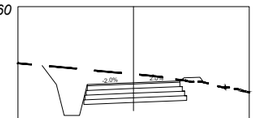


DATUM = 662

FINISHED	663.865	**663.925**	663.985
GROUND		663.926	
OFFSET	-3.000	**0.000**	3.000

CHAINAGE 460

H.SCALE 1:200
V.SCALE 1:100

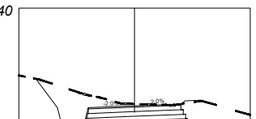


DATUM = 662

FINISHED	663.888	**663.948**	664.008
GROUND		664.223	
OFFSET	-3.000	**0.000**	3.000

CHAINAGE 440

H.SCALE 1:200
V.SCALE 1:100



DATUM = 663

FINISHED	664.193	**664.253**	664.313
GROUND		664.312	
OFFSET	-3.000	**0.000**	3.000

CHAINAGE 420

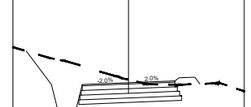
H.SCALE 1:200
V.SCALE 1:100

DATUM = 663

FINISHED	664.778	**664.838**	664.898
GROUND		664.993	
OFFSET	-3.000	**0.000**	3.000

CHAINAGE 400

H.SCALE 1:200
V.SCALE 1:100

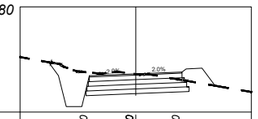


DATUM = 664

FINISHED	665.326	**665.386**	665.446
GROUND		665.487	
OFFSET	-3.000	**0.000**	3.000

CHAINAGE 580

H.SCALE 1:200
V.SCALE 1:100

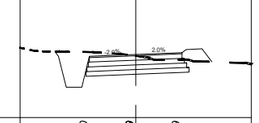


DATUM = 663

FINISHED	664.180	**664.240**	664.300
GROUND		664.237	
OFFSET	-3.000	**0.000**	3.000

CHAINAGE 560

H.SCALE 1:200
V.SCALE 1:100

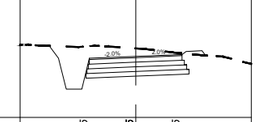


DATUM = 662

FINISHED	663.990	**664.049**	664.109
GROUND		664.005	
OFFSET	-3.000	**0.000**	3.000

CHAINAGE 540

H.SCALE 1:200
V.SCALE 1:100

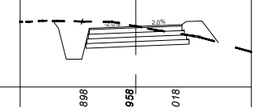


DATUM = 662

FINISHED	663.915	**663.975**	664.035
GROUND		664.234	
OFFSET	-3.000	**0.000**	3.000

CHAINAGE 520

H.SCALE 1:200
V.SCALE 1:100

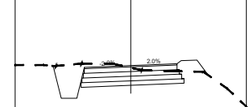


DATUM = 662

FINISHED	663.898	**663.958**	664.018
GROUND		663.966	
OFFSET	-3.000	**0.000**	3.000

CHAINAGE 500

H.SCALE 1:200
V.SCALE 1:100



DATUM = 662

FINISHED	663.882	**663.942**	664.002
GROUND		663.874	
OFFSET	-3.000	**0.000**	3.000

No.	DATE	REVISION	REVISED BY	DATE

DESIGNED BY

TSHINO CONSULTING ENGINEERS

19 Gen.Joubert
POLOKWANE
0699

Tel: (015) 291-4769
Fax: (015) 291-3440
info@tshino.co.za

DESIGNED P.M.	CONSULTANT	RECOMMENDED
DESIGN CHECKED P.M.	..... for CONSULTING ENGINEER	..... for HEAD OF DEPARTMENT
DRAWN P.M.	DATE:	DATE: .....
DRAWING CHECKED P.M.		

Private Bag X 2596
MAKHADO
0920

TEL: (015) 519-3000
FAX: (015) 516-6145

SCALE: AS SHOWN

REVISION: 0

CLIENT: MAKHADO LOCAL MUNICIPALITY

TYPE OF PLANNING: TENDER

PROJECT TITLE

LUVHALANI TO DZANANWA ACCESS ROAD

DRAWING TITLE: ROAD CROSS SECTIONS (SHEET 1 OF 6)

TENDER No. -

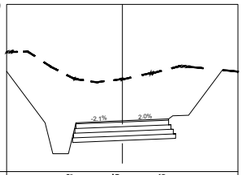
SHEET 1 OF 6

DRAWING No. TC/MLM/LDAR/Xs/02

ORIGINAL ON A1

CHAINAGE 680

H.SCALE 1:200
V.SCALE 1:100

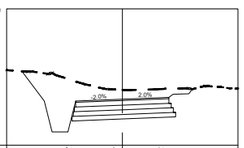


DATUM = 663

FINISHED	664.583	**664.645**	664.706
GROUND		665.986	
OFFSET	-3.000	**0.000**	3.000

CHAINAGE 660

H.SCALE 1:200
V.SCALE 1:100

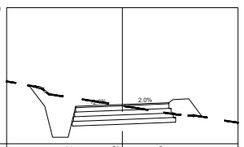


DATUM = 664

FINISHED	665.427	**665.486**	665.545
GROUND		665.793	
OFFSET	-3.000	**0.000**	3.000

CHAINAGE 640

H.SCALE 1:200
V.SCALE 1:100

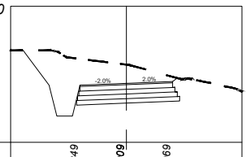


DATUM = 664

FINISHED	665.214	**665.273**	665.332
GROUND		665.233	
OFFSET	-3.000	**0.000**	3.000

CHAINAGE 620

H.SCALE 1:200
V.SCALE 1:100

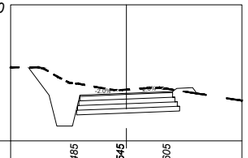


DATUM = 663

FINISHED	664.849	**664.909**	664.969
GROUND		665.516	
OFFSET	-3.000	**0.000**	3.000

CHAINAGE 600

H.SCALE 1:200
V.SCALE 1:100

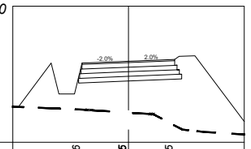


DATUM = 663

FINISHED	664.485	**664.545**	664.605
GROUND		664.659	
OFFSET	-3.000	**0.000**	3.000

CHAINAGE 760

H.SCALE 1:200
V.SCALE 1:100

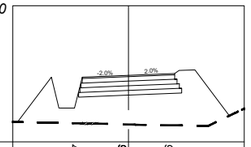


DATUM = 654

FINISHED	656.566	**656.625**	656.685
GROUND		654.961	
OFFSET	-3.000	**0.000**	3.000

CHAINAGE 740

H.SCALE 1:200
V.SCALE 1:100

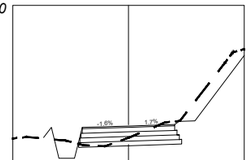


DATUM = 655

FINISHED	657.097	**657.156**	657.216
GROUND		655.565	
OFFSET	-3.000	**0.000**	3.000

CHAINAGE 720

H.SCALE 1:200
V.SCALE 1:100

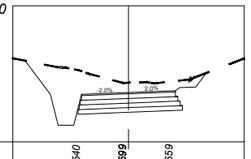


DATUM = 658

FINISHED	659.453	**659.500**	659.550
GROUND		659.122	
OFFSET	-3.000	**0.000**	3.000

CHAINAGE 700

H.SCALE 1:200
V.SCALE 1:100

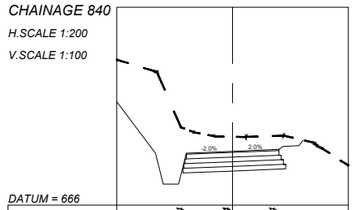


DATUM = 661

FINISHED	662.540	**662.599**	662.659
GROUND		662.919	
OFFSET	-3.000	**0.000**	3.000

CHAINAGE 840

H.SCALE 1:200
V.SCALE 1:100

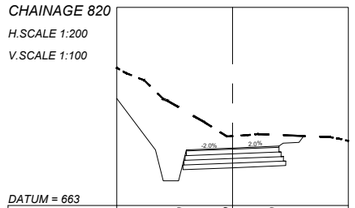


DATUM = 666

FINISHED	667.684	**667.744**	667.804
GROUND		668.217	
OFFSET	-3.000	**0.000**	3.000

CHAINAGE 820

H.SCALE 1:200
V.SCALE 1:100

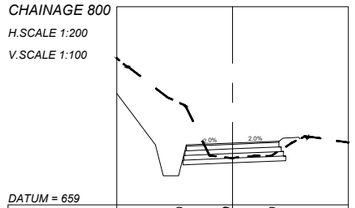


DATUM = 663

FINISHED	664.800	**664.860**	664.920
GROUND		665.244	
OFFSET	-3.000	**0.000**	3.000

CHAINAGE 800

H.SCALE 1:200
V.SCALE 1:100

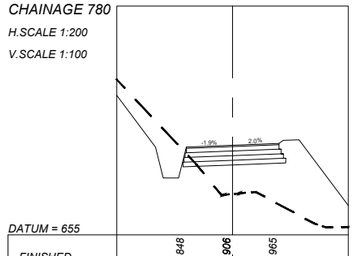


DATUM = 659

FINISHED	660.940	**661.000**	661.060
GROUND		660.511	
OFFSET	-3.000	**0.000**	3.000

CHAINAGE 780

H.SCALE 1:200
V.SCALE 1:100

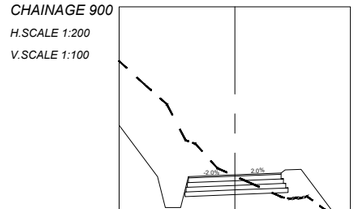


DATUM = 655

FINISHED	657.848	**657.906**	657.965
GROUND		656.328	
OFFSET	-3.000	**0.000**	3.000

CHAINAGE 900

H.SCALE 1:200
V.SCALE 1:100

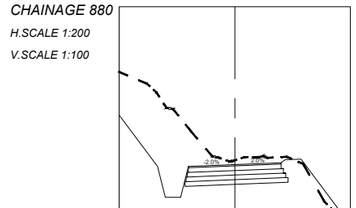


DATUM = 668

FINISHED	670.906	**670.966**	671.026
GROUND		670.928	
OFFSET	-3.000	**0.000**	3.000

CHAINAGE 880

H.SCALE 1:200
V.SCALE 1:100

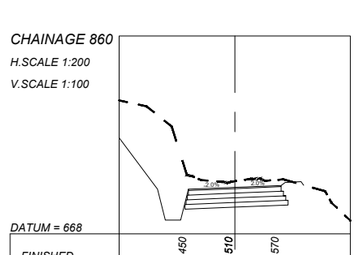


DATUM = 668

FINISHED	670.240	**670.300**	670.360
GROUND		670.435	
OFFSET	-3.000	**0.000**	3.000

CHAINAGE 860

H.SCALE 1:200
V.SCALE 1:100

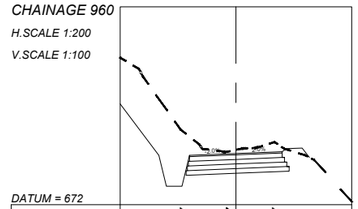


DATUM = 668

FINISHED	669.450	**669.510**	669.570
GROUND		669.706	
OFFSET	-3.000	**0.000**	3.000

CHAINAGE 960

H.SCALE 1:200
V.SCALE 1:100

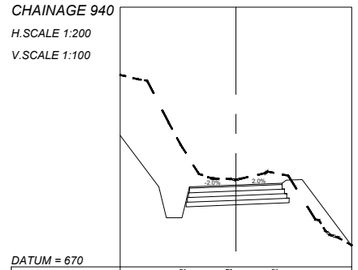


DATUM = 672

FINISHED	673.597	**673.657**	673.717
GROUND		673.775	
OFFSET	-3.000	**0.000**	3.000

CHAINAGE 940

H.SCALE 1:200
V.SCALE 1:100

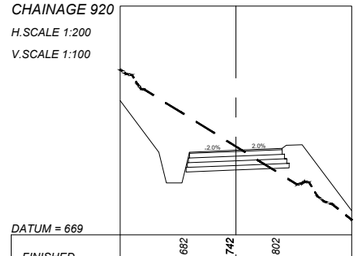


DATUM = 670

FINISHED	672.584	**672.644**	672.704
GROUND		672.819	
OFFSET	-3.000	**0.000**	3.000

CHAINAGE 920

H.SCALE 1:200
V.SCALE 1:100

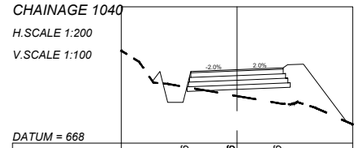


DATUM = 669

FINISHED	671.682	**671.742**	671.802
GROUND		671.866	
OFFSET	-3.000	**0.000**	3.000

CHAINAGE 1040

H.SCALE 1:200
V.SCALE 1:100

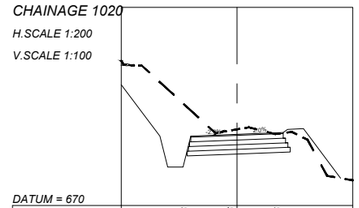


DATUM = 668

FINISHED	670.316	**670.376**	670.436
GROUND		669.524	
OFFSET	-3.000	**0.000**	3.000

CHAINAGE 1020

H.SCALE 1:200
V.SCALE 1:100

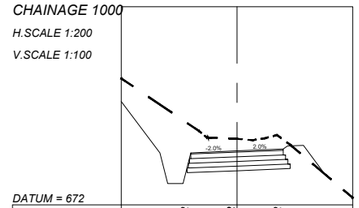


DATUM = 670

FINISHED	672.246	**672.306**	672.366
GROUND		672.462	
OFFSET	-3.000	**0.000**	3.000

CHAINAGE 1000

H.SCALE 1:200
V.SCALE 1:100

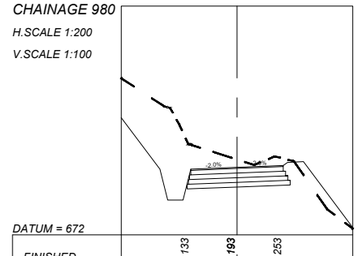


DATUM = 672

FINISHED	673.682	**673.742**	673.802
GROUND		674.135	
OFFSET	-3.000	**0.000**	3.000

CHAINAGE 980

H.SCALE 1:200
V.SCALE 1:100



DATUM = 672

FINISHED	674.133	**674.193**	674.253
GROUND		674.441	
OFFSET	-3.000	**0.000**	3.000

No.	DATE	REVISION	REVISED BY	DATE

DESIGNED BY

TSHINO CONSULTING ENGINEERS

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DESIGNED	P.M.
DESIGN CHECKED	P.M.
DRAWN	P.M.
DRAWING CHECKED	P.M.

CONSULTANT

for CONSULTING ENGINEER

DATE:

RECOMMENDED

for HEAD OF DEPARTMENT

DATE: .....

MAKHADO

Private Bag X 2596
MAKHADO
0920

TEL: (015) 519-3000
FAX: (015) 516-6145

SCALE: AS SHOWN

REVISION: 0

CLIENT: MAKHADO LOCAL MUNICIPALITY

TYPE OF PLANNING: TENDER

TENDER No.: -

PROJECT TITLE

LUVHALANI TO DZANANWA ACCESS ROAD

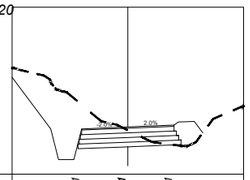
DRAWING TITLE: ROAD CROSS SECTIONS (SHEET 2 OF 6)

SHEET 2 OF 6

DRAWING No.: TC/MLM/LDAR/Xs/03

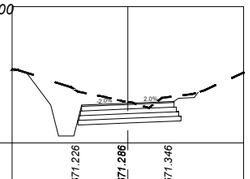
ORIGINAL ON A1

CHAINAGE 1120
H.SCALE 1:200
V.SCALE 1:100



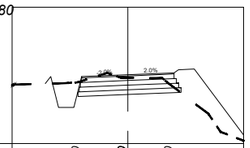
DATUM = 673			
FINISHED	674.471	**674.591**	674.591
GROUND		674.427	
OFFSET	-3.000	**0.000**	3.000

CHAINAGE 1100
H.SCALE 1:200
V.SCALE 1:100



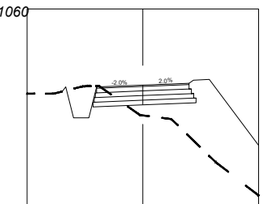
DATUM = 670			
FINISHED	671.226	**671.286**	671.346
GROUND		671.331	
OFFSET	-3.000	**0.000**	3.000

CHAINAGE 1080
H.SCALE 1:200
V.SCALE 1:100



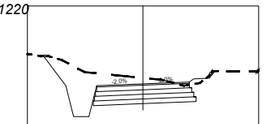
DATUM = 667			
FINISHED	669.170	**669.230**	669.290
GROUND		669.125	
OFFSET	-3.000	**0.000**	3.000

CHAINAGE 1060
H.SCALE 1:200
V.SCALE 1:100



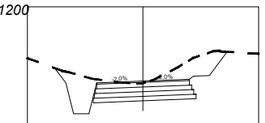
DATUM = 665			
FINISHED	668.885	**668.945**	669.005
GROUND		667.961	
OFFSET	-3.000	**0.000**	3.000

CHAINAGE 1220
H.SCALE 1:200
V.SCALE 1:100



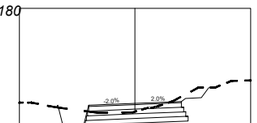
DATUM = 663			
FINISHED	664.831	**664.892**	664.953
GROUND		665.087	
OFFSET	-3.000	**0.000**	3.000

CHAINAGE 1200
H.SCALE 1:200
V.SCALE 1:100



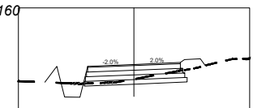
DATUM = 666			
FINISHED	667.940	**668.000**	668.060
GROUND		667.933	
OFFSET	-3.000	**0.000**	3.000

CHAINAGE 1180
H.SCALE 1:200
V.SCALE 1:100



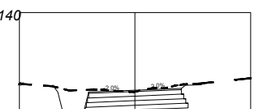
DATUM = 670			
FINISHED	671.273	**671.333**	671.393
GROUND		671.059	
OFFSET	-3.000	**0.000**	3.000

CHAINAGE 1160
H.SCALE 1:200
V.SCALE 1:100



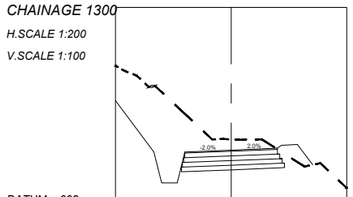
DATUM = 673			
FINISHED	674.523	**674.583**	674.642
GROUND		674.107	
OFFSET	-3.000	**0.000**	3.000

CHAINAGE 1140
H.SCALE 1:200
V.SCALE 1:100



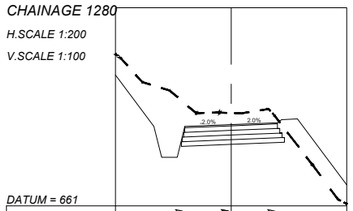
DATUM = 674			
FINISHED	675.841	**675.901**	675.960
GROUND		675.847	
OFFSET	-3.000	**0.000**	3.000

CHAINAGE 1300
H.SCALE 1:200
V.SCALE 1:100



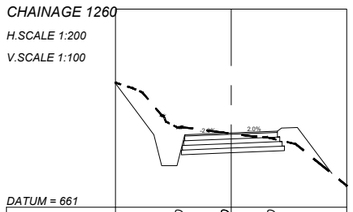
DATUM = 662			
FINISHED	663.732	**663.792**	663.852
GROUND		664.140	
OFFSET	-3.000	**0.000**	3.000

CHAINAGE 1280
H.SCALE 1:200
V.SCALE 1:100



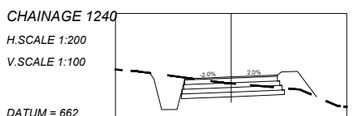
DATUM = 661			
FINISHED	663.571	**663.631**	663.691
GROUND		664.005	
OFFSET	-3.000	**0.000**	3.000

CHAINAGE 1260
H.SCALE 1:200
V.SCALE 1:100



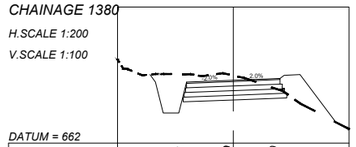
DATUM = 661			
FINISHED	663.340	**663.400**	663.460
GROUND		663.385	
OFFSET	-3.000	**0.000**	3.000

CHAINAGE 1240
H.SCALE 1:200
V.SCALE 1:100



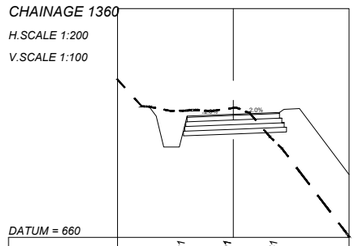
DATUM = 662			
FINISHED	663.298	**663.358**	663.418
GROUND		663.145	
OFFSET	-3.000	**0.000**	3.000

CHAINAGE 1380
H.SCALE 1:200
V.SCALE 1:100



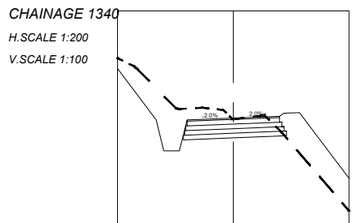
DATUM = 662			
FINISHED	663.981	**664.040**	664.100
GROUND		664.192	
OFFSET	-3.000	**0.000**	3.000

CHAINAGE 1360
H.SCALE 1:200
V.SCALE 1:100



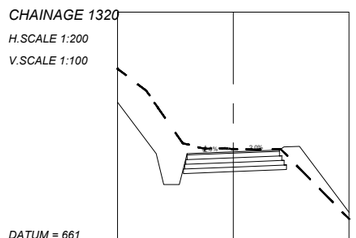
DATUM = 660			
FINISHED	663.931	**663.991**	664.051
GROUND		664.197	
OFFSET	-3.000	**0.000**	3.000

CHAINAGE 1340
H.SCALE 1:200
V.SCALE 1:100



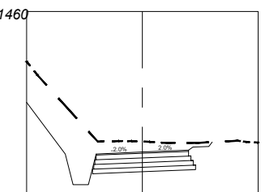
DATUM = 660			
FINISHED	663.876	**663.936**	663.996
GROUND		663.910	
OFFSET	-3.000	**0.000**	3.000

CHAINAGE 1320
H.SCALE 1:200
V.SCALE 1:100



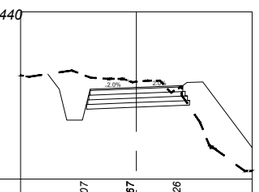
DATUM = 661			
FINISHED	663.822	**663.882**	663.942
GROUND		663.978	
OFFSET	-3.000	**0.000**	3.000

CHAINAGE 1460
H.SCALE 1:200
V.SCALE 1:100



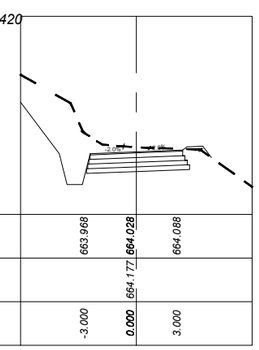
DATUM = 662			
FINISHED	663.802	**663.862**	663.922
GROUND		664.205	
OFFSET	-3.000	**0.000**	3.000

CHAINAGE 1440
H.SCALE 1:200
V.SCALE 1:100



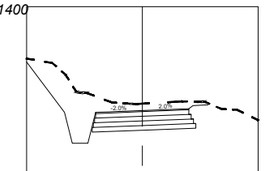
DATUM = 661			
FINISHED	663.907	**663.967**	664.026
GROUND		664.151	
OFFSET	-3.000	**0.000**	3.000

CHAINAGE 1420
H.SCALE 1:200
V.SCALE 1:100



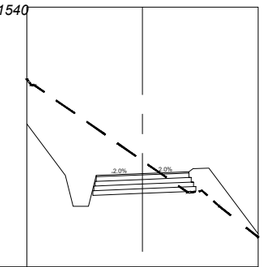
DATUM = 662			
FINISHED	663.968	**664.028**	664.088
GROUND		664.177	
OFFSET	-3.000	**0.000**	3.000

CHAINAGE 1400
H.SCALE 1:200
V.SCALE 1:100



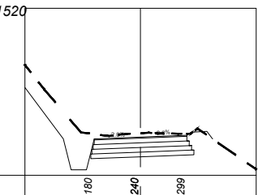
DATUM = 662			
FINISHED	663.995	**664.055**	664.114
GROUND		664.273	
OFFSET	-3.000	**0.000**	3.000

CHAINAGE 1540
H.SCALE 1:200
V.SCALE 1:100



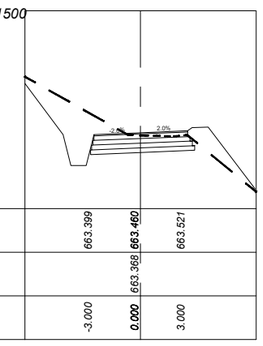
DATUM = 660			
FINISHED	662.960	**663.020**	663.080
GROUND		663.437	
OFFSET	-3.000	**0.000**	3.000

CHAINAGE 1520
H.SCALE 1:200
V.SCALE 1:100



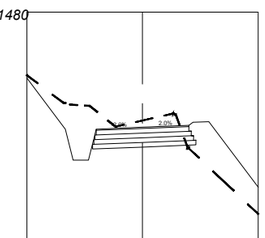
DATUM = 662			
FINISHED	663.180	**663.240**	663.299
GROUND		663.364	
OFFSET	-3.000	**0.000**	3.000

CHAINAGE 1500
H.SCALE 1:200
V.SCALE 1:100



DATUM = 661			
FINISHED	663.399	**663.460**	663.521
GROUND		663.368	
OFFSET	-3.000	**0.000**	3.000

CHAINAGE 1480
H.SCALE 1:200
V.SCALE 1:100



DATUM = 660			
FINISHED	663.619	**663.680**	663.741
GROUND		663.900	
OFFSET	-3.000	**0.000**	3.000

No.	DATE	REVISION	REVISED BY	DATE

DESIGNED BY

TSHINO CONSULTING ENGINEERS

19 Gen.Joubert
POLOKWANE
0699

Tel: (015) 291-4769
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DESIGNED	CONSULTANT	RECOMMENDED
P.M.		
DESIGN CHECKED: P.M.	.....	.....
DRAWN: P.M.	for CONSULTING ENGINEER	for HEAD OF DEPARTMENT
DRAWING CHECKED: P.M.	DATE:	DATE: .....

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SCALE: AS SHOWN

REVISION: 0

CLIENT: MAKHADO LOCAL MUNICIPALITY

TYPE OF PLANNING: TENDER

PROJECT TITLE

LUVHALANI TO DZANANWA ACCESS ROAD

DRAWING TITLE: ROAD CROSS SECTIONS (SHEET 3 OF 6)

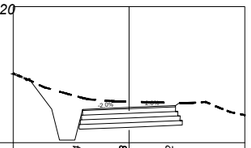
TENDER No.: -

SHEET 3 OF 6

DRAWING No.: TC/MLM/LDAR/Xs/04

ORIGINAL ON A1

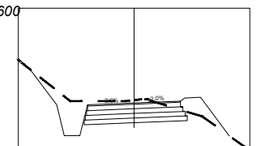
CHAINAGE 1620
H.SCALE 1:200
V.SCALE 1:100



DATUM = 661

FINISHED	662.084	**662.143**	662.202
GROUND		662.333	
OFFSET	-3.000	**0.000**	3.000

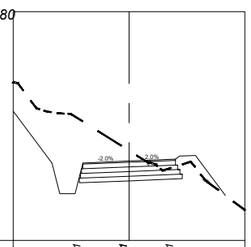
CHAINAGE 1600
H.SCALE 1:200
V.SCALE 1:100



DATUM = 660

FINISHED	662.282	**662.343**	662.404
GROUND		662.431	
OFFSET	-3.000	**0.000**	3.000

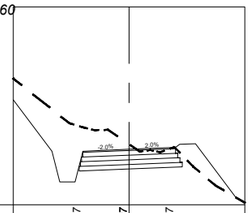
CHAINAGE 1580
H.SCALE 1:200
V.SCALE 1:100



DATUM = 660

FINISHED	662.511	**662.571**	662.631
GROUND		662.908	
OFFSET	-3.000	**0.000**	3.000

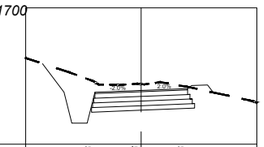
CHAINAGE 1560
H.SCALE 1:200
V.SCALE 1:100



DATUM = 661

FINISHED	662.737	**662.797**	662.857
GROUND		662.963	
OFFSET	-3.000	**0.000**	3.000

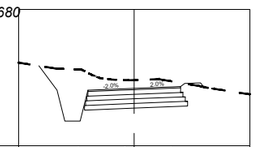
CHAINAGE 1700
H.SCALE 1:200
V.SCALE 1:100



DATUM = 660

FINISHED	661.676	**661.736**	661.796
GROUND		661.944	
OFFSET	-3.000	**0.000**	3.000

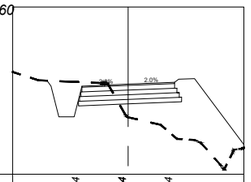
CHAINAGE 1680
H.SCALE 1:200
V.SCALE 1:100



DATUM = 660

FINISHED	661.797	**661.857**	661.917
GROUND		662.122	
OFFSET	-3.000	**0.000**	3.000

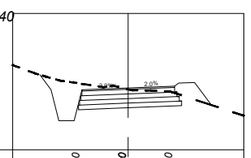
CHAINAGE 1660
H.SCALE 1:200
V.SCALE 1:100



DATUM = 659

FINISHED	661.854	**661.914**	661.974
GROUND		660.842	
OFFSET	-3.000	**0.000**	3.000

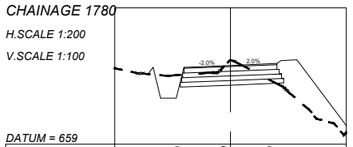
CHAINAGE 1640
H.SCALE 1:200
V.SCALE 1:100



DATUM = 660

FINISHED	661.940	**662.000**	662.060
GROUND		661.961	
OFFSET	-3.000	**0.000**	3.000

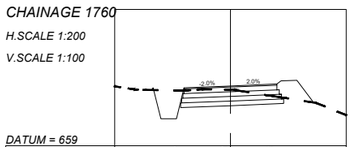
CHAINAGE 1780
H.SCALE 1:200
V.SCALE 1:100



DATUM = 659

FINISHED	661.490	**661.550**	661.610
GROUND		661.716	
OFFSET	-3.000	**0.000**	3.000

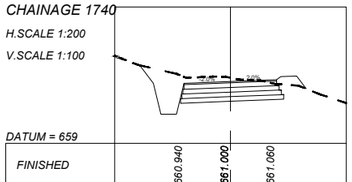
CHAINAGE 1760
H.SCALE 1:200
V.SCALE 1:100



DATUM = 659

FINISHED	660.877	**660.938**	660.998
GROUND		660.814	
OFFSET	-3.000	**0.000**	3.000

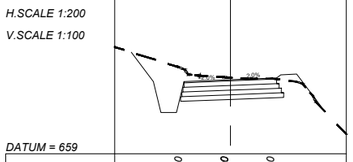
CHAINAGE 1740
H.SCALE 1:200
V.SCALE 1:100



DATUM = 659

FINISHED	660.940	**661.000**	661.060
GROUND		661.124	
OFFSET	-3.000	**0.000**	3.000

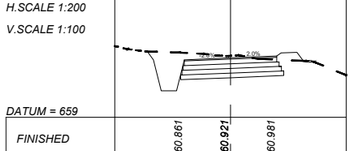
CHAINAGE 1720
H.SCALE 1:200
V.SCALE 1:100



DATUM = 659

FINISHED	661.340	**661.400**	661.460
GROUND		661.466	
OFFSET	-3.000	**0.000**	3.000

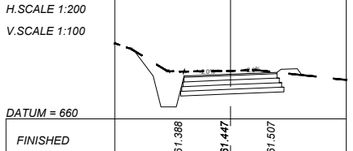
CHAINAGE 1860
H.SCALE 1:200
V.SCALE 1:100



DATUM = 659

FINISHED	660.861	**660.921**	660.981
GROUND		660.986	
OFFSET	-3.000	**0.000**	3.000

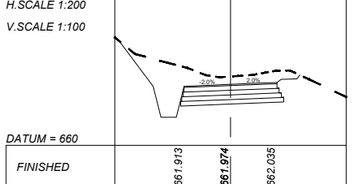
CHAINAGE 1840
H.SCALE 1:200
V.SCALE 1:100



DATUM = 660

FINISHED	661.388	**661.447**	661.507
GROUND		661.545	
OFFSET	-3.000	**0.000**	3.000

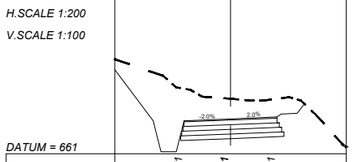
CHAINAGE 1820
H.SCALE 1:200
V.SCALE 1:100



DATUM = 660

FINISHED	661.913	**661.974**	662.035
GROUND		662.228	
OFFSET	-3.000	**0.000**	3.000

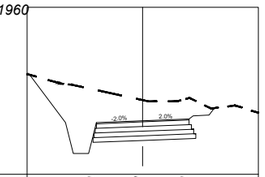
CHAINAGE 1800
H.SCALE 1:200
V.SCALE 1:100



DATUM = 661

FINISHED	662.071	**662.131**	662.191
GROUND		662.784	
OFFSET	-3.000	**0.000**	3.000

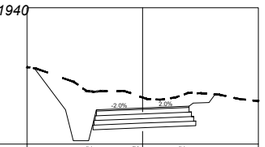
CHAINAGE 1960
H.SCALE 1:200
V.SCALE 1:100



DATUM = 661

FINISHED	662.679	**662.739**	662.799
GROUND		663.405	
OFFSET	-3.000	**0.000**	3.000

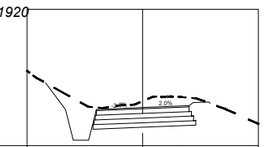
CHAINAGE 1940
H.SCALE 1:200
V.SCALE 1:100



DATUM = 661

FINISHED	662.104	**662.164**	662.224
GROUND		662.509	
OFFSET	-3.000	**0.000**	3.000

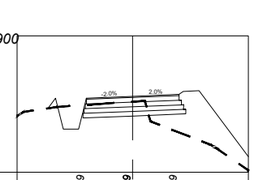
CHAINAGE 1920
H.SCALE 1:200
V.SCALE 1:100



DATUM = 660

FINISHED	661.170	**661.231**	661.291
GROUND		661.441	
OFFSET	-3.000	**0.000**	3.000

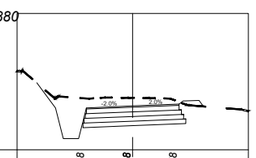
CHAINAGE 1900
H.SCALE 1:200
V.SCALE 1:100



DATUM = 658

FINISHED	660.399	**660.459**	660.519
GROUND		660.281	
OFFSET	-3.000	**0.000**	3.000

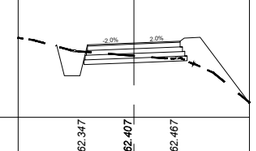
CHAINAGE 1880
H.SCALE 1:200
V.SCALE 1:100



DATUM = 659

FINISHED	660.358	**660.418**	660.478
GROUND		660.692	
OFFSET	-3.000	**0.000**	3.000

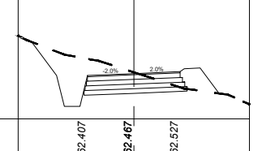
CHAINAGE 2040
H.SCALE 1:200
V.SCALE 1:100



DATUM = 660

FINISHED	662.347	**662.407**	662.467
GROUND		661.957	
OFFSET	-3.000	**0.000**	3.000

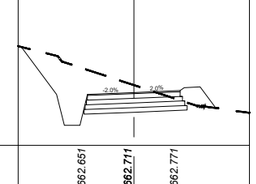
CHAINAGE 2020
H.SCALE 1:200
V.SCALE 1:100



DATUM = 661

FINISHED	662.407	**662.467**	662.527
GROUND		662.511	
OFFSET	-3.000	**0.000**	3.000

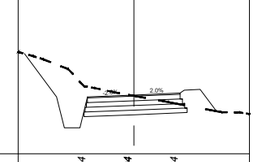
CHAINAGE 2000
H.SCALE 1:200
V.SCALE 1:100



DATUM = 661

FINISHED	662.651	**662.711**	662.771
GROUND		662.950	
OFFSET	-3.000	**0.000**	3.000

CHAINAGE 1980
H.SCALE 1:200
V.SCALE 1:100



DATUM = 661

FINISHED	662.844	**662.904**	662.964
GROUND		662.873	
OFFSET	-3.000	**0.000**	3.000

No.	DATE	REVISION	REVISED BY	DATE

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DRAWN	P.M.
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SCALE: AS SHOWN

REVISION: 0

CLIENT: MAKHADO LOCAL MUNICIPALITY

TYPE OF PLANNING: TENDER

PROJECT TITLE

LUVHALANI TO DZANANWA ACCESS ROAD

DRAWING TITLE: ROAD CROSS SECTIONS (SHEET 4 OF 6)

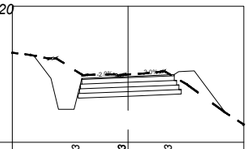
TENDER No.: -

SHEET 4 OF 6

DRAWING No.: TC/MLM/LDAR/Xs/05

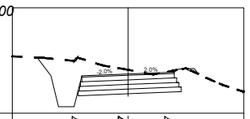
ORIGINAL ON A1

CHAINAGE 2120
H.SCALE 1:200
V.SCALE 1:100



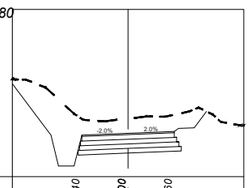
DATUM = 663			
FINISHED	665.073	**665.133**	665.193
GROUND		665.200	
OFFSET	-3.000	**0.000**	3.000

CHAINAGE 2100
H.SCALE 1:200
V.SCALE 1:100



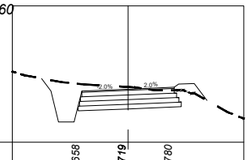
DATUM = 663			
FINISHED	664.207	**664.267**	664.327
GROUND		664.404	
OFFSET	-3.000	**0.000**	3.000

CHAINAGE 2080
H.SCALE 1:200
V.SCALE 1:100



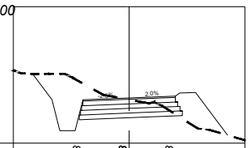
DATUM = 662			
FINISHED	663.340	**663.400**	663.460
GROUND		663.875	
OFFSET	-3.000	**0.000**	3.000

CHAINAGE 2060
H.SCALE 1:200
V.SCALE 1:100



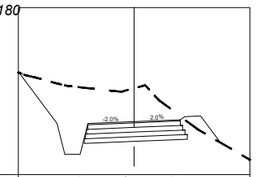
DATUM = 661			
FINISHED	662.658	**662.719**	662.780
GROUND		662.788	
OFFSET	-3.000	**0.000**	3.000

CHAINAGE 2200
H.SCALE 1:200
V.SCALE 1:100



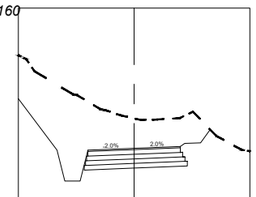
DATUM = 667			
FINISHED	668.403	**668.463**	668.523
GROUND		668.409	
OFFSET	-3.000	**0.000**	3.000

CHAINAGE 2180
H.SCALE 1:200
V.SCALE 1:100



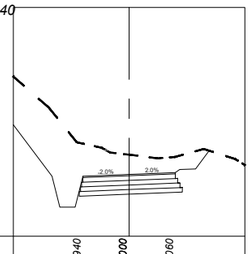
DATUM = 666			
FINISHED	667.658	**667.718**	667.778
GROUND		668.796	
OFFSET	-3.000	**0.000**	3.000

CHAINAGE 2160
H.SCALE 1:200
V.SCALE 1:100



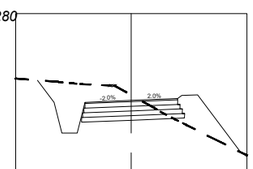
DATUM = 665			
FINISHED	666.807	**666.867**	666.927
GROUND		667.832	
OFFSET	-3.000	**0.000**	3.000

CHAINAGE 2140
H.SCALE 1:200
V.SCALE 1:100



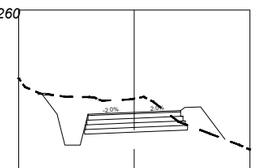
DATUM = 664			
FINISHED	665.940	**666.000**	666.060
GROUND		666.639	
OFFSET	-3.000	**0.000**	3.000

CHAINAGE 2280
H.SCALE 1:200
V.SCALE 1:100



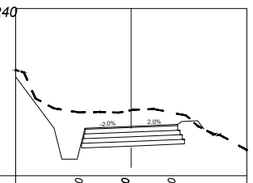
DATUM = 668			
FINISHED	670.540	**670.600**	670.660
GROUND		670.778	
OFFSET	-3.000	**0.000**	3.000

CHAINAGE 2260
H.SCALE 1:200
V.SCALE 1:100



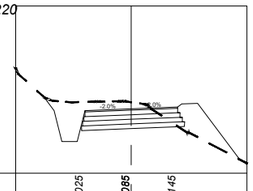
DATUM = 668			
FINISHED	670.040	**670.100**	670.160
GROUND		670.541	
OFFSET	-3.000	**0.000**	3.000

CHAINAGE 2240
H.SCALE 1:200
V.SCALE 1:100



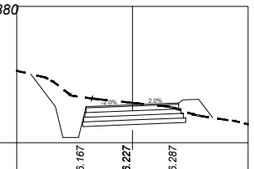
DATUM = 668			
FINISHED	669.540	**669.600**	669.660
GROUND		670.119	
OFFSET	-3.000	**0.000**	3.000

CHAINAGE 2220
H.SCALE 1:200
V.SCALE 1:100



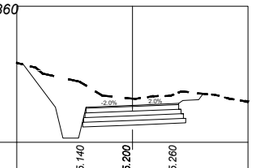
DATUM = 667			
FINISHED	669.025	**669.085**	669.145
GROUND		669.302	
OFFSET	-3.000	**0.000**	3.000

CHAINAGE 2380
H.SCALE 1:200
V.SCALE 1:100



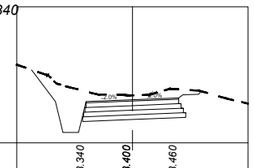
DATUM = 675			
FINISHED	676.167	**676.227**	676.287
GROUND		676.293	
OFFSET	-3.000	**0.000**	3.000

CHAINAGE 2360
H.SCALE 1:200
V.SCALE 1:100



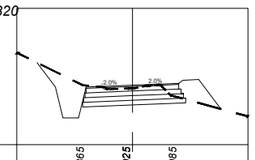
DATUM = 674			
FINISHED	675.140	**675.200**	675.260
GROUND		675.413	
OFFSET	-3.000	**0.000**	3.000

CHAINAGE 2340
H.SCALE 1:200
V.SCALE 1:100



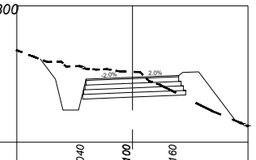
DATUM = 672			
FINISHED	673.340	**673.400**	673.460
GROUND		673.543	
OFFSET	-3.000	**0.000**	3.000

CHAINAGE 2320
H.SCALE 1:200
V.SCALE 1:100



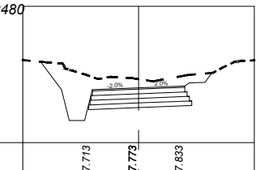
DATUM = 670			
FINISHED	671.865	**671.925**	671.985
GROUND		671.818	
OFFSET	-3.000	**0.000**	3.000

CHAINAGE 2300
H.SCALE 1:200
V.SCALE 1:100



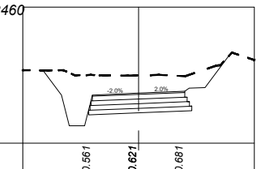
DATUM = 669			
FINISHED	671.040	**671.100**	671.160
GROUND		671.281	
OFFSET	-3.000	**0.000**	3.000

CHAINAGE 2480
H.SCALE 1:200
V.SCALE 1:100



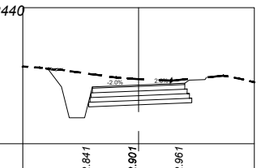
DATUM = 666			
FINISHED	667.713	**667.773**	667.833
GROUND		668.056	
OFFSET	-3.000	**0.000**	3.000

CHAINAGE 2460
H.SCALE 1:200
V.SCALE 1:100



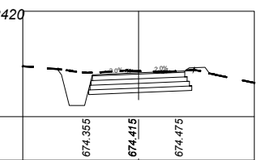
DATUM = 669			
FINISHED	670.561	**670.621**	670.681
GROUND		671.195	
OFFSET	-3.000	**0.000**	3.000

CHAINAGE 2440
H.SCALE 1:200
V.SCALE 1:100



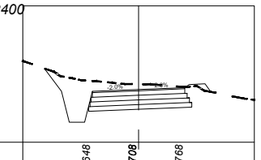
DATUM = 671			
FINISHED	672.841	**672.901**	672.961
GROUND		673.099	
OFFSET	-3.000	**0.000**	3.000

CHAINAGE 2420
H.SCALE 1:200
V.SCALE 1:100



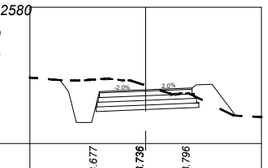
DATUM = 673			
FINISHED	674.355	**674.415**	674.475
GROUND		674.473	
OFFSET	-3.000	**0.000**	3.000

CHAINAGE 2400
H.SCALE 1:200
V.SCALE 1:100



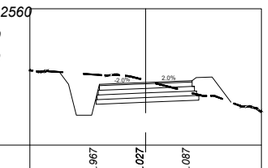
DATUM = 674			
FINISHED	675.648	**675.708**	675.768
GROUND		675.879	
OFFSET	-3.000	**0.000**	3.000

CHAINAGE 2580
H.SCALE 1:200
V.SCALE 1:100



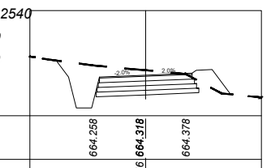
DATUM = 662			
FINISHED	663.677	**663.736**	663.796
GROUND		663.876	
OFFSET	-3.000	**0.000**	3.000

CHAINAGE 2560
H.SCALE 1:200
V.SCALE 1:100



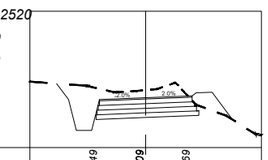
DATUM = 662			
FINISHED	663.967	**664.027**	664.087
GROUND		664.094	
OFFSET	-3.000	**0.000**	3.000

CHAINAGE 2540
H.SCALE 1:200
V.SCALE 1:100



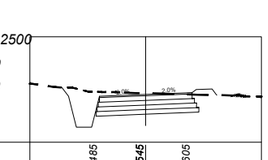
DATUM = 663			
FINISHED	664.258	**664.318**	664.378
GROUND		664.476	
OFFSET	-3.000	**0.000**	3.000

CHAINAGE 2520
H.SCALE 1:200
V.SCALE 1:100



DATUM = 663			
FINISHED	664.549	**664.609**	664.669
GROUND		664.858	
OFFSET	-3.000	**0.000**	3.000

CHAINAGE 2500
H.SCALE 1:200
V.SCALE 1:100



DATUM = 664			
FINISHED	665.485	**665.545**	665.605
GROUND		665.681	
OFFSET	-3.000	**0.000**	3.000

No.	DATE	REVISION	REVISED BY	DATE

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DRAWING CHECKED	P.M.

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SCALE: AS SHOWN

REVISION: 0

CLIENT: MAKHADO LOCAL MUNICIPALITY

TYPE OF PLANNING: TENDER

TENDER No.: -

PROJECT TITLE

LUVHALANI TO DZANANWA ACCESS ROAD

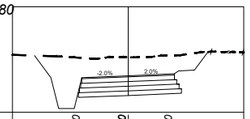
SHEET 5 OF 6

DRAWING TITLE: ROAD CROSS SECTIONS (SHEET 5 OF 6)

DRAWING No.: TC/MLM/LDAR/Xs/06

ORIGINAL ON A1

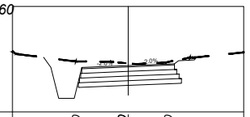
CHAINAGE 2680
H.SCALE 1:200
V.SCALE 1:100



DATUM = 668

FINISHED	669.120	**669.180**	669.240
GROUND		669.777	
OFFSET	-3.000	**0.000**	3.000

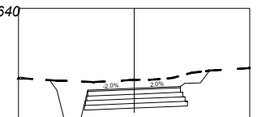
CHAINAGE 2660
H.SCALE 1:200
V.SCALE 1:100



DATUM = 666

FINISHED	667.440	**667.500**	667.560
GROUND		667.571	
OFFSET	-3.000	**0.000**	3.000

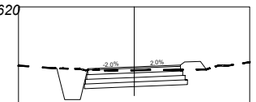
CHAINAGE 2640
H.SCALE 1:200
V.SCALE 1:100



DATUM = 664

FINISHED	665.760	**665.820**	665.880
GROUND		666.094	
OFFSET	-3.000	**0.000**	3.000

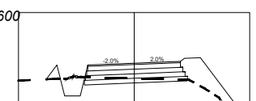
CHAINAGE 2620
H.SCALE 1:200
V.SCALE 1:100



DATUM = 663

FINISHED	664.408	**664.469**	664.529
GROUND		664.361	
OFFSET	-3.000	**0.000**	3.000

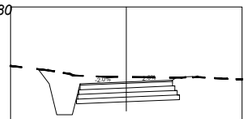
CHAINAGE 2600
H.SCALE 1:200
V.SCALE 1:100



DATUM = 661

FINISHED	663.714	**663.774**	663.834
GROUND		663.285	
OFFSET	-3.000	**0.000**	3.000

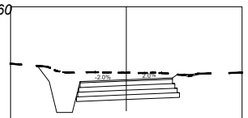
CHAINAGE 2780
H.SCALE 1:200
V.SCALE 1:100



DATUM = 673

FINISHED	674.925	**674.985**	675.045
GROUND		675.147	
OFFSET	-3.000	**0.000**	3.000

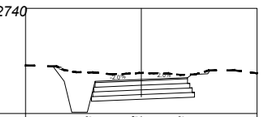
CHAINAGE 2760
H.SCALE 1:200
V.SCALE 1:100



DATUM = 672

FINISHED	673.986	**674.046**	674.106
GROUND		674.270	
OFFSET	-3.000	**0.000**	3.000

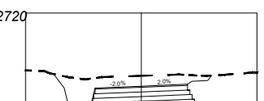
CHAINAGE 2740
H.SCALE 1:200
V.SCALE 1:100



DATUM = 672

FINISHED	673.048	**673.108**	673.168
GROUND		673.315	
OFFSET	-3.000	**0.000**	3.000

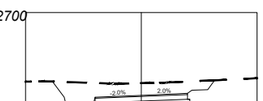
CHAINAGE 2720
H.SCALE 1:200
V.SCALE 1:100



DATUM = 670

FINISHED	671.986	**672.046**	672.106
GROUND		672.381	
OFFSET	-3.000	**0.000**	3.000

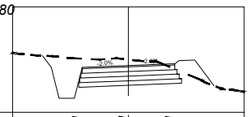
CHAINAGE 2700
H.SCALE 1:200
V.SCALE 1:100



DATUM = 669

FINISHED	670.676	**670.736**	670.796
GROUND		671.131	
OFFSET	-3.000	**0.000**	3.000

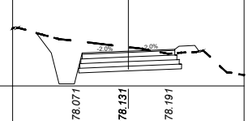
CHAINAGE 2880
H.SCALE 1:200
V.SCALE 1:100



DATUM = 677

FINISHED	678.451	**678.511**	678.571
GROUND		678.707	
OFFSET	-3.000	**0.000**	3.000

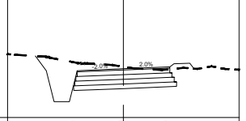
CHAINAGE 2860
H.SCALE 1:200
V.SCALE 1:100



DATUM = 677

FINISHED	678.071	**678.131**	678.191
GROUND		678.255	
OFFSET	-3.000	**0.000**	3.000

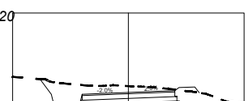
CHAINAGE 2840
H.SCALE 1:200
V.SCALE 1:100



DATUM = 676

FINISHED	677.521	**677.581**	677.641
GROUND		677.647	
OFFSET	-3.000	**0.000**	3.000

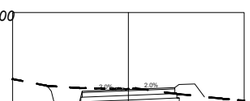
CHAINAGE 2820
H.SCALE 1:200
V.SCALE 1:100



DATUM = 675

FINISHED	676.777	**676.837**	676.897
GROUND		677.045	
OFFSET	-3.000	**0.000**	3.000

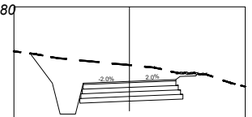
CHAINAGE 2800
H.SCALE 1:200
V.SCALE 1:100



DATUM = 674

FINISHED	675.863	**675.923**	675.983
GROUND		675.943	
OFFSET	-3.000	**0.000**	3.000

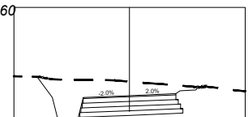
CHAINAGE 2980
H.SCALE 1:200
V.SCALE 1:100



DATUM = 681

FINISHED	682.940	**683.000**	683.060
GROUND		683.528	
OFFSET	-3.000	**0.000**	3.000

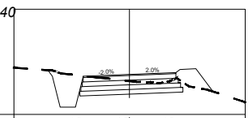
CHAINAGE 2960
H.SCALE 1:200
V.SCALE 1:100



DATUM = 680

FINISHED	681.500	**681.560**	681.620
GROUND		682.012	
OFFSET	-3.000	**0.000**	3.000

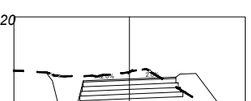
CHAINAGE 2940
H.SCALE 1:200
V.SCALE 1:100



DATUM = 679

FINISHED	680.241	**680.301**	680.361
GROUND		680.077	
OFFSET	-3.000	**0.000**	3.000

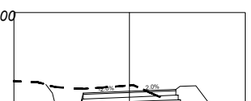
CHAINAGE 2920
H.SCALE 1:200
V.SCALE 1:100



DATUM = 678

FINISHED	679.343	**679.403**	679.463
GROUND		679.627	
OFFSET	-3.000	**0.000**	3.000

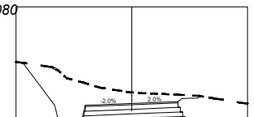
CHAINAGE 2900
H.SCALE 1:200
V.SCALE 1:100



DATUM = 677

FINISHED	678.807	**678.867**	678.927
GROUND		679.057	
OFFSET	-3.000	**0.000**	3.000

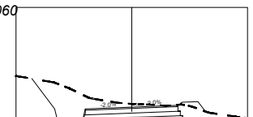
CHAINAGE 3080
H.SCALE 1:200
V.SCALE 1:100



DATUM = 678

FINISHED	679.225	**679.285**	679.345
GROUND		679.644	
OFFSET	-3.000	**0.000**	3.000

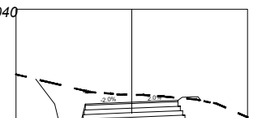
CHAINAGE 3060
H.SCALE 1:200
V.SCALE 1:100



DATUM = 681

FINISHED	682.126	**682.186**	682.246
GROUND		682.290	
OFFSET	-3.000	**0.000**	3.000

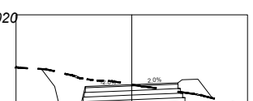
CHAINAGE 3040
H.SCALE 1:200
V.SCALE 1:100



DATUM = 683

FINISHED	684.338	**684.398**	684.458
GROUND		684.639	
OFFSET	-3.000	**0.000**	3.000

CHAINAGE 3020
H.SCALE 1:200
V.SCALE 1:100



DATUM = 684

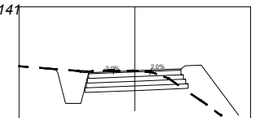
FINISHED	685.090	**685.150**	685.210
GROUND		685.151	
OFFSET	-3.000	**0.000**	3.000

CHAINAGE 3000
H.SCALE 1:200
V.SCALE 1:100

DATUM = 683

FINISHED	684.380	**684.440**	684.500
GROUND		684.481	
OFFSET	-3.000	**0.000**	3.000

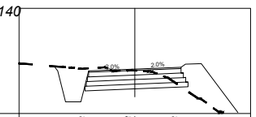
CHAINAGE 3141
H.SCALE 1:200
V.SCALE 1:100



DATUM = 670

FINISHED	672.276	**672.336**	672.396
GROUND		672.336	
OFFSET	-3.000	**0.000**	3.000

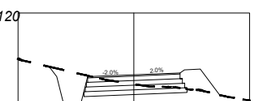
CHAINAGE 3140
H.SCALE 1:200
V.SCALE 1:100



DATUM = 671

FINISHED	672.383	**672.443**	672.503
GROUND		672.396	
OFFSET	-3.000	**0.000**	3.000

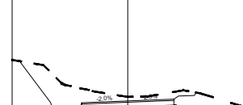
CHAINAGE 3120
H.SCALE 1:200
V.SCALE 1:100



DATUM = 673

FINISHED	674.354	**674.414**	674.474
GROUND		674.108	
OFFSET	-3.000	**0.000**	3.000

CHAINAGE 3100
H.SCALE 1:200
V.SCALE 1:100



DATUM = 675

FINISHED	676.622	**676.680**	676.739
GROUND		676.820	
OFFSET	-3.000	**0.000**	3.000

No.	DATE	REVISION	REVISED BY	DATE

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DESIGN CHECKED P.M.	.....	.....
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DRAWING CHECKED P.M.	DATE:	DATE: .....

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SCALE: AS SHOWN

REVISION: 0

CLIENT: MAKHADO LOCAL MUNICIPALITY

TYPE OF PLANNING: TENDER

PROJECT TITLE

LUVHALANI TO DZANANWA ACCESS ROAD

DRAWING TITLE: ROAD CROSS SECTIONS (SHEET 6 OF 6)

TENDER No.: -

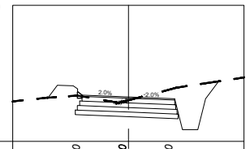
SHEET 6 OF 6

DRAWING No.: TC/MLM/LDAR/Xs/07

ORIGINAL ON A1

CHAINAGE 80

H.SCALE 1:200
V.SCALE 1:100

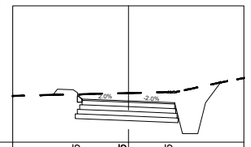


DATUM = 672

FINISHED	673.500	**673.440**	673.380
GROUND		673.331	
OFFSET	-3.000	**0.000**	3.000

CHAINAGE 60

H.SCALE 1:200
V.SCALE 1:100

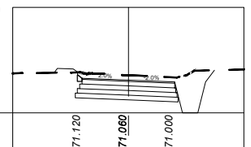


DATUM = 671

FINISHED	672.395	**672.335**	672.275
GROUND		672.588	
OFFSET	-3.000	**0.000**	3.000

CHAINAGE 40

H.SCALE 1:200
V.SCALE 1:100

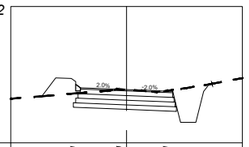


DATUM = 670

FINISHED	671.120	**671.060**	671.000
GROUND		671.218	
OFFSET	-3.000	**0.000**	3.000

CHAINAGE 132

H.SCALE 1:200
V.SCALE 1:100

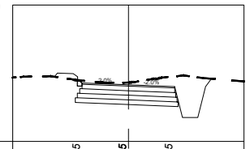


DATUM = 674

FINISHED	675.781	**675.721**	675.661
GROUND		675.721	
OFFSET	-3.000	**0.000**	3.000

CHAINAGE 20

H.SCALE 1:200
V.SCALE 1:100

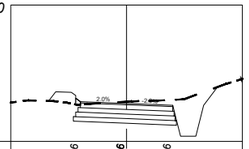


DATUM = 668

FINISHED	669.895	**669.835**	669.775
GROUND		669.906	
OFFSET	-3.000	**0.000**	3.000

CHAINAGE 120

H.SCALE 1:200
V.SCALE 1:100

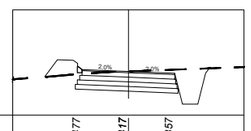


DATUM = 674

FINISHED	675.286	**675.226**	675.166
GROUND		675.288	
OFFSET	-3.000	**0.000**	3.000

CHAINAGE 0

H.SCALE 1:200
V.SCALE 1:100

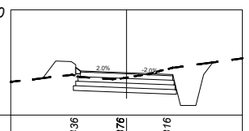


DATUM = 668

FINISHED	669.477	**669.417**	669.357
GROUND		669.417	
OFFSET	-3.000	**0.000**	3.000

CHAINAGE 100

H.SCALE 1:200
V.SCALE 1:100



DATUM = 673

FINISHED	674.436	**674.376**	674.316
GROUND		674.209	
OFFSET	-3.000	**0.000**	3.000

No.	DATE	REVISION	REVISED BY	DATE

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SCALE: AS SHOWN

REVISION: 0

CLIENT: MAKHADO LOCAL MUNICIPALITY

TYPE OF PLANNING: TENDER

PROJECT TITLE

LUVHALANI TO DZANANWA ACCESS ROAD

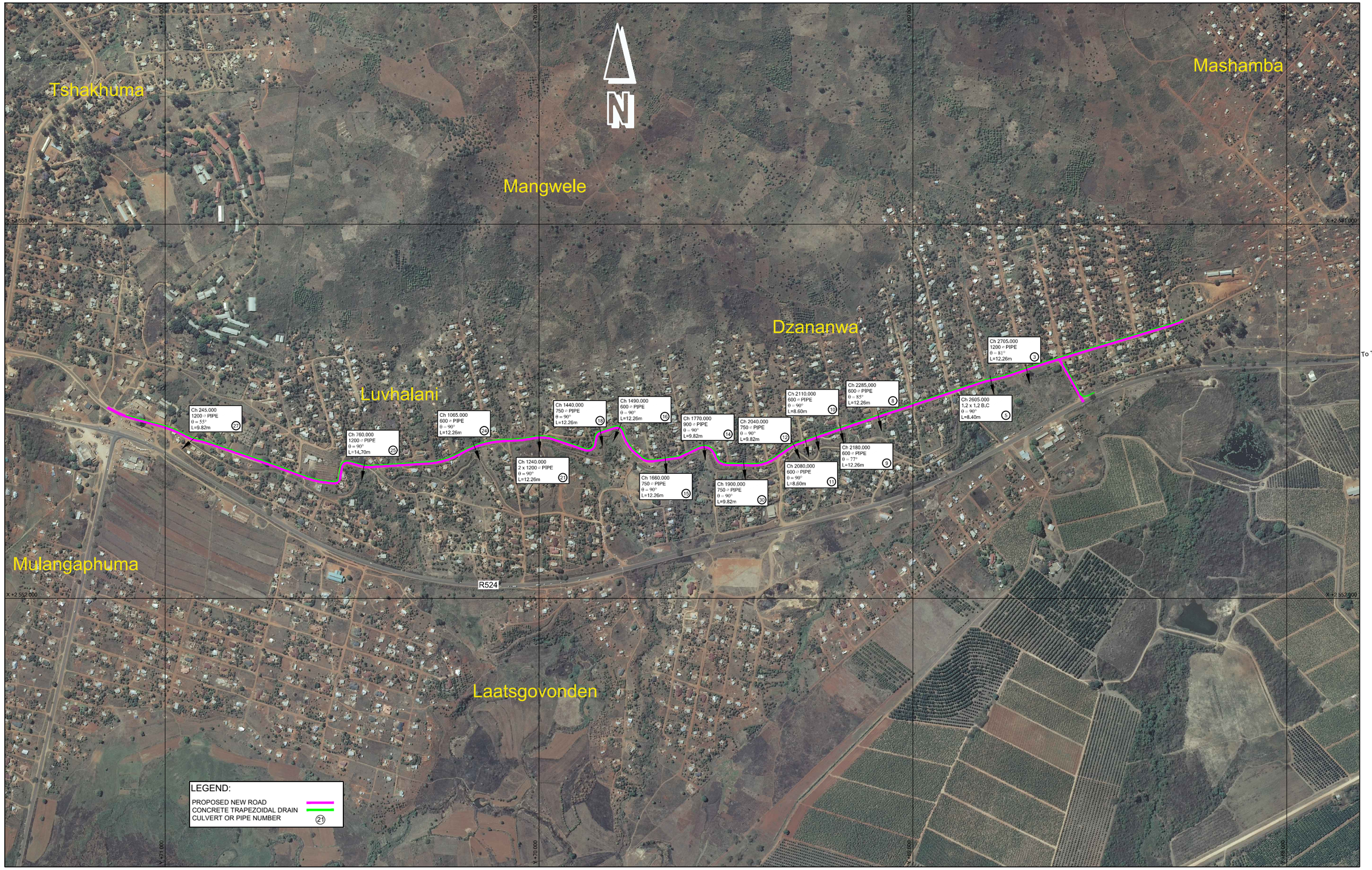
DRAWING TITLE: ACCESS ROAD CROSS SECTIONS (SHEET 1 OF 1)

TENDER No.: -

SHEET 1 OF 1

DRAWING No.: TC/MLM/LDAR/Xs/08

ORIGINAL ON A1



No.	DATE	REVISION	REVISED BY	DATE

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DRAWING CHECKED P.M.	DATE:	DATE: .....

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SCALE 1:5000

REVISION 0

CLIENT MAKHADO LOCAL MUNICIPALITY

TYPE OF PLANNING TENDER

PROJECT TITLE

LUVHALANI TO DZANANWA ACCESS ROAD

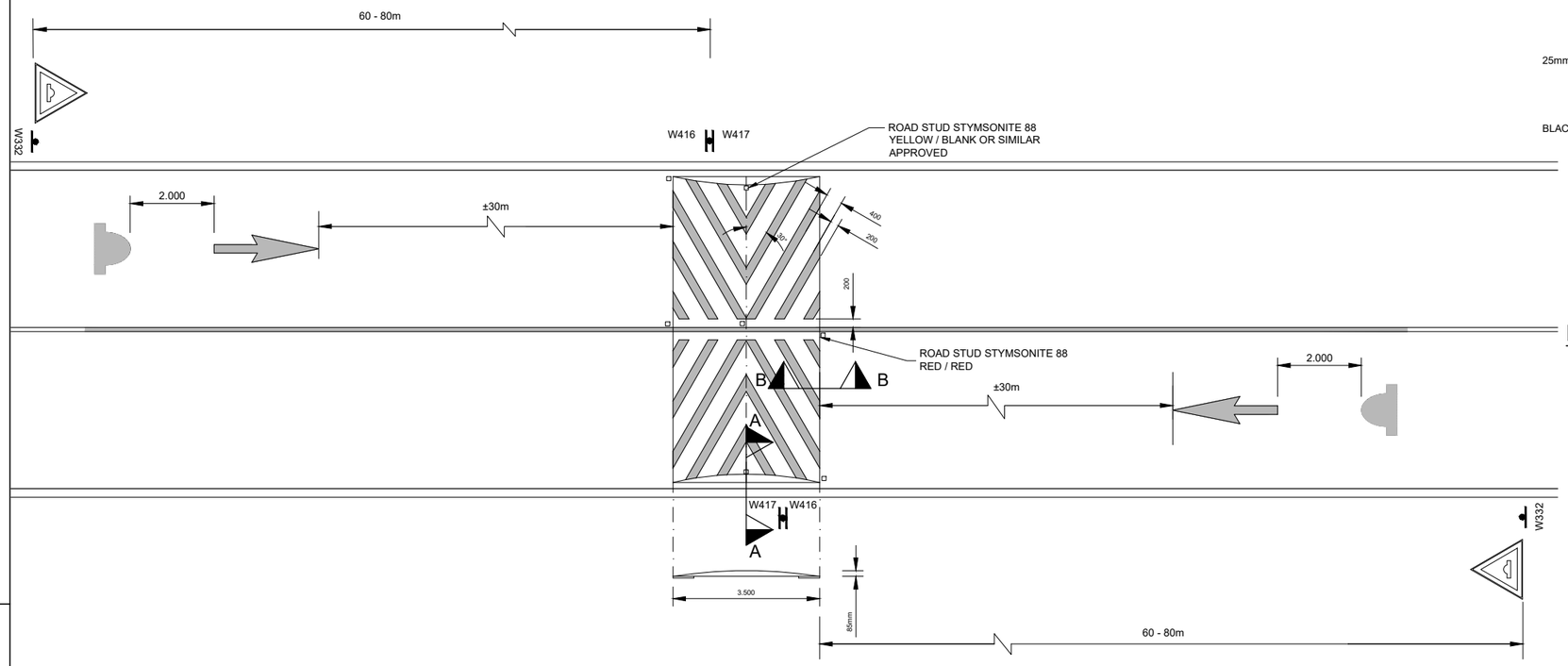
DRAWING TITLE STORMWATER KEY PLAN

TENDER No. -

SHEET 1 OF 1

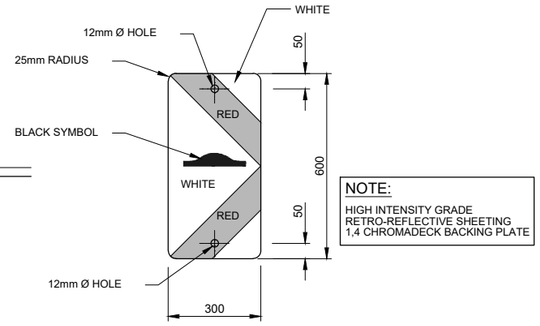
DRAWING No. TC/MLM/LDAR/Sw/01

ORIGINAL ON A1



PLAN OF SPEED HUMP

SCALE 1:100

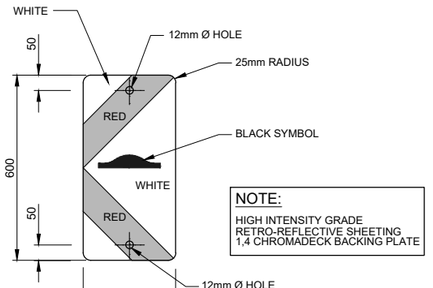


NOTE:
HIGH INTENSITY GRADE
RETRO-REFLECTIVE SHEETING
1,4 CHROMADECK BACKING PLATE

DANGER PLATE SPEEDHUMP (LEFT)

W416

SCALE 1:10



NOTE:
HIGH INTENSITY GRADE
RETRO-REFLECTIVE SHEETING
1,4 CHROMADECK BACKING PLATE

DANGER PLATE SPEEDHUMP (RIGHT)

W417

SCALE 1:10

NOTES

CONSTRUCTION METHOD: SPEED HUMPS

1. Setting out of hump - few days before construction.
2. Saw cuts one to two days before construction.

ON CONSTRUCTION DAY:

3. Remove 500 mm asphalt strips.
4. Start erecting road signs and paint warning road marking.
5. Place asphalt in strips and compact with two passes without vibrator.
6. Place templates - both sides of one lane at a time.
7. Place asphalt and rake till slightly higher than templates.
8. Shape asphalt with straight edge (channel section 6 m long).
9. Remove templates and compact without vibrator (three passes)
10. Measure profile and rectify if necessary.
11. Final compaction with three to four passes with vibrator.
12. Place road studs.
13. Paint speed hump the next day.

2. Traffic Signs:

2.1 Only galvanised bolts and nuts to be used on W and R series (no uni-struts)

2.2 All signs must be according to the Road Traffic Signs Manuals but use 900Φ STOP (60km/h zone) for 3-way and 4-way stops

2.3 All signs excluding R1 series must have rounded edges

3. **ROADMARKINGS:**
All new road markings in thermoplastic

Colour	Paint application rate (mm)	Premix bead application rate (%)	Initial coefficient of retro-reflective (minicandelas/lux/m²)
WHITE	1.2	35	200
YELLOW	1.2	35	135

NOTE

1. Traffic Signs:

1.1 Only galvanised bolts and nuts to be used on W and R series (no uni-struts)

1.2 All signs must be according to the Road Traffic Signs Manuals but use 900Φ STOP (60km/h zone) for 3-way and 4-way stops

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2. ROADMARKINGS:
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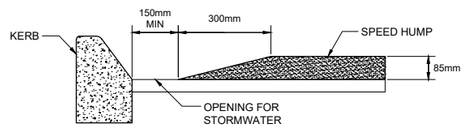
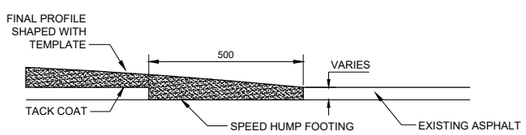
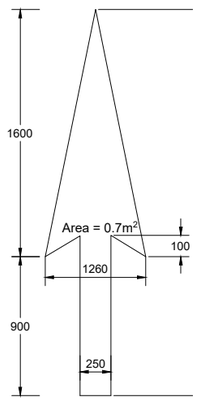
Colour	Paint application rate (mm)	Premix bead application rate (%)	Initial coefficient of retro-reflective (minicandelas/lux/m²)
WHITE	1.2	35	200
YELLOW	1.2	35	135

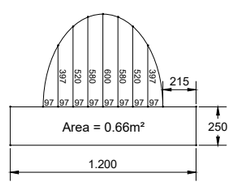
NOTE:

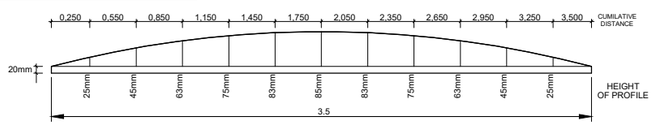
The Trafic Engineering and Operation section
must always be consulted to assist with the setting out of speed humps.



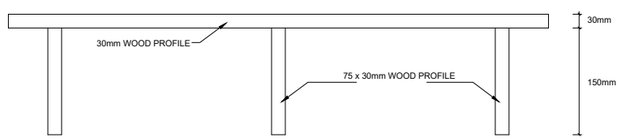








SIDE ELEVATION



PLAN

No.	DATE	REVISION	REVISED BY	DATE

DESIGNED BY

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DRAWING CHECKED	P.M.

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for HEAD OF DEPARTMENT

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SCALE: AS SHOWN

REVISION: 0

CLIENT: MAKHADO LOCAL MUNICIPALITY

TYPE OF PLANNING: TENDER

PROJECT TITLE

LUVHALANI TO DZANANWA ACCESS ROAD

DRAWING TITLE: TYPICAL SPEED HUMP DETAIL

TENDER No. -

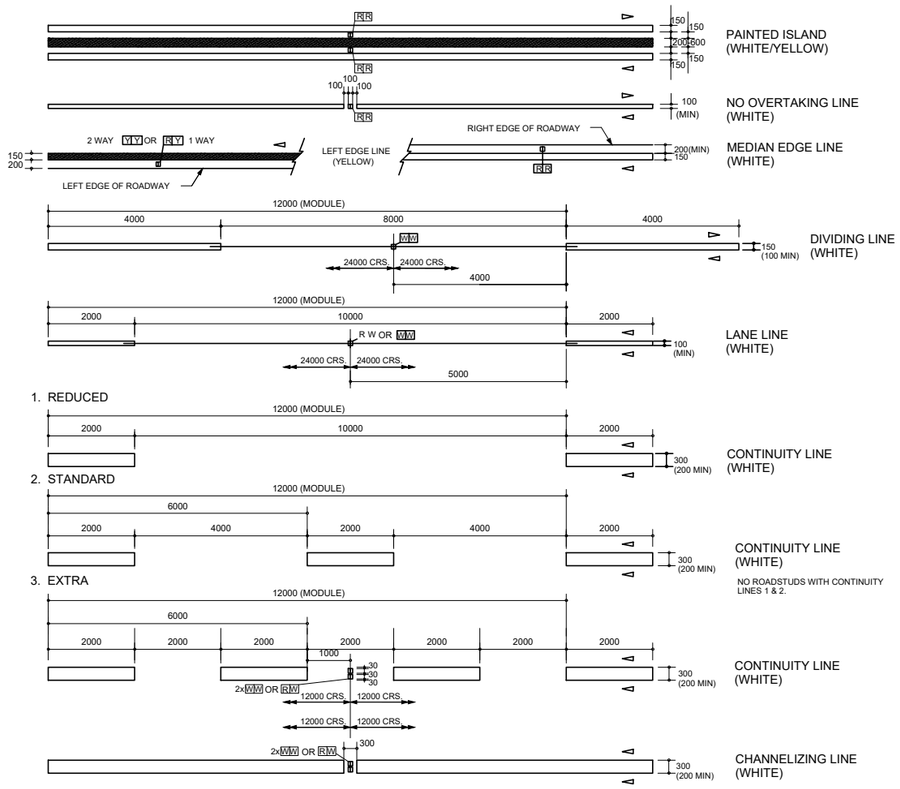
SHEET 1 OF 1

DRAWING No. TC/MLM/LDAR/SD/01

ORIGINAL ON A1

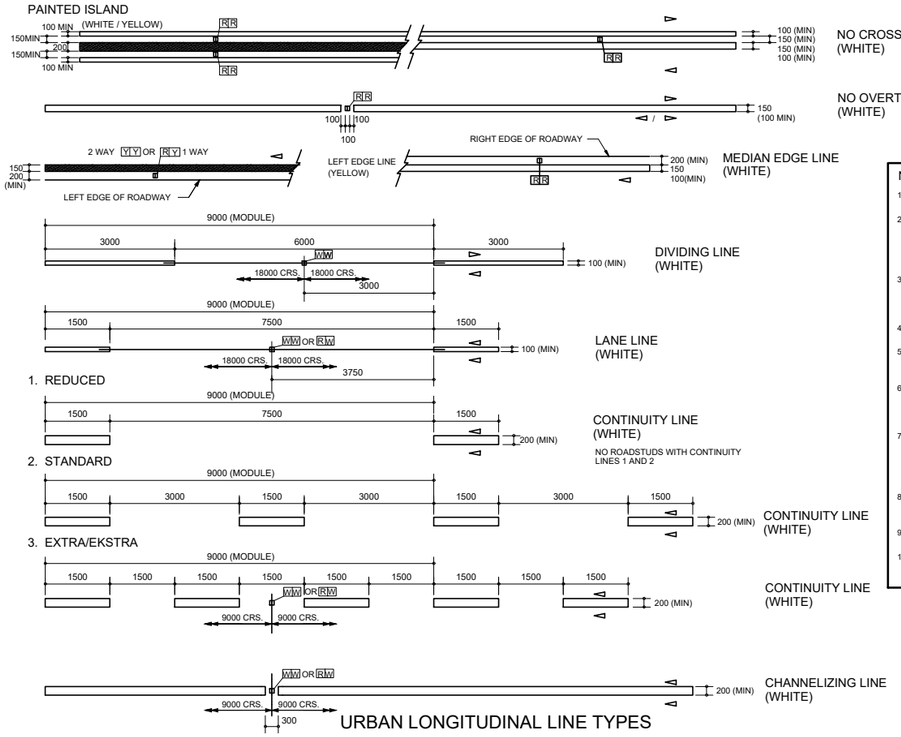
ROAD MARKING DETAILS

SHEET 1 OF 2



RURAL LONGITUDINAL LINE TYPES

SCALE 1:50

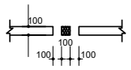


URBAN LONGITUDINAL LINE TYPES

NOTES: (RURAL LONGITUDINAL LINE TYPES)

1. DIRECTION OF TRAFFIC MOVEMENT WITH RESPECT TO LINE MARKING INDICATED THUS ⊳ OR ⊲.
2. PAINTED ISLAND MARKINGS SHALL BE USED AS A STANDARD DIVIDING MARKING ON ALL 4-LANE 2-WAY ROADWAYS. (SEE URBAN LOMGITUDINAL LINE TYPES)
3. A NO OVERTAKING LINE MAY BE USED TO REPLACE A DIVIDING LINE MARKING ON MINOR ROADS OR TO MATCH PROVINCIAL ROAD MARKING POLICY ON AN INTERSECTING ROADWAY AS APPROPRIATE. A NO OVERTAKING LINE MAY BE USED IN COMBINATION WITH A LANE LINE. (NORMALLY ON A FREEWAY CARRIAGEWAY.)
4. A LEFT EDGE LINE MARKING SHALL NOT EXTEND ACROSS THE POINT OF DEPATURE FROM A THROUGH PORTION OF ROADWAY.
5. A RIGHT EDGE LINE MARKING IS ONLY REQUIRED TO DEMARCATE AN UNKERBED MEDIAN (A MEDIAN GUARDRAIL OR CONCRETE SEPERATOR BARRIER DOES NOT CONSTITUTE A KERBED MEDIAN.)
6. THE DIVIDING LINE MARKING REPLACES THE PREVIOUS "CENTRE LINE" MARKING AND SHALL ONLY BE USED BETWEEN LANES CARRYING OPPOSING TRAFFIC FLOWS WHERE OVERTAKING IS PERMITTED.
7. A CONTINUITY LINE MAY BE SPECIFIED IN ONE OF THREE DENSITIES - 1. REDUCED 2. STANDARD OR 3. EXTRA. A CONTINUITY LINE MAY BE USED TO DEFINE THE LIMIT OF THE THROUGH PORTION OF A ROADWAY, EITHER AT A HIGH SPEED EXIT (OFF-RAMP OR SLIP ROAD), A DEDICATED EXIT LANE ON FREEWAY, OR AT-GRADE ROAD. (RIGHT OR LEFT TURN.)
8. A CHANNELIZING LINE MAY BE USED AS AN EXTENSION OF A CONTINUITY LINE FOR CERTAIN APPLICATIONS ON THE APPROACH TO AN AT-GRADE SLIP ROAD GORE AREA.
9. A LANE LINE, CONTINUITY LINE OR CHANNELIZING LINE SHALL NOT BE USED BETWEEN OPPOSING TRAFFIC MOVEMENTS.
10. THE WIDTHS OF LINES SHOWN ARE RECOMMENDATIONS ONLY. (SEE LONGITUDINAL LINE COMBINATIONS.)

LEGEND:
R = RED
W = WHITE
Y = YELLOW

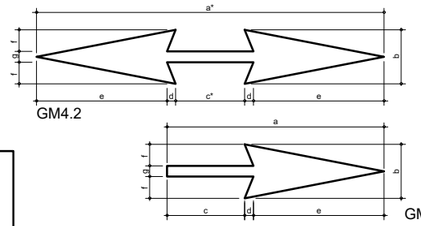


DETAIL "A2"
SCALE: 1:25

NOTES: (LONGITUDINAL LINE COMBINATIONS)

1. DIRECTION OF TRAFFIC MOVEMENT WITH RESPECT TO THE MARKING INDICATED THUS ⊳ OR ⊲.
2. FOR FULL LONGITUDINAL DIMENSIONS OF COMPONENT MARKINGS SEE RURAL AND URBAN LONGITUDINAL LINE TYPES.
3. COMBINATION MARKING 1 TO 4 ARE FOR TWO WAY TRAFFIC AND ARE APPLICABLE TO NATIONAL NON-FREEWAY ROUTES WHICH INTERSECT FREEWAYS.
4. COMBINATION MARKING 5 SHALL BE USED TO INDICATE THE DIVISIONS BETWEEN THE THROUGH ROADWAY AND ANY EXCLUSIVE EXIT/TURN LANES. WHEREVER POSSIBLE A CONTINUITY LINE SHOULD LEAD TO, OR TERMINATE IN A CHANNELIZING LINE WHICH MAY BE SHORT. RECOMMENDED MINIMUM LENGTH IS 12m FOR RURAL AND 9m FOR URBAN APPLICATIONS.
5. FOR MARKINGS 1 TO 4 ROADSTUDS SHOULD BE LOCATED ON CENTRE LINE OF THE DIVIDING LINE (OR SINGLE NO OVERTAKING LINE MARKING 4)
6. WHERE POSSIBLE THE LENGTH OF CHANNELIZING MARKING SHOULD BE ADJUSTED SO THAT THE CONTINUITY LINE ROADSTUDS MATCH OTHER ROADSTUDS ON CROSS-SECTION AND FALL IN THE CENTRE OF A GAP IN THE CONTINUITY LINE.
7. DIMENSIONS FOR URBAN APPLICATIONS ARE INDICATED IN BRACKETS.
8. ROADSTUDS ON THE SINGLE NO OVERTAKING LINE IN MARKING 4 MAY BE COVERED DURING LINE MARKING OR PLACED AS INDICATED IN DETAIL "A2".

LONGITUDINAL LINE COMBINATIONS

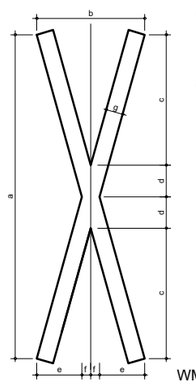


GM4.2 REVERSIBLE FLOW ARROW / GM4.1 INFORMATION ARROW — DIMENSIONS (mm)

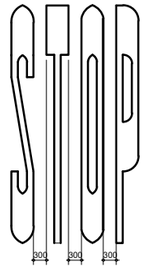
Operating Speed km/h	Typical Applications	a	a*	b	c	c*	d	e	f	g
30 - 40	City Centre	1250	2000	1250	450	400	50	750	500	250
50 - 60	Urban	2500	4000	1250	900	800	100	1500	500	250
70 - 90	Urban Arterial/Rural Expressway	4000	6400	1250	1440	1280	160	2400	500	250
100 - 120	Rural and Freeways	5000	8000	1250	1800	1600	200	3000	500	250

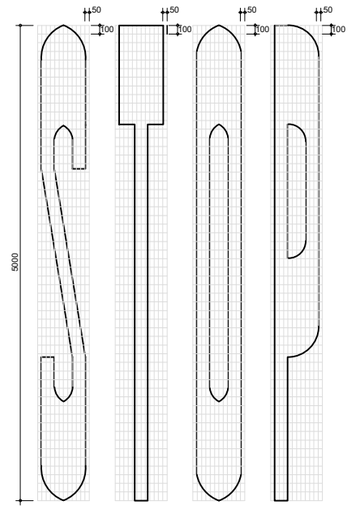
Area m²				
Marking	a	Area	a*	Area
WM1	4000	1.84		
	7500	6.00		
GM4.1/ GM4.2(a*)	1250	0.59	2000	1.05
	2500	1.17	4000	2.10
	4000	1.88	6400	3.36
	5000	2.35	8000	4.20
WM5	450	0.20		
	850	0.83		
	1350	2.15		
GM7	5500	6.90		

NOTES:
1. THIS DRAWING DETAILS A RANGE OF GENERAL WARNING OR GUIDANCE SYMBOLS. APPLICATION SHALL BE IN ACCORDANCE WITH THE SOUTH AFRICAN ROAD TRAFFIC SIGNS MANUAL.
2. MARKING WM5 - YIELD CONTROL AHEAD MAY BE REPEATED 1m FROM THE YIELD LINE MARKING.



WM1 RAILWAY LEVEL CROSSING AHEAD





SCALE: 1:25

WM5 YIELD CONTROL AHEAD — DIMENSIONS (mm)

Operating Speed km/h	Typical Applications	Distance from Yield line	a	b	c	d
30 - 40	City Centre	90m	450	250	100	1250
50 - 60	Urban	120m	850	450	150	2500
70 - 90	Rural	180m	1350	675	225	3600

DIMENSIONS (mm)

Typical Applications	a	b	c	d	e	f	g
Urban	4000	2500	1797	203	1135	115	200
Rural	7500	2500	3003	747	1042	208	400

REGULATORY/WARNING /GUIDANCE SYMBOLS

No.	DATE	REVISION	REVISED BY	DATE

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SCALE: AS SHOWN

REVISION: 0

CLIENT: MAKHADO LOCAL MUNICIPALITY

TYPE OF PLANNING: TENDER

TENDER No.: -

PROJECT TITLE: LUVHALANI TO DZANANWA ACCESS ROAD

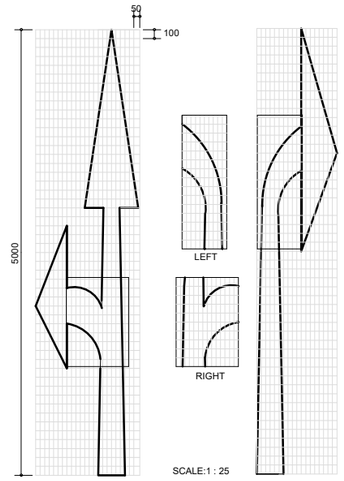
SHEET 1 OF 1

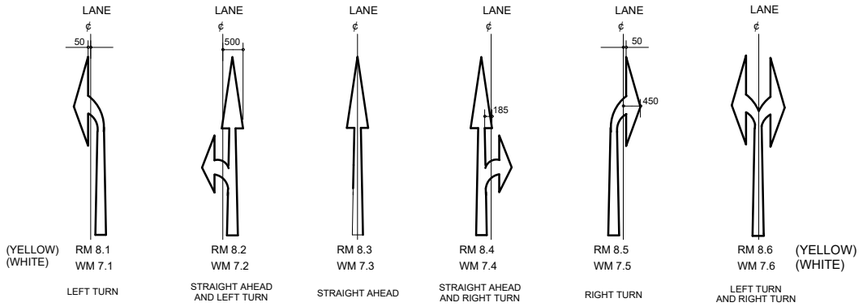
DRAWING TITLE: ROAD MARKINGS: REGULARITY, WARNING AND GUIDANCE SYMBOLS

DRAWING No.: TC/MLM/LDAR/SD/02

ORIGINAL ON A1

ROAD MARKING DETAILS





APPLICATIONS

SCALE: 1:50

DIMENSIONS (mm)

Operating Speed km/h	Typical Applications	a	b	c	d	e	f	g	h	i	j	k	l	m	n	o	p	q	r
30 -40	City Centre	2500	600	350	450	884	200	417	1000	1700	250	550	1250	700	380	1450	58	30	29
50 - 90	Urban/Rural Expressway	4000	960	560	720	1406	320	666	1600	2720	400	880	2000	1120	608	2320	93	48	46
100 - 120	Rural and Freeways	5000	1200	700	900	1767	400	833	2000	3400	500	1100	2500	1400	760	2900	116	60	58
ALL	Special Applications	7500	1800	1050	1350	2651	600	1250	3000	5100	750	1650	3750	2100	1140	4350	174	90	87

All Operating Speeds and Applications	N	O	P	Q	R	S	T
	210	180	350	300	500	400	600

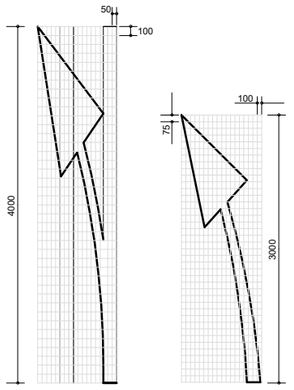
ARROW AREA / (m²)				
a	RM8.1/RM8.5 WM7.1/WM7.5	RM8.2/RM8.4 WM7.2/WM7.4	RM8.3 WM7.3	RM8.6 WM7.6
2500	0.67	0.89	0.66	1.03
4000	1.14	1.43	1.06	1.68
5000	1.45	1.78	1.32	2.12
7500	2.23	2.66	1.98	3.20

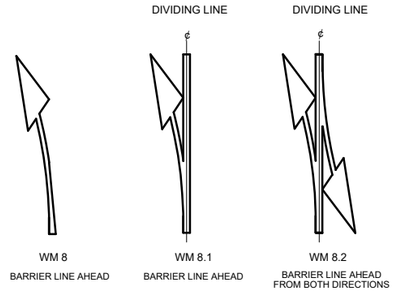
MANDATORY DIRECTION ARROWS

NOTES: (MANDATORY DIRECTION ARROWS)

1. THESE ARROWS MAY BE USED IN LANES TO INDICATE THAT DRIVERS SHALL PROCEED ONLY IN THE DIRECTION OR DIRECTIONS SHOWN. THEY SHOULD ONLY BE USED IF THE JUNCTION CONCERNED REQUIRED TURNING MOVEMENT CONTROL BY LANE.
2. THE FINAL ARROW NEAREST THE POINT OF TURN OR STRAIGHT ON MOVEMENT SHALL BE YELLOW. ANY ARROWS MARKED IN ADVANCE OF THIS POINT TO WARN DRIVERS OF THE MANDATORY MOVEMENT AHEAD SHALL BE WHITE.
3. A MANDATORY OR WARNING DIRECTION ARROW SHALL NOT BE USED IN ADVANCE OF A WIDENING OF THE ROADWAY TO A GREATER NUMBER OF LANES. THIS SHALL BE INDICATED IF NECESSARY, BY USING FURCATION ARROWS.

LEGEND:
R = RED
W = WHITE
Y = YELLOW





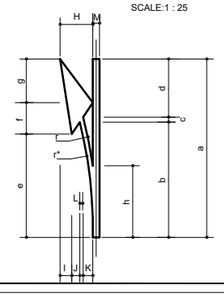
DIMENSIONS (mm)

Typical Applications	a	b	c	d	e	f	g	h	r	r*
Urban	3000	1941	83	976	1741	528	731	1206	5620	5820
										10000

All Applications	H	I	J	K	L	M
	735	260	181	219	75	100 or 150

APPLICATIONS

SCALE 1 : 50

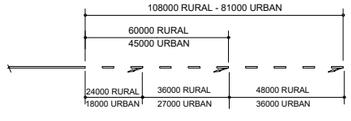


NOTES: (BARRIER LINE AHEAD ARROWS)

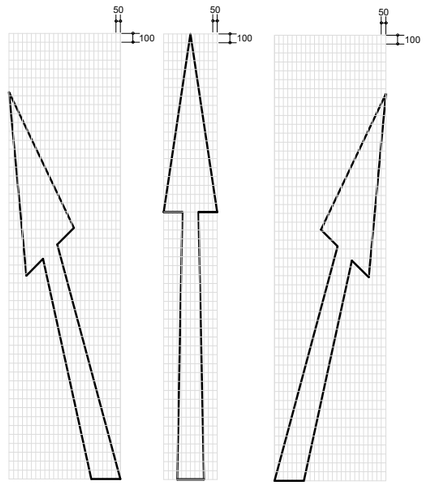
1. THESE ARROWS SHOULD BE USED IN MULTIPLES OF THREE (AT LEAST) IN ADVANCE OF THE START OF A SECTION OF NO OVERTAKING LINE , NO CROSSING LINE OR PAINTED ISLAND WHEN SUCH BARRIER LINES REPLACE A DIVIDING LINE.
2. THE ARROWS MAY BE MARKED ON TOP OF EXISTING DIVIDING LINE MARKINGS (IF THE EXISTING LINE IS A CENTRE LINE TO A 12m OR 7.2m MODULE THE POINT OF THE ARROW SHOULD BE LINED UP WITH THE FORWARD END OF THE LINE).
3. WHEN OVERTAKING SECTIONS ARE REGULARLY INTERSPERSED WITH NO OVERTAKING SECTIONS AND ARE SHORT IN LENGTH MARKING WM 8.2 MAY BE USED AT THE CENTRE OF THE OVERTAKING SECTION.

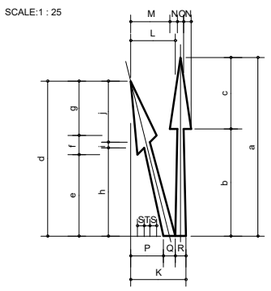
ARROW AREA / (m²)	
a	Per Arrow
3000	0.62
4000	0.82

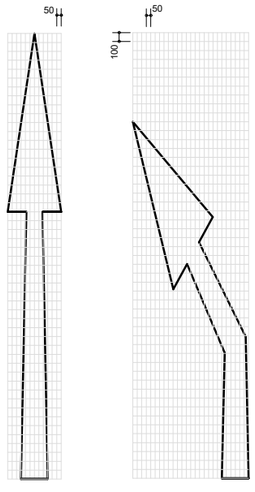
BARRIER LINE AHEAD ARROWS

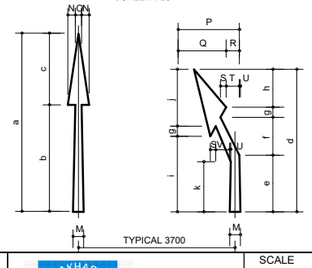


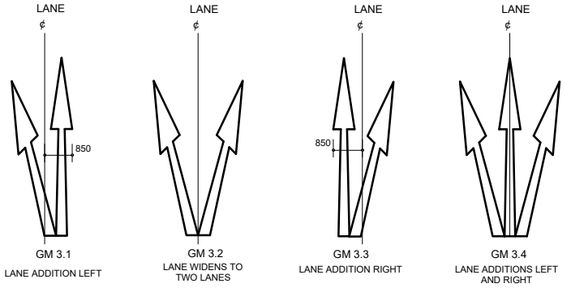
MARKING SPACING











APPLICATIONS

SCALE 1 : 50

DIMENSIONS (mm)

Operating Speed km/h	Typical Applications	a	b	c	d	e	f	g	h	i	j
30 -40	City Centre	2500	1500	1000	2170	1141	268	761	1235	81	855
50 - 60	Urban Roads	4000	2400	1600	3472	1826	429	1218	1976	129	1367
70 - 90	Urban Arterial Roads/ Rural Expressways	5000	3000	2000	4340	2282	536	1522	2470	161	1709
100 - 120	Rural Roads and Freeways	7500	4500	3000	6510	3423	804	2283	3705	242	2564

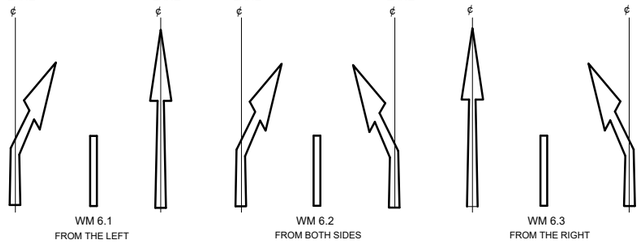
All Operating Speeds and Applications	K	L	M	N	O	P	Q	R	S	T
	1700	1250	1100	210	180	921	329	300	188	161

NOTES: (FURCATION ARROWS)

1. THESE ARROWS MAY BE USED TO INDICATE THAT THE NUMBER OF LANES IS INCREASING AHEAD. ONLY ONE SET OF ARROWS SHOULD BE USED UNLESS A LEFT AND RIGHT TURN LANE ARE ADDED TO A MULTI-LANE ROADWAY AT THE SAME POINT WHERE TWO SETS MAY BE USED.
2. DIRECTION ARROWS AHEAD SHALL NOT BE USED TO INDICATE THE ADDITION OF LANES AHEAD.
3. AS A GENERAL RULE BIFURACTION ARROWS SHOULD BE LOCATED TWO TO THREE MARKING MODULES BEFORE THE START OF THE LANE GENERATING TAPER OR CURVE.

ARROW AREA / (m²)			
a	GM3.1/GM3.3	GM3.2	GM3.4
2500	1.30	1.27	1.93
4000	2.07	2.04	3.09
5000	2.59	2.55	3.87
7500	3.89	3.82	5.80

FURCATION ARROWS



APPLICATIONS

SCALE 1 : 50

DIMENSIONS (mm)

Operating Speed km/h	Typical Applications	a	b	c	d	e	f	g	h	i	j	k
30 -40	City Centre	4000	2400	1600	3200	1271	847	227	855	1696	1277	1126
50 - 60	Urban Roads	5000	3000	2000	4000	1589	1058	284	1069	2120	1596	1407
70 - 90	Urban Arterial Roads/ Rural Expressways	7500	4500	3000	6000	2384	1587	426	1603	3180	2394	2111
	Rural Roads and Freeways	12000	7200	4								

All Operating Speeds and Applications	M	N	O	P	Q	R	S	T	U	V
	300	210	180	1300	898	402	155	370	32	390

NOTES: (LANE REDUCTION ARROWS)

1. IT IS RECOMMENDED THAT THREE SETS OF ARROWS BE USED ON HIGH SPEED ROADS, SPACED AT FOUR MODULE INTERVALS BEFORE THE END OF THE LANE LINE. SINGLE ARROWS SETS MAY BE USED ON LOWER SPEED ROADS.
2. THE BENT ARROWS MAY BE USED IN ADDITION TO THE THREE-ARROW SETS ALONG THE LENGTH OF THE LANE REDUCTION TAPER.

ARROW AREA / (m²)		
a	WM6.1/WM6.3	WM6.2
4000	2.08	2.06
5000	2.61	2.58
7500	3.92	3.88
12000	6.56	6.20

LANE REDUCTION ARROWS

No.	DATE	REVISION	REVISED BY	DATE

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REVISION: 0

CLIENT: MAKHADO LOCAL MUNICIPALITY

TYPE OF PLANNING: TENDER

PROJECT TITLE: LUVHALANI TO DZANANWA ACCESS ROAD

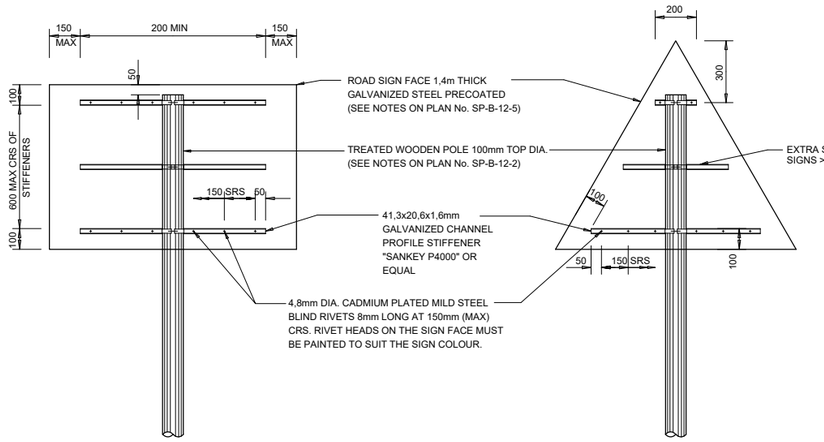
DRAWING TITLE: ROAD MARKINGS: MANDATORY DIRECTION ARROWS AND DIRECTION ARROWS AHEAD

TENDER No.: -

SHEET 1 OF 1

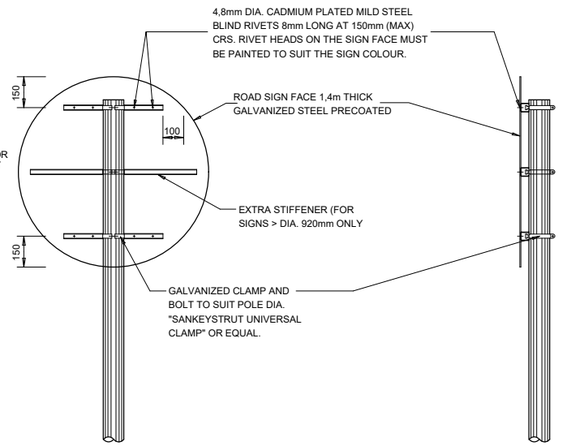
DRAWING No.: TC/MLM/LDAR/SD/03

ORIGINAL ON A1



REAR ELEVATION

REAR ELEVATION



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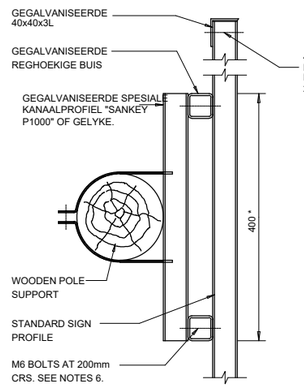
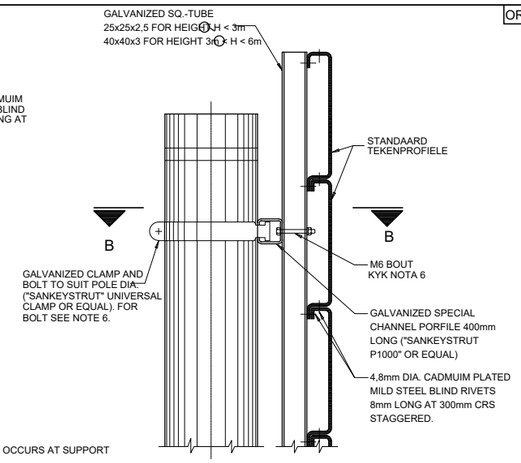


TYPICAL SIDE ELEVATION

SECTION
1:5

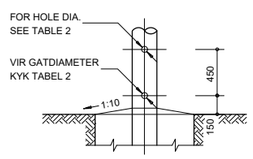


* 600 IF JOINT OCCURS AT SUPPORT

ELEVATION
1:5

TABLE 1

WIDTH OF SIGN	No. OF SUPPORTS	DIMENSIONS	
W	N	B	C
1,2m	1	W/2	-
1,2m - 4,0m	2	W/5	3W/5
4,0m - 7,2m	3	W/2N	W/N
7,2m - 9,6m	4		
9,6 - 12,0m	5		

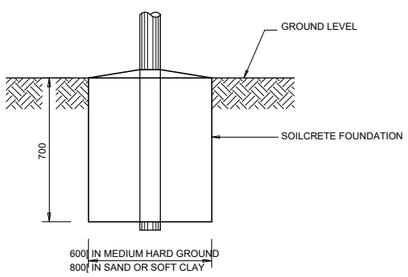


DETAIL "A"

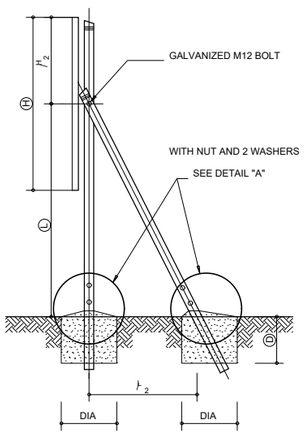
TABEL 2

* AT GROUND LEVEL

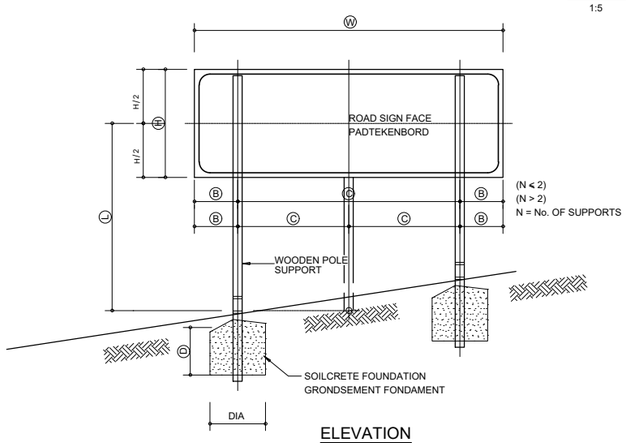
POLE DIA * (mm)	HOLE DIA (mm)
⩽ 140	NONE
141 - 170	40
171 - 200	50
201 - 225	65



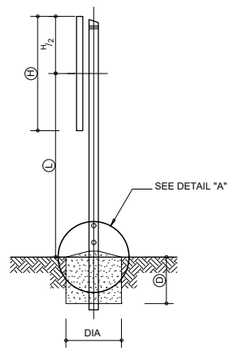
TYPICAL FOUNDATION



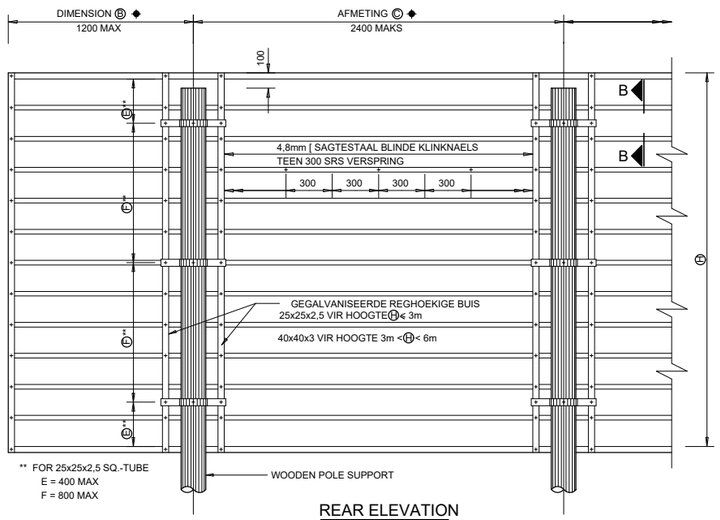
TYPICAL SECTION
BRACED SUPPORT



ELEVATION



TYPICAL SECTION
FREE STANDING SUPPORT



** FOR 25x25x2,5 SQ.-TUBE
E = 400 MAX
F = 800 MAX

REAR ELEVATION
1:20

NOTES

THE ROAD SIGN FACES SHALL BE MANUFACTURED AND ERECTED IN ACCORDANCE WITH THE REV
TIONS AS WELL AS THE FOLLOWING REQUIREMENTS:-

1. SIGN FACES SHALL BE FOR TYPE "A" OR "B" EXPOSURE AS INDICATED ON THE ROAD SI
   TYPE "A": ALL CASES OTHER THAN TYPE "B".
   TYPE "B": SIGN FACES FOR USE IN MARINE OR CHEMICALLY POLLUTED CORROSIVE E
2. THE COATING SYSTEMS FOR SIGN FACES TYPE "A" AND "B" ARE SPECIFIED ON PLAN No
3. THE STANDARD SIGN PROFILE SHALL BE MADE IN ACCORDANCE WITH THE DETAILS SHOWN
4. A SIGN FACE WICH EXCEEDS 6m IN LENGTH MAY BE MANUFACTURED IN TWO SECTIONS. T
   SHOWN ON PLAN No. SP-B-12-5.
5. STRUCTURAL STEEL SECTIONS SHALL BE OF MILD STEEL CONFORMING TO THE REQUIREME
   RECTANGULAR HOLLOW SECTIONS AND SPECIAL CHANNEL PROFILES MAY BE COLD FORMED
6. BOLTS, WASHERS AND NUTS SHALL BE AS FOLLOWS:-
   TYPE "A" SIGN FACES: GALVANIZED STEEL BOLTS COMPLYING WITH THE REQUIREMENT
   TYPE "B" SIGN FACES: STAILESS STEEL BOLTS GRADE 304 MANUFACTURED TO SABS 1
   NUTS FOR BOTH TYPE "A" AND "B" SIGN FACES SHALL BE SELFLOCKING "NYLOC" OR EQ
7. BLIND RIVETS SHALL BE 4,8mm DIA CADMIUM PLATED MIL STEEL.
8. ALL STEEL SECTIONS SHALL BE HOT DIP GALVANIZED IN ACCORDANCE WITH CLAUSE 710
   TURE.
9. REFERENCE MUST BE MADE TO THE RELEVANT ROAD SIGN DETAIL DRAWINGS FOR DETAILS
10. MEASUREMENT AND PAYMENT OF THE SIGN FACES SHALL BE IN ACCORDANCE WITH CLAUSE
    OVER" RATE SHALL BE APPLICABLE FOR TYPE "B" SIGN FACES.

GN DETAIL DRAWINGS OR AS DIRECTED BY THE ENGINEER:-
ANT CLAUSES OF SECTION 5600 OF STANDARD SPECIFICA-
NVIRONMENTS.
. SP-B-12-5.
ON PLAN No. SP-B-12-5.
HE JOINT SHALL BE MADE IN ACCORDANCE WITH DETAILS

NTS OF SECTION 7100 OF THE STANDARD SPECIFICATIONS.
OF COMMERCIAL QUALITY MILD STEEL.

S OF CLAUSE 5602(b) OF THE STANDARD SPECIFICATIONS.
36.
UAL APPROVED.

5(l) OF THE STANDARD SPECIFICATIONS AFTER MANUFAC-

OF THE SYMBOLS AND LEGEND FOR EACH INDIVIDUAL SIGN.
5609 OF THE STANDARD SPECIFICATIONS. AN "EXTRA

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CLIENT: MAKHADO LOCAL MUNICIPALITY

TYPE OF PLANNING: TENDER

TENDER No.: -

PROJECT TITLE

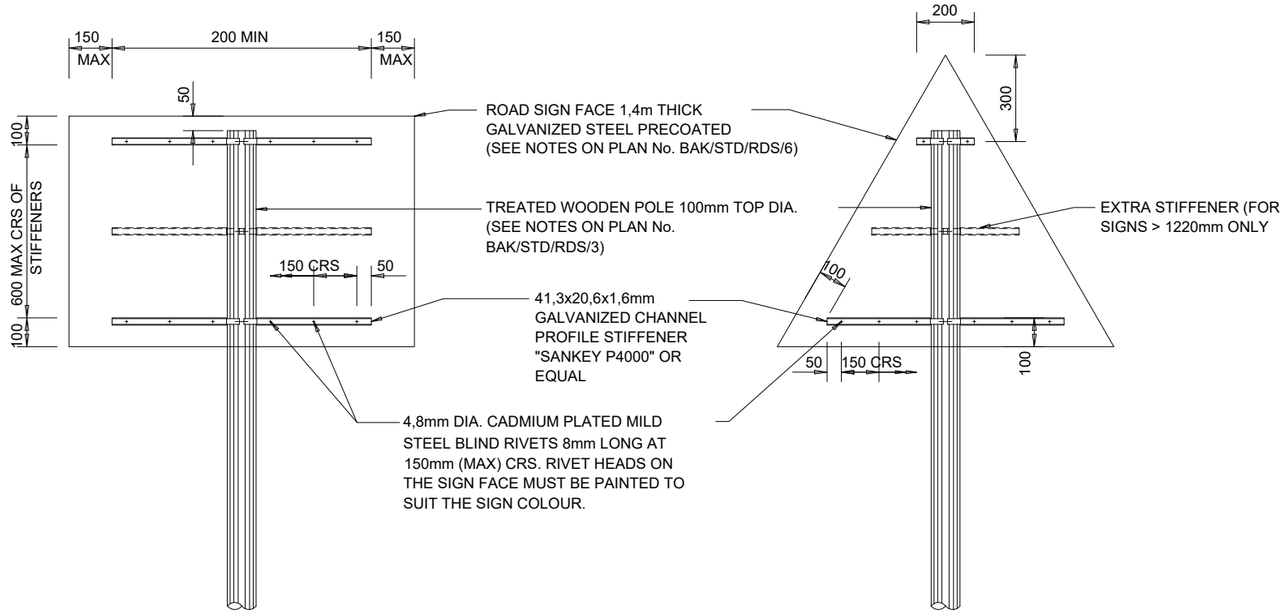
LUVHALANI TO DZANANWA ACCESS ROAD

SHEET 1 OF 1

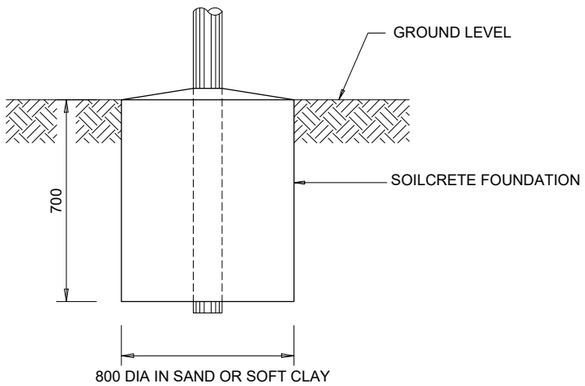
DRAWING TITLE: ROAD TRAFFIC SIGNS SUPPORTS, FOUNDATIONS AND DETAIL OF GROUND MOUNTED ROAD SIGN FACE

DRAWING No.: TC/MLM/LDAR/SD/04

ORIGINAL ON A1



REAR ELEVATION | REAR ELEVATION | REAR ELEVATION | TYPICAL SIDE ELEVATION



TYPICAL FOUNDATION

GENERAL NOTES

REFER ALSO TO SECTION 5600 OF THE STANDARD SPECIFICATIONS

SIZE AND SPACING OF ROAD SIGN SUPPORTS AND FOUNDATIONS

SIZE AND SPACING OF SUPPORTS AND FOUNDATIONS SHALL BE DETERMINED FROM INFORMATION SHOWN ON THIS PLAN AND ON THE DESIGN CHARTS SHOWN ON

POSITION

ROAD SIGNS SHALL BE ERECTED IN THE POSITIONS SHOWN ON THE DRAWINGS OR INDICATED BY THE PROJECT MANAGER, STANDARD CLEARANCES ARE SHOWN

EXCAVATION

EXCAVATION FOR FOUNDATIONS MUST BE MADE TO THE NEAT DIMENSIONS SPECIFIED. WHERE THE FOUNDATION DEPTH IS 1,5m OR GREATER, EXCAVATIONS MUST BE SUITABLE SHORED FOR THE PROTECTION OF WORKMEN.

TIMBER POLE SUPPORTS

TIMBER SUPPORTS SHALL BE ROUND POLES COMPLYING WITH REQUIREMENTS OF SABS 457.

LENGTH:

WHEREVER POSSIBLE LENGTHS CORRESPONDING TO AVAILABLE NOMINAL LENGTHS SHALL BE USED

CUTTING:

WHERE CUTTING TO LENGTH AFTER PRESERVATIVE TREATMENT IS UNAVOIDABLE, ONLY ONE CUT PER POLE SHALL BE ALLOWED, THE CUT SHALL BE NEAR THE TOP END OF THE POLE AND THE EXPOSED SURFACE SHALL BE TREATED WITH TWO COATS OF THE APPLICABLE PRESERVATIVE AND THE POLE BANDED IN ACCORDANVE WITH SABS 457.

PRESERVATIVE TREATMENT:

THE POLES SHALL BE TREATED WITH A MIXTURE OF COPPER-CHROMIUM-ARSENIC COMPOUNDS COMPLYING WITH THE REQUIREMENTS OF TYPE II OF SABS 673 (HICKSONS "TANALITH C" OR EQUAL).

ERECTION:

POLES SHALL BE SELECTED FOR STRAIGHTNESS AND ERECTED AT AN ORIENTATION WICH WILL PERMIT THE SIGN FACE TO BE FASTENED IN A VERTICAL PLANE WITHOUT UNDUE DISTORTION.

BREAKAWAY HOLES:

ALL HOLES HAVING A DIAMETER > 140mm SHALL BE DRILLED WITH TWO HOLES PERPENDICULAR TO THE DIRECTION OF TRAFFIC AS SHOWN IN DETAIL "A". THE EXPOSED TIMBER SURFACES SHALL BE TREATED WITH TWO COATS OF THE APPLICABLE PRESERVATIVE

SOILCRETE FONDATIONS

SOILCRETE SHALL CONSIST OF 12 PARTS APPROVED GRANULAR SOIL OR GRAVEL MIXED WITH 1 PART PORTLAND CEMENT AND ONLY SUFFICIENT WATER TO GIVE IT A CONSISTENCY THAT WILL PERMIT THE SOILCRETE TO BE VIBRATED OR TAMPED TO EXCLUDE VOIDS. TIMBER SUPPORTS POLES SHALL BE SET VERTICAL AND FIRMLY PROPPED IN POSITION PRIOR TO PLACING OF THE SOILCRETE. PROPS SHALL REMAIN IN POSITION FOR A MINIMUM OF 12 HOURS AFTER PLACING THE SOILCRETE. THE SURFACE OF THE SOILCRETE SHALL BE NEATLY FINISHED WITH SUFFICIENT FALL TO ENSURE PROPER DRAINAGE. CONCRETE SHALL NOT BE SUBSTITUTED FOR SOILCRETE.

BOLTS, NUTS AND WASHERS

EXCEPT WHERE OTHERWISE SPECIFIED STEEL BOLTS AND NUTS SHALL CONFORM TO SABS 135 OR SABS 1143 AND ALL COMPONENTS SHALL HAVE A HOT-DIP (GALVANIZED) ZINC COATING THAT COMPLIES WITH THE REQUIREMENTS OF SABS 763 FOR COATINGS ON TYPE C1 ARTICLES

ROAD SIGN FACES

ROAD SIGN FACES SHALL BE MANUFACTURED STRICTLY IN ACCORDANCE WITH THE DETAILS SHOWN. TRANSPORTATION AND ERECTION OF SIGN FACES SHALL BE CARRIED OUT IN SUCH A WAY THAT DAMAGE TO THE SIGN IS PREVENTED. THE LOWER EDGE OF SIGN FACES SHALL BE HORIZONTAL AFTER COMPLETION OF ERECTION. THE MONTH AND YEAR OF ERECTION OF THE ROAD SIGN SHALL BE INDICATED BY MEANS OF WHITE PAINT ON THE BACK OF THE SIGN IN THE BOTTOM

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REVISION: 0

CLIENT: MAKHADO LOCAL MUNICIPALITY

TYPE OF PLANNING: TENDER

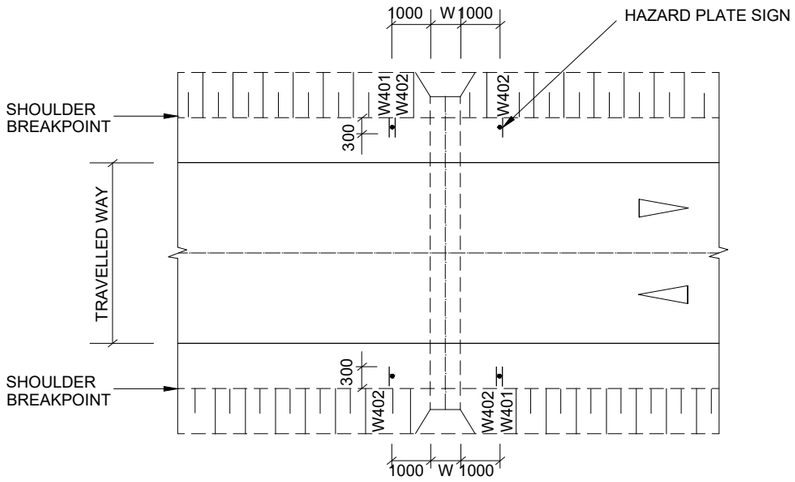
PROJECT TITLE: LUVHALANI TO DZANANWA ACCESS ROAD

DRAWING TITLE: GENERAL ROAD SIGN DETAILS

TENDER No.: -

SHEET 1 OF 1

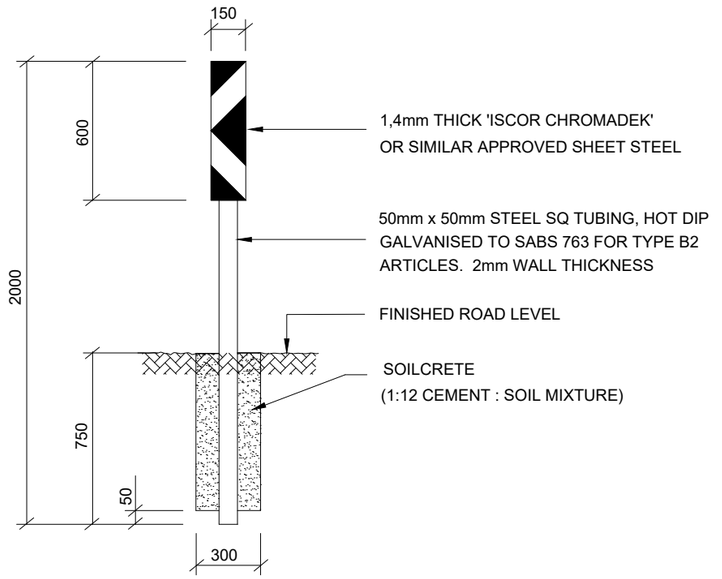
DRAWING No.: TC/MLM/LDAR/SD/05



POSITION OF HAZARD PLATES

AT CULVERTS

N.T.S.



TYPICAL DETAIL OF HAZARD PLATE

(W402 SHOWN)

SCALE 1:20

NOTES:

A. HAZARD PLATES

1. HAZARD PLATE SHALL BE 300mm FROM THE SHOULDER BREAKPOINT.
2. FOR WIDE CULVERT (W> 2m WIDTH) SINGLE-SIDED HAZARD PLATES SHALL SHALL BE PLACED ON EACH SIDE OF CULVERT.
3. FOR NARROW CULVERTS (W<2m) PLACE ONE DOUBLE-SIDED HAZARD PLATE PER DIRECTION, ON UPSTREAM SIDE OF TRAFFIC FLOW.
4. W401 AND W402 SIGNS SHALL COMPLY WITH THE LATEST EDITION OF THE SA ROAD TRAFFIC SIGNS MANUAL.

B. EMERGENCY ACCESS

1. TO BE PLACED AT SAFE LOCATIONS WHERE THERE IS NO INTERFERENCE WITH DRAINAGE.
2. ENSURE 300m SIGHT DISTANCE TO BOTH SIDES.

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CLIENT: MAKHADO LOCAL MUNICIPALITY

TYPE OF PLANNING: TENDER

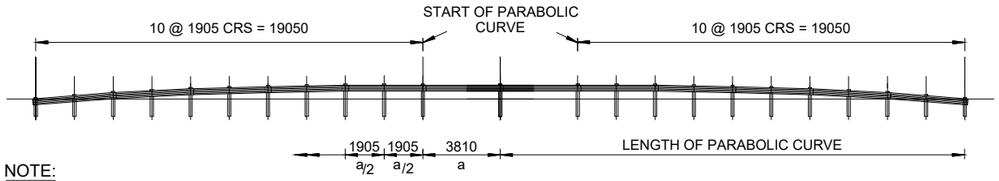
PROJECT TITLE: LUVHALANI TO DZANANWA ACCESS ROAD

DRAWING TITLE: TYPICAL DETAILS OF HAZARD PLATE AT CULVERT AND EMERGENCY ACCESS POINT

TENDER No.: -

SHEET 1 OF 1

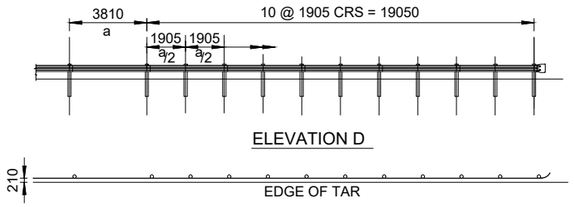
DRAWING No.: TC/MLM/LDAR/SD/06



NOTE:

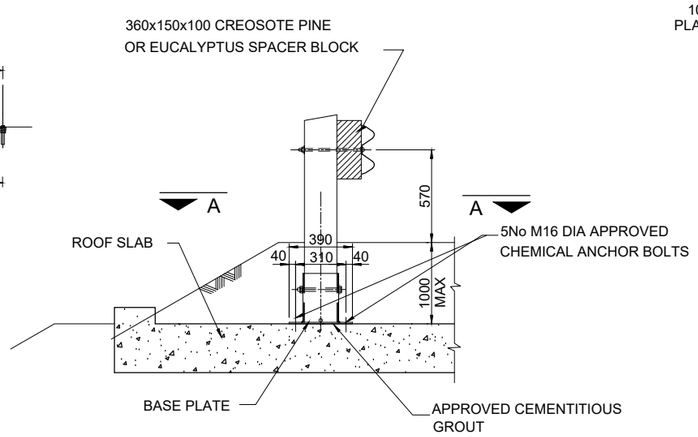
FOR SETTING OUT OF PARABOLIC CURVE REFER TO PLANS BAK/STD/GRD/03-04

TYPICAL PLACING OF GUARDRAILS - MEDIAN



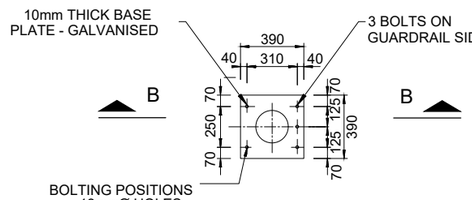
TRAILING END ON DOUBLE CARRIAGEWAY ROADS - OUTER EDGES

1:200



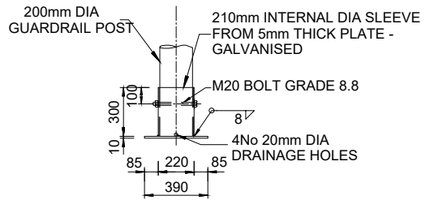
GUARDRAIL AT CULVERT (FILL <1000mm)

1:25



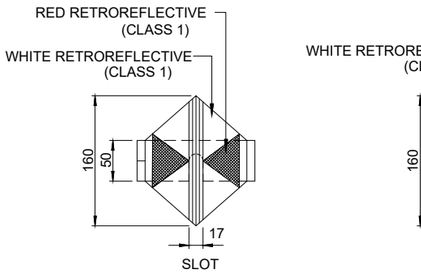
PLAN A

1:25

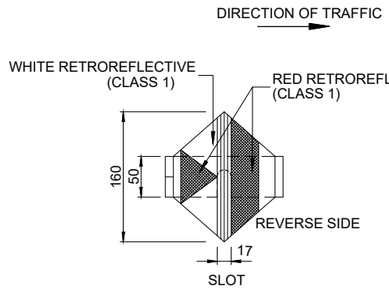


SECTION B

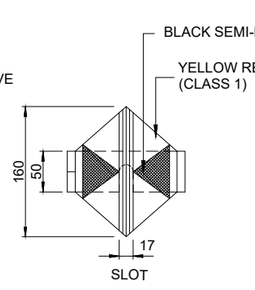
1:25



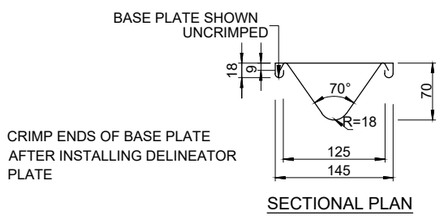
FRONT ELEVATION:
TYPE D1(A)



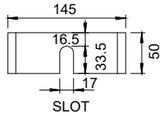
FRONT ELEVATION:
TYPE D1(B)



FRONT ELEVATION:
TYPE TD1



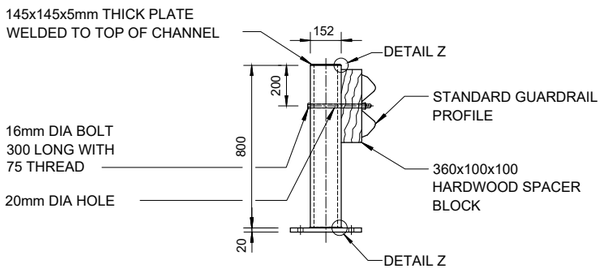
SECTIONAL PLAN



DETAIL OF BASE PLATE

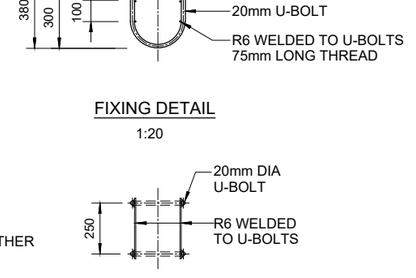
DETAIL OF GUARDRAIL DELINEATORS (REFLECTIVE PLATE)

1:5



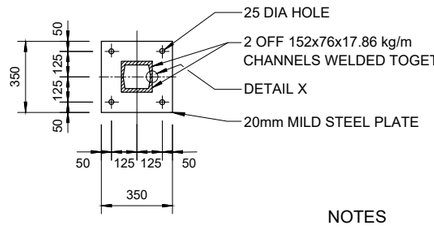
ELEVATION OF GUARDRAIL SECTION

1:20



FIXING DETAIL

1:20

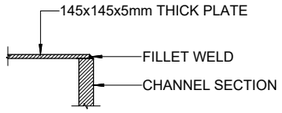


DETAIL OF BASEPLATE

1:20

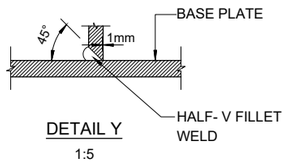
U-BOLT GROUP

1:20



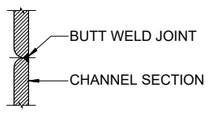
DETAIL Z

1:5



DETAIL Y

1:5



DETAIL X

1:5

NOTES

1. ALL MILD STEEL ITEMS TO BS 4360 GRADE 43A.
2. AFTER MANUFACTURING THE STANCHION TO BE HOT-DIP GALVANISED IN ACCORDANCE WITH THE SABS 763 TO THE FOLLOWING ZINC COAT THICKNESSES:
   a) STANCHION - 105um (TYPE A ARTICLES - HEAVY DUTY)
   B) U-BOLTS, WASHERS & NUTS - 5um (TYPE,C ARTICLES GENERAL APPLICATIONS)
3. SCREW THREADS OF BOLTS & NUTS TO BE CLEANED AFTER GALVANISING.
4. ALL WELDING TO BE IN ACCORDANCE WITH THE REQUIREMENTS OF BS 5135.

No.	DATE	REVISION	REVISED BY	DATE

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DESIGN CHECKED P.M.	.....	.....
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REVISION: 0

CLIENT: MAKHADO LOCAL MUNICIPALITY

TYPE OF PLANNING: TENDER

PROJECT TITLE: LUVHALANI TO DZANANWA ACCESS ROAD

DRAWING TITLE: GENERAL GUARDRAIL DETAILS

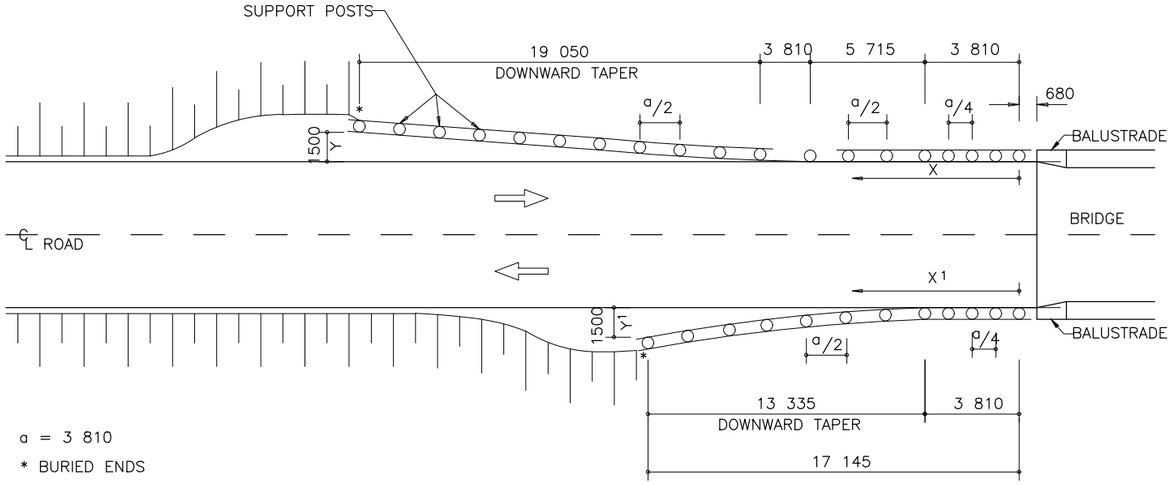
TENDER No.: -

SHEET 1 OF 1

DRAWING No.: TC/MLM/LDAR/SD/07

ORIGINAL ON A1

NORMAL FILL: 0m – 3m



SETTING OUT POSITIONS OF SHOULDER SUPPORT POSTS

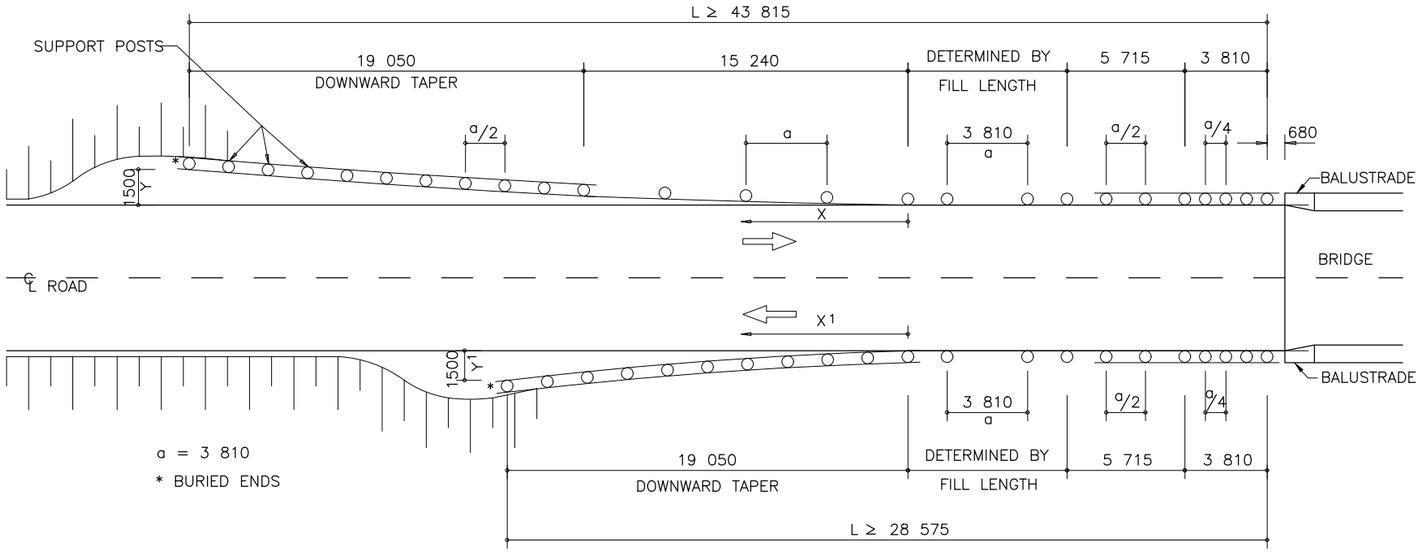
APPROACH SIDE

X	Y
0	0
953	1
1 905	5
2 858	12
3 810	21
5 715	47
7 620	83
9 525	130
13 335	254
15 240	332
17 145	420
19 050	519
20 955	628
22 860	747
24 765	877
26 670	1 017
28 575	1 168
30 480	1 329
32 385	1 500

DEPARTING SIDE

X1	Y1
0	0
935	4
1 905	19
2 858	42
3 810	74
5 715	167
7 620	296
9 525	463
11 430	667
13 335	907
15 240	1 185
17 145	1 500

HIGH FILL: > 3m



SETTING OUT POSITIONS OF SHOULDER SUPPORT POSTS

APPROACH SIDE

X	Y
0	0
3 810	19
7 620	74
11 430	167
15 240	296
17 145	375
19 050	463
20 955	560
22 860	667
24 765	782
26 670	907
28 575	1 042
30 480	1 185
32 385	1 338
34 290	1 500

DEPARTING SIDE

X1	Y1
0	0
1 905	15
3 810	60
5 715	135
7 620	240
9 525	375
11 430	540
13 335	735
15 240	960
17 145	1 215
19 050	1 500

No.	DATE	REVISION	REVISED BY	DATE

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REVISION: 0

CLIENT: MAKHADO LOCAL MUNICIPALITY

TYPE OF PLANNING: TENDER

PROJECT TITLE

LUVHALANI TO DZANANWA ACCESS ROAD

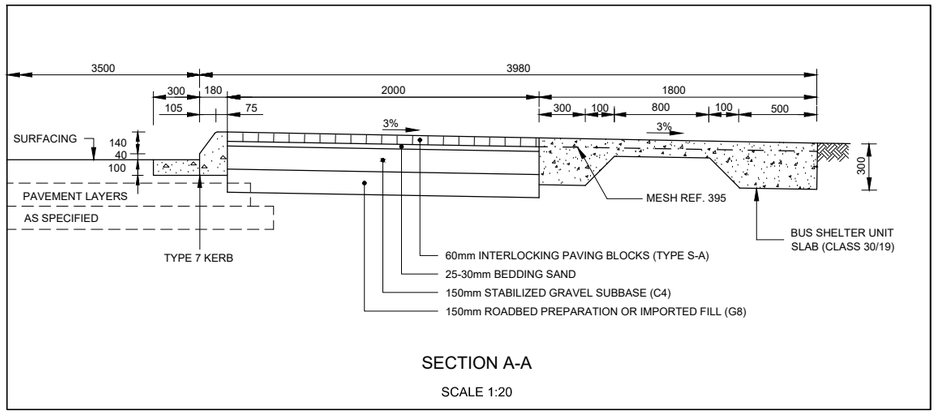
DRAWING TITLE: SINGLE CARRIAGEWAY PLACING OF GUARDRAILS DETAIL AT BRIDGES

TENDER No. -

SHEET 1 OF 1

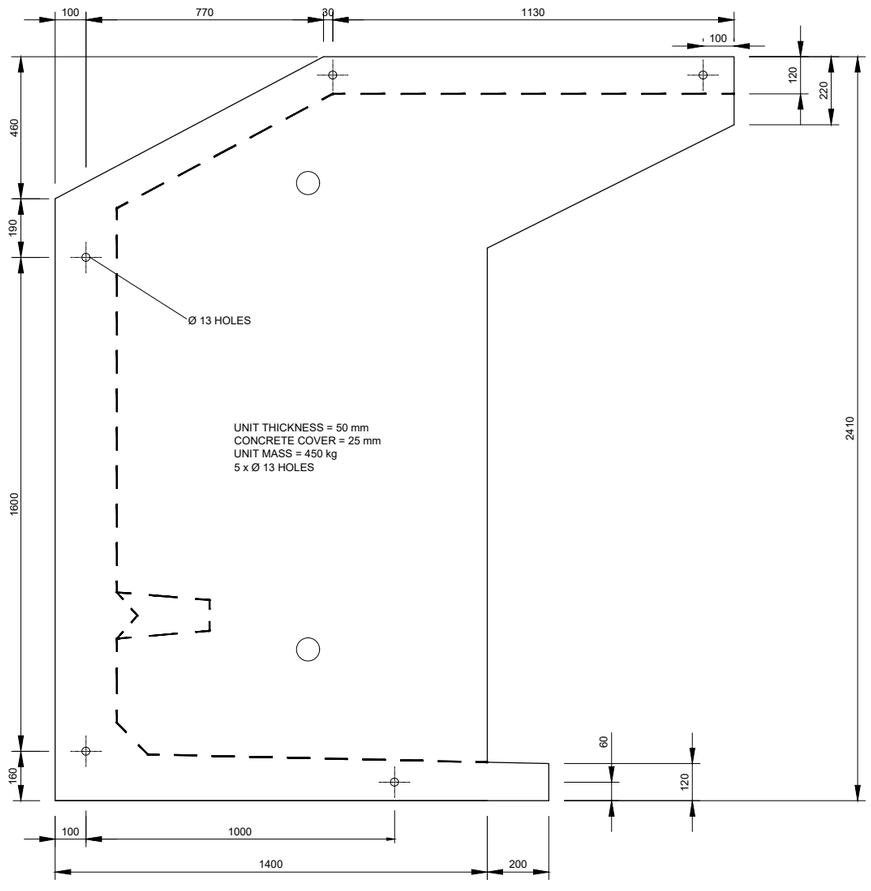
DRAWING No. TC/MLM/LDAR/SD/08

ORIGINAL ON A1



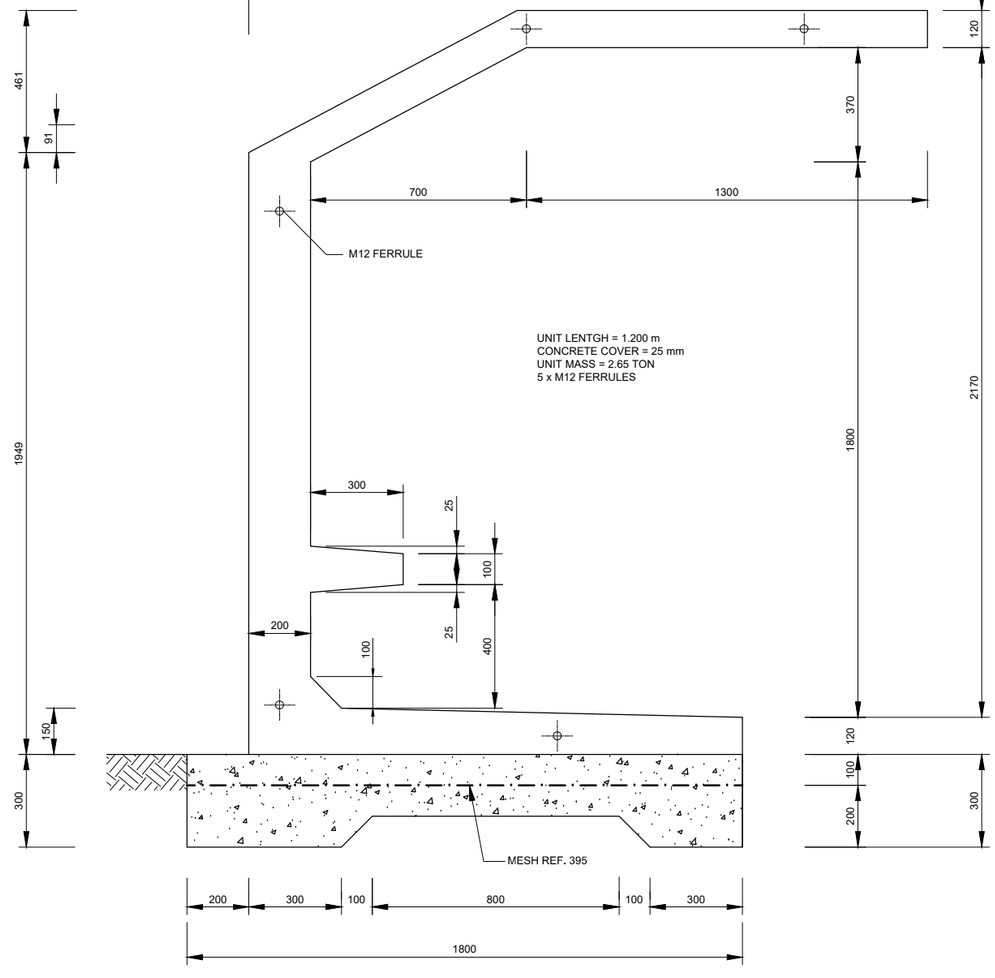
SECTION A-A

SCALE 1:20



DETAIL OF BUS SHELTER SIDE PANEL

SCALE 1:100



DETAIL OF BUS SHELTER UNIT

SCALE 1:100

No.	DATE	REVISION	REVISED BY	DATE

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TYPE OF PLANNING: TENDER

PROJECT TITLE

LUVHALANI TO DZANANWA ACCESS ROAD

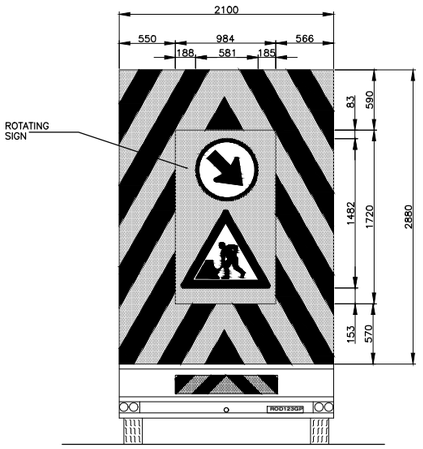
DRAWING TITLE: TYPICAL DETAIL: BUS/TAXI STOP LAYOUT WITH BUS SHELTER DETAILS

TENDER No. -

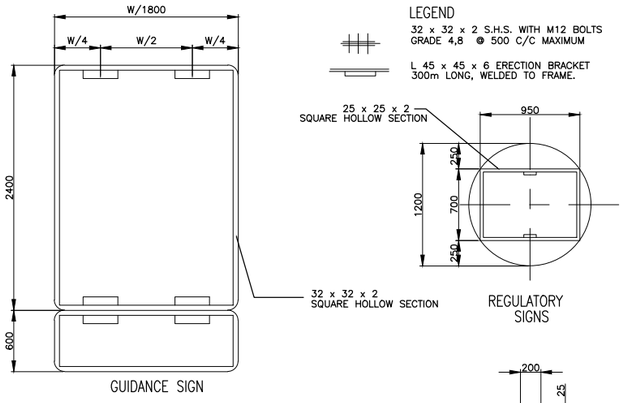
SHEET 1 OF 1

DRAWING No. TC/MLM/LDAR/SD/09

ORIGINAL ON A1



SAFETY VEHICLE



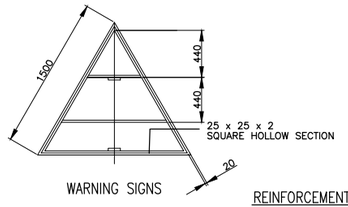
GUIDANCE SIGN

LEGEND

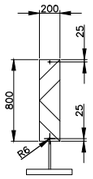
32 x 32 x 2 S.H.S. WITH M12 BOLTS GRADE 4,8 @ 500 C/C MAXIMUM

L 45 x 45 x 6 ERECTION BRACKET 300m LONG, WELDED TO FRAME.

REGULATORY SIGNS

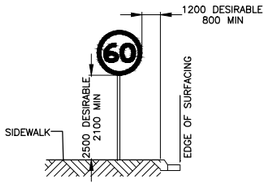


WARNING SIGNS

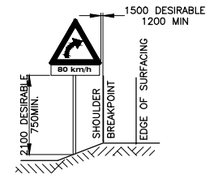


TW401/402

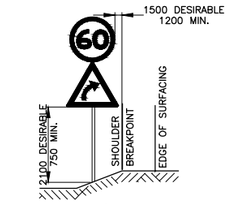
REINFORCEMENT FOR GUIDANCE, WARNING AND REGULATORY ROAD SIGNS



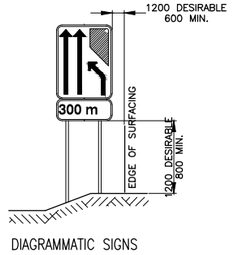
REGULATORY SIGNS



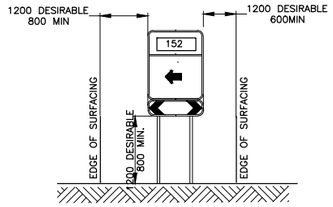
WARNING SIGNS



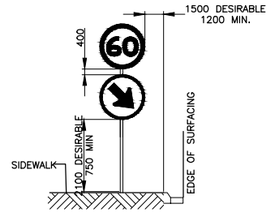
REGULATORY / WARNING SIGNS



DIAGRAMMATIC SIGNS

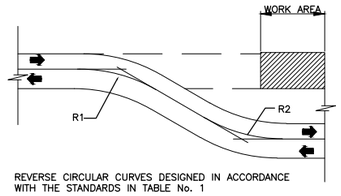


GORE SIGN



2 x REGULATORY SIGNS

TYPICAL SIGN MOUNTING DETAILS

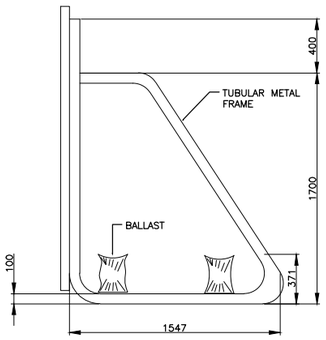


REVERSE CIRCULAR CURVES DESIGNED IN ACCORDANCE WITH THE STANDARDS IN TABLE No. 1

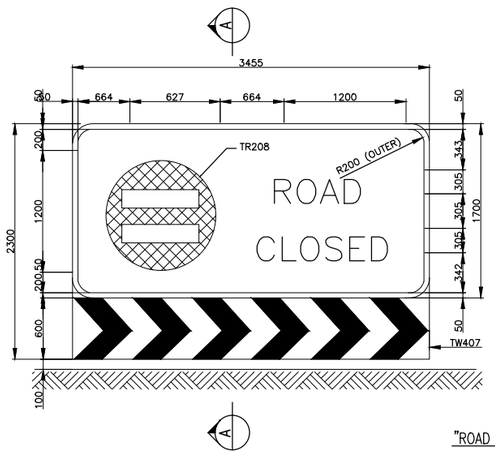
TABLE No.1 MINIMUM RADII OF HORIZONTAL CURVES		
ANTICIPATED SPEED *1 (km/h)	R1 (m) e = 0.10 m/m)	R2 (m) (e = 0.1m/m)
50	60	124
60	110	166
70	160	264
80	210	360
90	270	477
100	350	610

1. ANTICIPATED PERCENTILE SPEED
2. FOR PRACTICAL PURPOSES A SPEED OF 50km/h IS RECOMMENDED

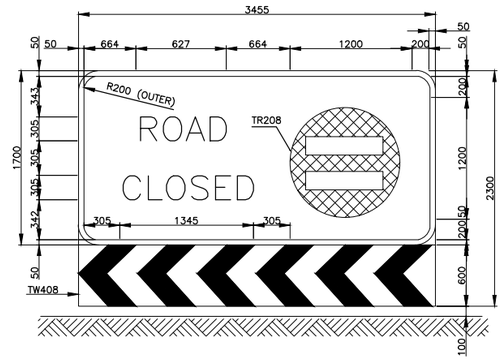
(1) RADII OF REVERSE CURVES

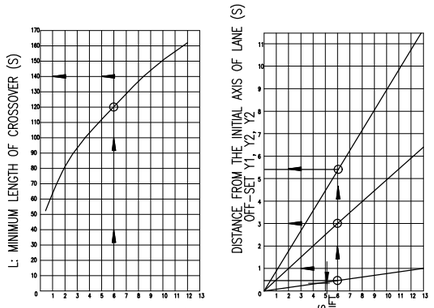


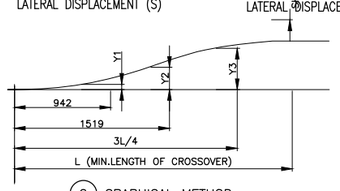
SECTION A-A



"ROAD CLOSED" BARRICADE



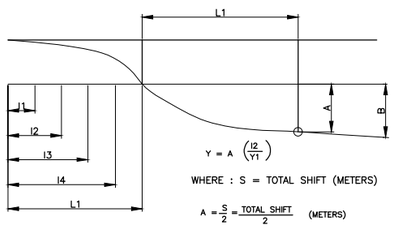




(2) GRAPHICAL METHOD (BASED ON 50 km/h)

EXAMPLE:
LATERAL DISPLACEMENT (SHIFT) (S) = 6m

FROM THE ABOVE GRAPHS:
MIN. LENGTH OF CROSSOVER (L) = 120m
OFF-SET DISTANCE : Y1 = 0.5m
Y2 = 3.0m
Y3 = 5.5m



$Y = A\left(\frac{l2}{Y1}\right)$

WHERE : S = TOTAL SHIFT (METERS)

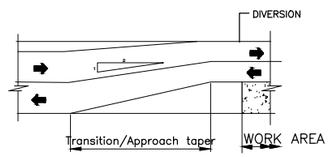
$A = \frac{S}{2} = \frac{\text{TOTAL SHIFT}}{2}$ (METERS)

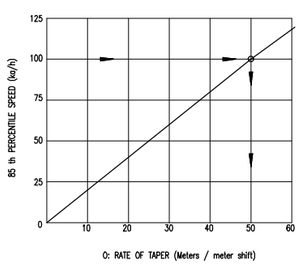
L1 = TOTAL LENGTH OF CROSSOVER DIVIDED BY TWO (METERS)

Y = OFF-SET VALUE (METERS) WITH CORRESPONDING VALUE (METERS)

(3) PARABOLIC METHOD

MINIMUM STANDARDS FOR DIVERSIONS





RATE OF TAPER AT TRANSITIONS

MINIMUM ROADWAY WIDTH FOR DIVERSIONS

THE MINIMUM ROADWAY WIDTH FOR DIVERSIONS (EXCLUDING GRAVEL SHOULDERS) IN RURAL AREAS IS AS FOLLOWS:

100 km/h = 3.6m – 3.1m
80km/h = 3.1m AND LOWER (2.0m ABSOLUTE MIN)

No.	DATE	REVISION	REVISED BY	DATE

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REVISION: 0

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TYPE OF PLANNING: TENDER

PROJECT TITLE: LUVHALANI TO DZANANWA ACCESS ROAD

DRAWING TITLE: ROAD CLOSURE SIGN DETAILS, STANDARDS FOR DIVERSIONS, SIGN MOUNTING AND REINFORCEMENT DETAILS FOR ROAD SIGNS

TENDER No.: -

SHEET 1 OF 1

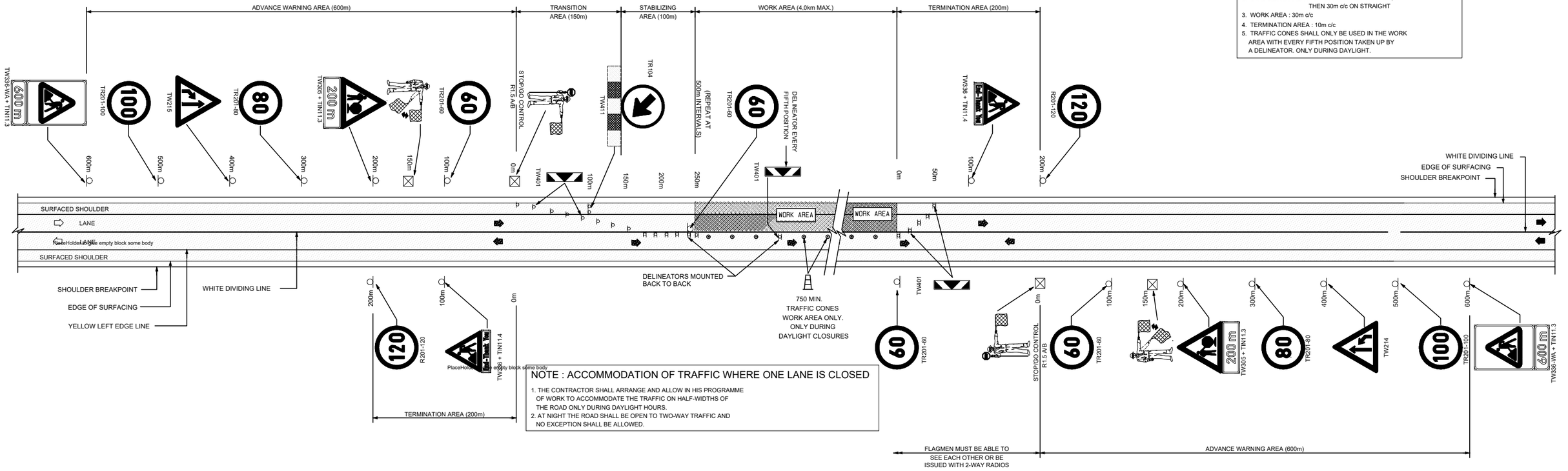
DRAWING No.: TC/MLM/LDAR/SD/10

ORIGINAL ON A1

TEMPORARY ROAD TRAFFIC MANAGEMENT FOR 2-LANE SINGLE CARRIAGEWAY ROADS
STOP / GO OPERATION & SHOULDER CONSTRUCTION : DAYLIGHT AND NIGHT-TIME CLOSURES

NOTE : SPACING OF DELINEATORS / CONES

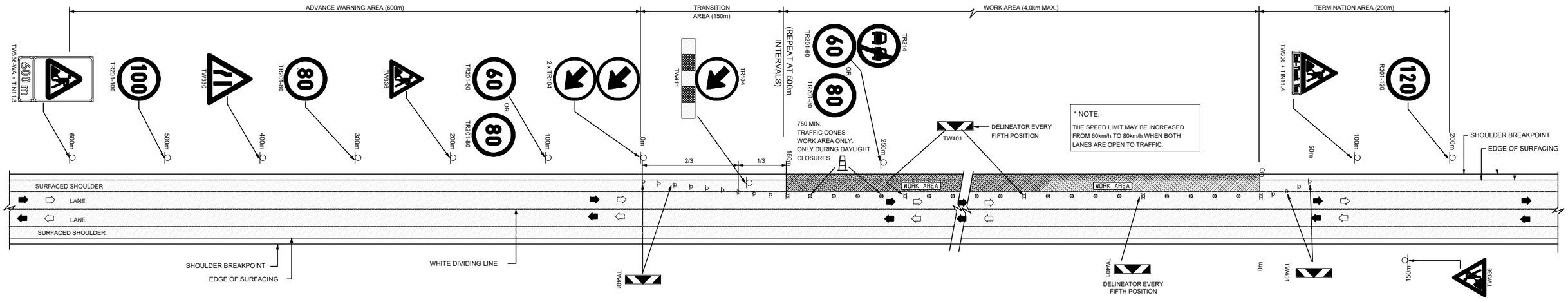
1. TRANSITION AREA : 10m c/c
2. STABILIZING AREA : 10m c/c FOR THE FIRST 50m, THEN 30m c/c ON STRAIGHT
3. WORK AREA : 30m c/c
4. TERMINATION AREA : 10m c/c
5. TRAFFIC CONES SHALL ONLY BE USED IN THE WORK AREA WITH EVERY FIFTH POSITION TAKEN UP BY A DELINEATOR. ONLY DURING DAYLIGHT.



NOTE : ACCOMMODATION OF TRAFFIC WHERE ONE LANE IS CLOSED

1. THE CONTRACTOR SHALL ARRANGE AND ALLOW IN HIS PROGRAMME OF WORK TO ACCOMMODATE THE TRAFFIC ON HALF-WIDTHS OF THE ROAD ONLY DURING DAYLIGHT HOURS.
2. AT NIGHT THE ROAD SHALL BE OPEN TO TWO-WAY TRAFFIC AND NO EXCEPTION SHALL BE ALLOWED.

SIGN SEQUENCE FOR STOP / GO OPERATION FOR LANE AND SHOULDER CLOSURE ON SINGLE CARRIAGEWAY ROADS



MAXIMUM SPEED LIMITS

THE MAXIMUM SPEED LIMIT SHALL BE CONSISTENT WITH THE PREVAILING CONDITIONS OF THE DEVIATION IN TERMS OF ROAD SAFETY REQUIREMENTS

SIGN SEQUENCE FOR WORK ON SHOULDERS ON SINGLE CARRIAGEWAY ROADS

No.	DATE	REVISION	REVISED BY	DATE

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DRAWN P.M.	DATE:	DATE: .....
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SCALE: AS SHOWN

REVISION: 0

CLIENT: MAKHADO LOCAL MUNICIPALITY

TYPE OF PLANNING: TENDER

PROJECT TITLE: LUVHALANI TO DZANANWA ACCESS ROAD

DRAWING TITLE: TEMPORARY ROAD TRAFFIC MANAGEMENT FOR 2-LANE SINGLE CARRIAGEWAY ROADS STOP / GO OPERATION AND SHOULDER CONSTRUCTION

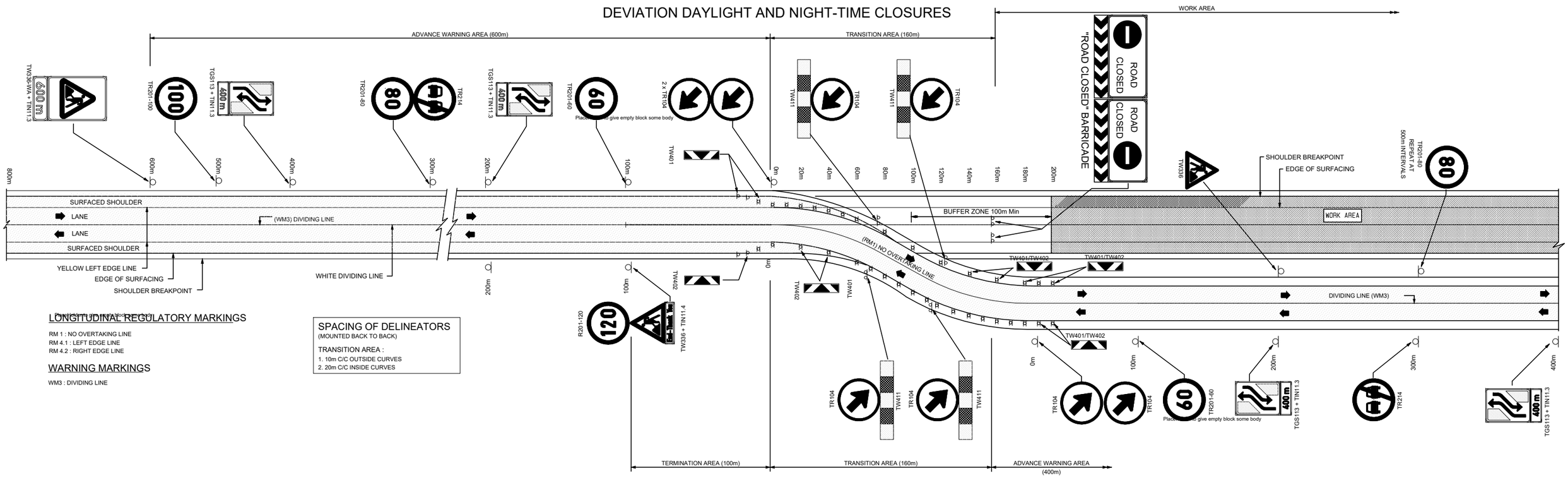
TENDER No. -

SHEET 1 OF 1

DRAWING No. TC/MLM/LDAR/SD/11

ORIGINAL ON A1

TEMPORARY ROAD TRAFFIC MANAGEMENT FOR 2 LANE SINGLE CARRIAGEWAY - BEGINNING AND END OF A DEVIATION DAYLIGHT AND NIGHT-TIME CLOSURES



LONGITUDINAL REGULATORY MARKINGS

RM 1 : NO OVERTAKING LINE
RM 4.1 : LEFT EDGE LINE
RM 4.2 : RIGHT EDGE LINE

WARNING MARKINGS

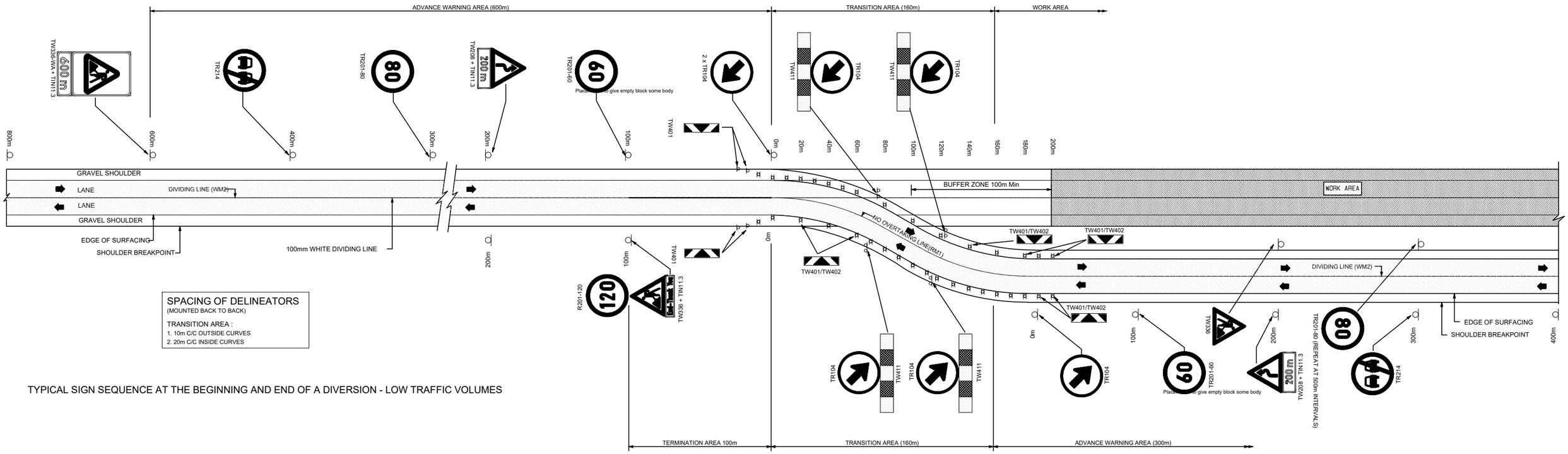
WM3 : DIVIDING LINE

SPACING OF DELINEATORS

(MOUNTED BACK TO BACK)

TRANSITION AREA :
1. 10m C/C OUTSIDE CURVES
2. 20m C/C INSIDE CURVES

TYPICAL ROAD SIGN SEQUENCE AT THE BEGINNING AND END OF A DIVERSION - HIGH TRAFFIC VOLUMES



SPACING OF DELINEATORS

(MOUNTED BACK TO BACK)

TRANSITION AREA :
1. 10m C/C OUTSIDE CURVES
2. 20m C/C INSIDE CURVES

TYPICAL SIGN SEQUENCE AT THE BEGINNING AND END OF A DIVERSION - LOW TRAFFIC VOLUMES

No.	DATE	REVISION	REVISED BY	DATE

DESIGNED BY

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DRAWN	P.M.
DRAWING CHECKED	P.M.

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DATE:

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.....
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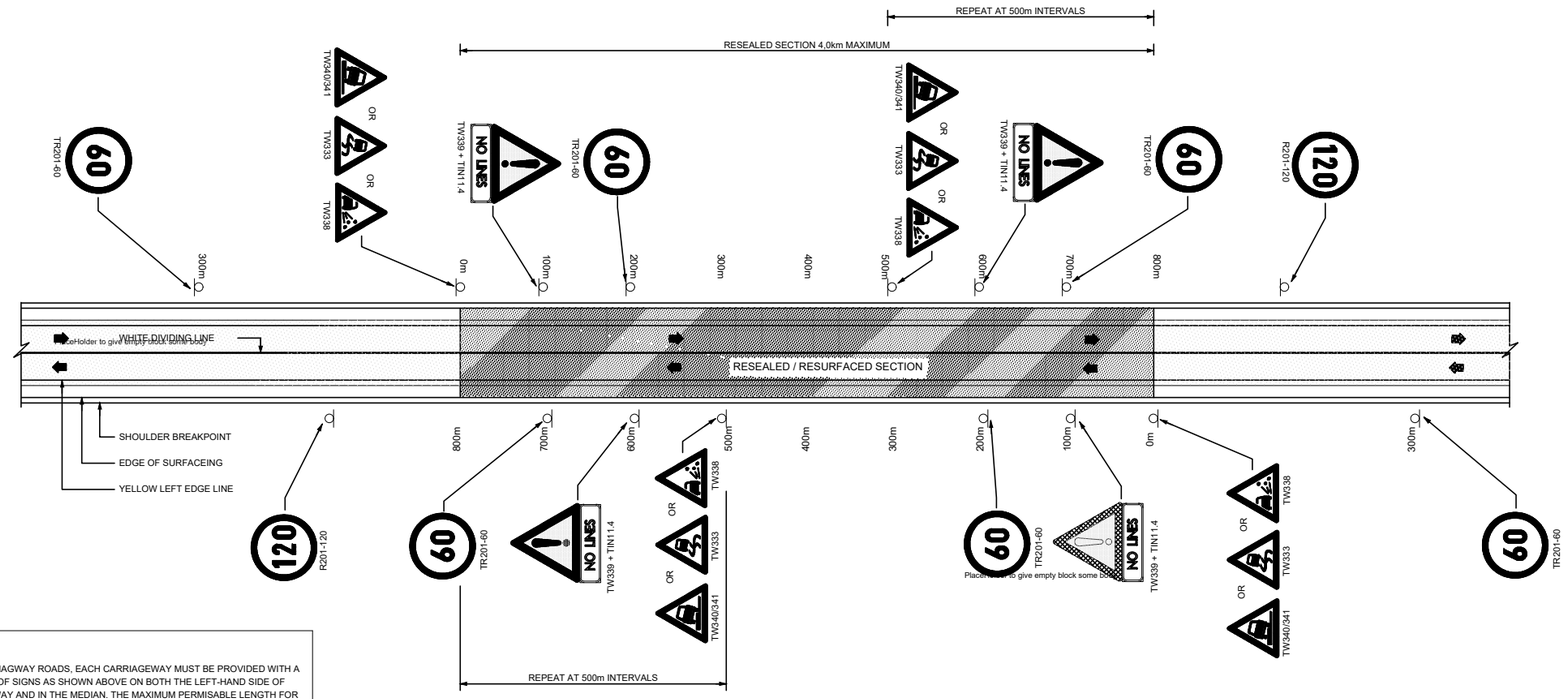
SCALE: AS SHOWN
REVISION: 0

CLIENT: MAKHADO LOCAL MUNICIPALITY
TYPE OF PLANNING: TENDER
PROJECT TITLE: LUVHALANI TO DZANANWA ACCESS ROAD
DRAWING TITLE: TEMPORARY ROAD TRAFFIC MANAGEMENT FOR 2-LANE SINGLE CARRIAGEWAY-BEGINNING AND END OF DEVIATION

TENDER No.: -
SHEET 1 OF 1
DRAWING No.: TC/MLM/LDAR/SD/12

ORIGINAL ON A1

TEMPORARY ROAD TRAFFIC MANAGEMENT FOR 2-LANE SINGLE CARRIAGEWAY ROADS : RESEALING / RESURFACING WORK AND HALF-WIDTH CONSTRUCTION : DAYLIGHT AND NIGHT-TIME CLOSURES



TYPICAL SIGN SEQUENCE AT NEWLY COMPLETED RESEAL WORK

MAXIMUM SPEED LIMITS

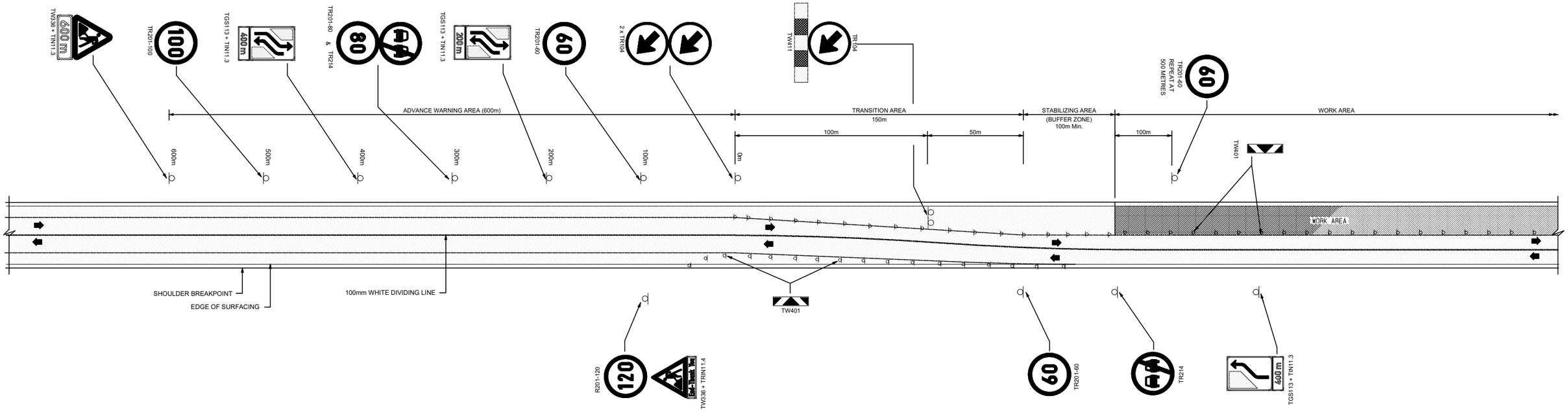
THE MAXIMUM SPEED LIMIT SHALL BE CONSISTENT WITH THE PREVAILING CONDITIONS OF THE DEVIATION IN TERMS OF ROAD SAFETY REQUIREMENTS

NOTE :

FOR DUAL CARRIAGWAY ROADS, EACH CARRIAGEWAY MUST BE PROVIDED WITH A COMPLETE SET OF SIGNS AS SHOWN ABOVE ON BOTH THE LEFT-HAND SIDE OF THE CARRIAGEWAY AND IN THE MEDIAN. THE MAXIMUM PERMISABLE LENGTH FOR RESEALING / RESURFACING SHALL BE 4,0km.

NOTE : SPACING OF DELINEATORS / CONES

1. TRANSITION AREA : 10m c/c
2. STABILIZING AREA : 10m c/c FOR THE FIRST 50m, THEN 30m c/c ON STRAIGHT
3. WORK AREA : 30m C/C



TYPICAL ROAD SIGN SEQUENCE FOR HALF-WIDTH CONSTRUCTION

No.	DATE	REVISION	REVISED BY	DATE

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REVISION: 0

CLIENT: MAKHADO LOCAL MUNICIPALITY

TYPE OF PLANNING: TENDER

PROJECT TITLE: LUVHALANI TO DZANANWA ACCESS ROAD

DRAWING TITLE: TEMPORARY ROAD TRAFFIC MANAGEMENT FOR 2-LANE SINGLE CARRIAGEWAY ROADS

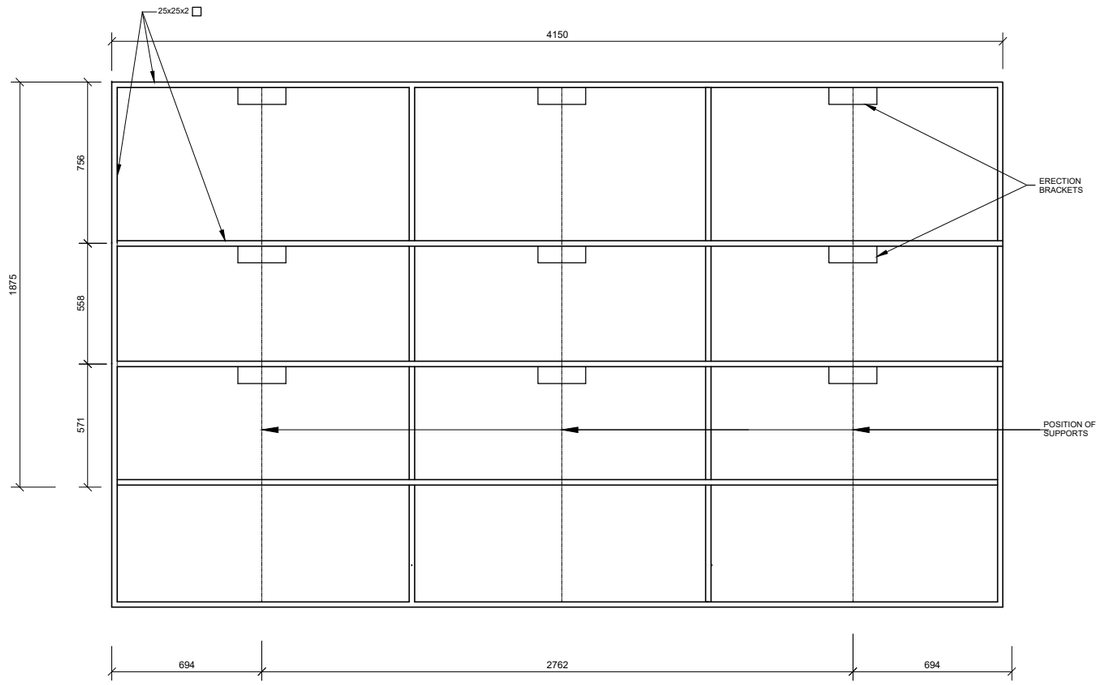
TENDER No.: -

SHEET 1 OF 1

DRAWING No.: TC/MLM/LDAR/SD/13

ORIGINAL ON A1

FRONT ELEVATION
SCALE 1:15



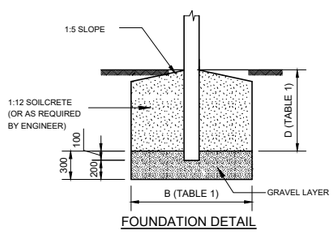
SIGN BOARD DETAIL

REAR SIDE BRACING
SCALE 1:15

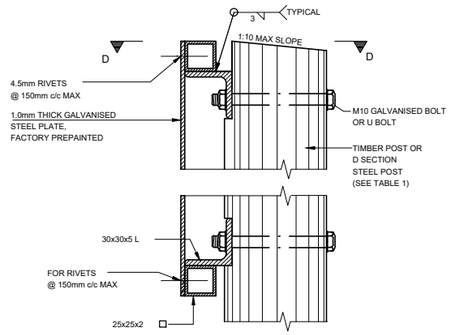
TABLE 1				
ERECTION DETAILS				
TYPE POST	UPRIGHT	STAY	D	B
TIMBER POST AND STAY	80mm	80mm	600mm	750mm
TIMBER POST	160mm	-	900mm	1350mm
D SECTION STEEL POST	100mm x 4mm	-	900mm	1350mm

NOTE:

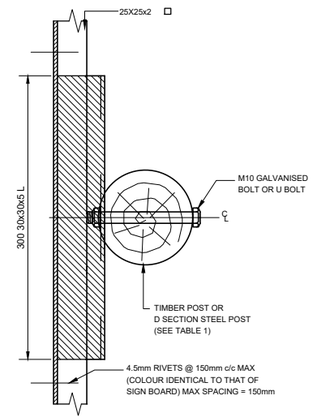
1. ALL EMBLEMS TO BE DISPLAYED IN FULL COLOUR ON A SEMI-MATT BACKGROUND.
2. DESCRIPTION: MATT-BLACK, SERIES DIN B LETTERS AND NUMBERS ON A SEMI-MATT SMOKE-GREY BACKGROUND (PANTONE 429U).
3. BORDER : GREEN NON-REFLECTORIZED.
4. TWO SIGN BOARDS SHALL BE ERECTED AS DETERMINED BY THE ENGINEER.
5. DESCRIPTION OF WORK (NUMBER OF KILOMETRES AND TYPE OF WORK, eg "13,5 km RE= CONSTRUCTION OF ROAD 1974"). DESCRIPTION STARTS CENTERED ON THE LEFT-HAND SIDE AND IN THE FIRST 105mm-DIMENSION BELOW "MAKHADO LOCAL MUNICIPALITY".
6. (a) SAFCEC EMBLEM ONLY, IF CONTRACTOR IS A MEMBER, ALL OTHER CASES, INCLUDING DEPARTMENTAL CONSTRUCTION, REMAIN BLANK.
   (b) IF DEPARMENTAL CONSTRUCTION,THE CONTRACTOR AND TELEPHONE ARE REPLACED WITH ROAD AGENCY LIMPOPO (PTY) LTD CONSTRUCTION UNIT : TEL :
7. SABTACO LOGO TO BE OBTAINED FROM SABTACO, JOHANNESBURG.



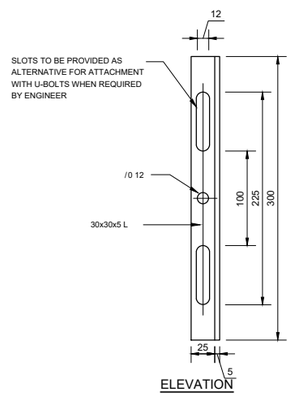
FOUNDATION DETAIL
N.T.S.



SIDE ELEVATION
N.T.S.



PLAN: SECTION D-D
N.T.S.



ELEVATION
ERECTION BRACKET
N.T.S.

No.	DATE	REVISION	REVISED BY	DATE

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REVISION: 0

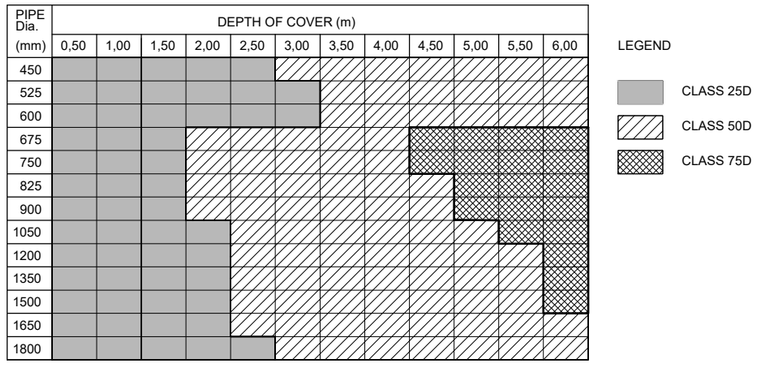
CLIENT: MAKHADO LOCAL MUNICIPALITY
TYPE OF PLANNING: TENDER
PROJECT TITLE: LUVHALANI TO DZANANWA ACCESS ROAD
DRAWING TITLE: NAMEBOARD DETAILS

TENDER No. -
SHEET 1 OF 1
DRAWING No. TC/MLM/LDAR/SD/14

ORIGINAL ON A1

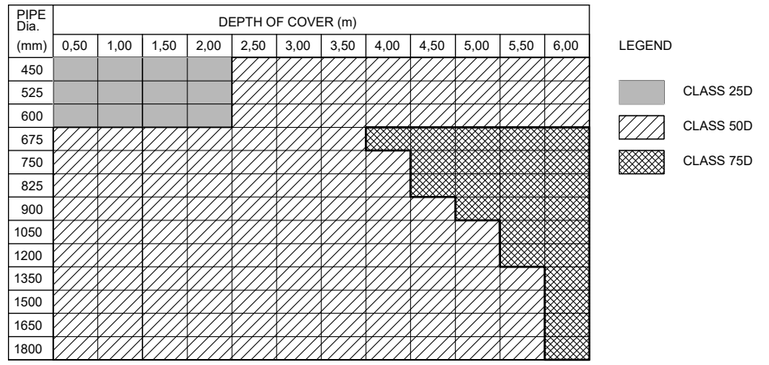
* SOIL TYPE 2: SLIGHTLY COHESIVE (SAND AND GRAVEL)
NO TRAFFIC LOAD.

CLASS A BEDDING (UNREINFORCED)



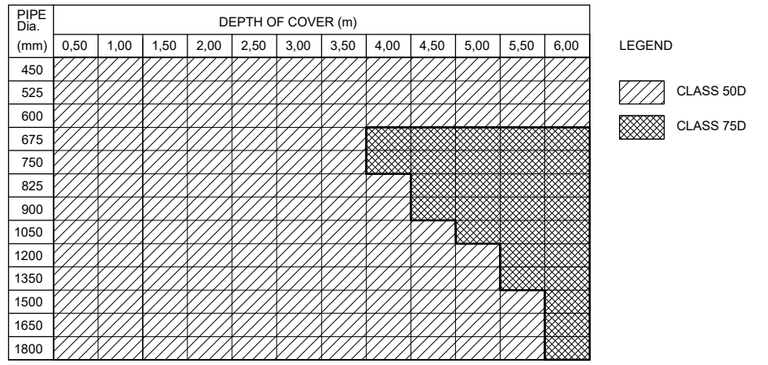
* SOIL TYPE 2: SLIGHTLY COHESIVE (SAND AND GRAVEL)
TRAFFIC LOAD: NB24 (MUNICIPAL ROADS AND STREETS, DISTRICT ROADS)

CLASS A BEDDING (UNREINFORCED)



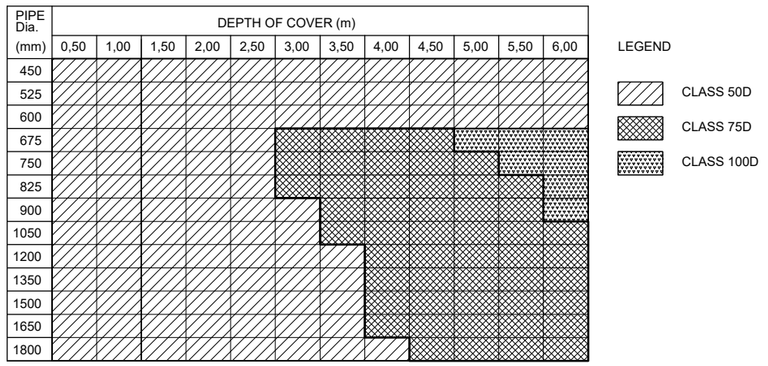
* SOIL TYPE 2: SLIGHTLY COHESIVE (SAND AND GRAVEL)
TRAFFIC LOAD: NB36 (NATIONAL HIGHWAYS AND ROADS, REGIONAL ROADS)

CLASS A BEDDING (UNREINFORCED)



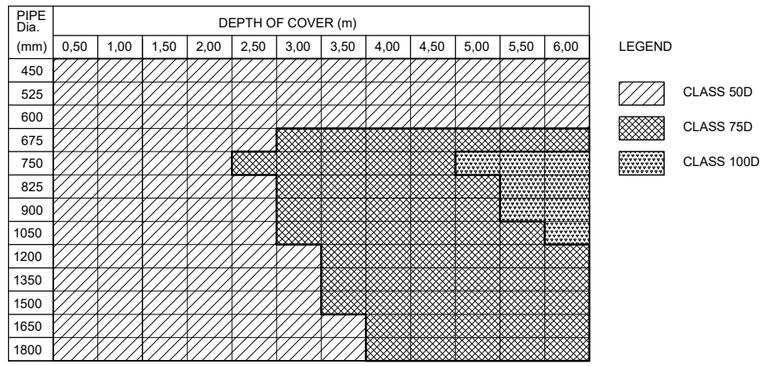
* SOIL TYPE 2: SLIGHTLY COHESIVE (SAND AND GRAVEL)
NO TRAFFIC LOAD.

CLASS B BEDDING



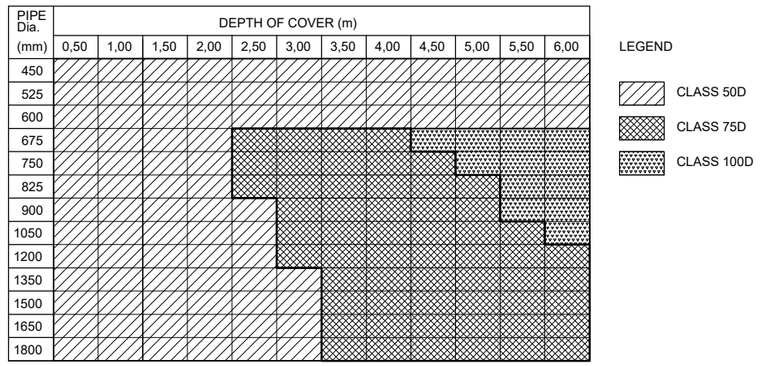
* SOIL TYPE 2: SLIGHTLY COHESIVE (SAND AND GRAVEL)
TRAFFIC LOAD: NB24 (MUNICIPAL ROADS AND STREETS, DISTRICT ROADS)

CLASS B BEDDING



* SOIL TYPE 2: SLIGHTLY COHESIVE (SAND AND GRAVEL)
TRAFFIC LOAD: NB36 (NATIONAL HIGHWAYS AND ROADS, REGIONAL ROADS)

CLASS B BEDDING



* For cohesive materials, the earth loading can be determined from the following:

DESIGN CRITERIA

1. BEDDING FACTORS

1.1 CLASS A: 2,6 (UNREINFORCED)
1.2 CLASS B: 2,0
1.3 CLASS C: 1.5
1.4 CLASS D: 1,1

2. LOAD COEFFICIENT Cd FOR SOIL GROUP 3: COHESIVE MATERIAL

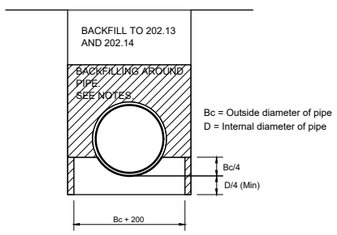
H/Bd	0,50	1,00	1,50	2,00	2,50	3,00	3,50	4,00	4,50	5,00	5,50	6,00
Cd	0,46	0,83	1,14	1,40	1,62	1,79	1,94	2,06	2,16	2,24	2,31	2,37

3. PIPE LOADING DUE TO FILL

$W = Cd*GM*Bd^2$, where
W = Load/metre (kN/m)
Cd = Load coefficient
GM = Soil density (kN/m^2)
Bd = Trench width

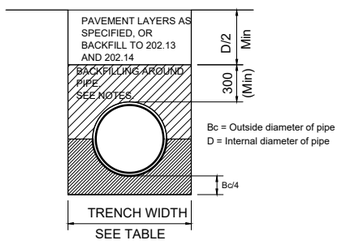
4. PIPE CLASS REQUIRED

= Load/(Pipe Dia * Bedding factor)



CLASS A BEDDING

NOTE:
THE CLASS A IN SITU CONCRETE BEDDING SHALL BE IN ACCORDANCE WITH SABS 0102.



CLASS B BEDDING

NOTE:
BEDDING SHALL BE OF AN APPROVED SELECTED GRAVEL MATERIAL WITH A PI NOT EXCEEDING 6.
BEDDING MATERIAL SHALL BE COMPACTED TO 90% OF MOD. AASHTO DENSITY.

AUTHORISED TRENCH WIDTHS

PIPE Dia.	TRENCH WIDTH	PIPE Dia.	TRENCH WIDTH
450	850	1050	1950
525	925	1200	2100
600	1000	1350	2250
675	1575	1500	2400
750	1650	1650	2550
825	1725	1800	2700
900	1800		

1. GENERAL
1.1 THE DESIGN CHARTS ARE BASED ON THE REQUIREMENTS OF SABS 0102-1987: PART I AND PART II.
1.2 A UNIT WEIGHT OF FILL MATERIAL OF 20 kN/m WAS USED.
1.3 THE SOIL TYPE AND PR0PERTIES REFER TO TABLE 2 IN SABS 0102:PART I-1987.
1.4 THE TRENCH WIDTHS USED ARE IN ACCORDANCE WITH THE REQUIREMENTS IN PARAGRAPH 04.01 OF SECTION 201:GENERAL OF THE 'STANDARD SPECIFICATIONS FOR MUNICIPAL CIVIL ENGINEERING WORKS, 3rd EDITION, 2005.

PIPE CLASS SELECTION FOR RIGID BURIED PIPES IN TRENCH CONDITIONS (INCLUDING BEDDING AND CONSTRUCTION SPECIFICATIONS)

No.	DATE	REVISION	REVISED BY	DATE

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REVISION: 0

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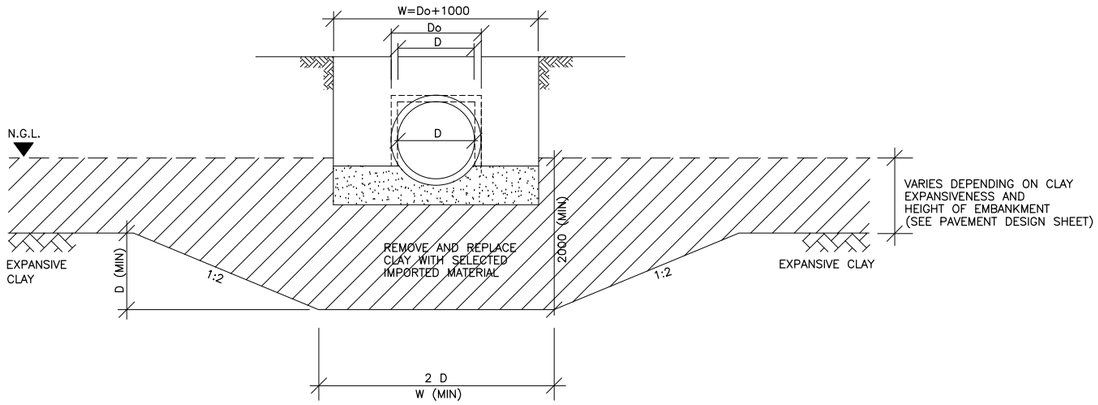
TYPE OF PLANNING: TENDER
PROJECT TITLE: LUVHALANI TO DZANANWA ACCESS ROAD
DRAWING TITLE: BEDDING DETAILS FOR PIPE CULVERTS SHEET 1

TENDER No. -
SHEET 1 OF 2
DRAWING No. TC/MLM/LDAR/DD/01

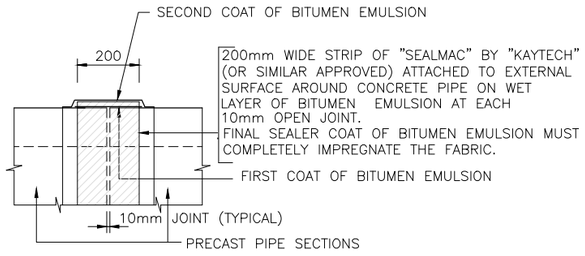
ORIGINAL ON A1



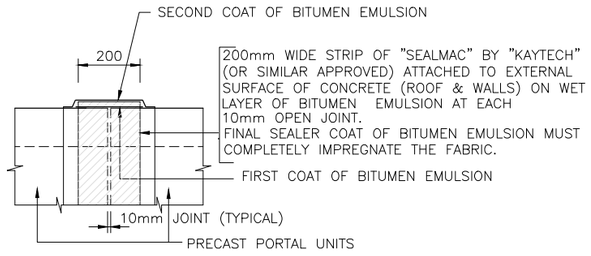
CULVERT BEDDING IN EXPANSIVE CLAY

NOTES:

1. DISTANCE BETWEEN MULTIPLE PIPE CULVERTS SHALL BE THE GREATER OF THE FOLLOWING WITH A MAXIMUM OF 500mm :
   - 300mm (GRAVEL BACKFILL); 100mm (SOILCRETE BACKFILL)
   - 0,5 x OUTSIDE DIAMETER OF PIPE (Do) – (EXCLUDES SOILCRETE BACKFILL)
2. CARE SHALL BE TAKEN WHEN PLACING SOILCRETE BACKFILL TO AVOID FLOTATION OF PIPES.
3. LOADING ON DRAINAGE CULVERTS TO BE IN ACCORDANCE WITH THE REQUIREMENTS OF TMH7
4. TRENCH WORK AND BACKFILL FOR CULVERTS MUST BE COMPLETED BEFORE SUBBASE AND FINAL LAYERS OF ROAD FILL



WATERPROOFING OF JOINTS BETWEEN PIPE SECTIONS
(IN EXPANSIVE CLAYS)
1:10



WATERPROOFING OF JOINTS BETWEEN PRECAST PORTAL UNITS
(IN EXPANSIVE CLAYS)
1:10

No.	DATE	REVISION	REVISED BY	DATE

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DRAWING CHECKED	P.M.

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..... for HEAD OF DEPARTMENT
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REVISION: 0

CLIENT: MAKHADO LOCAL MUNICIPALITY

TYPE OF PLANNING: TENDER

PROJECT TITLE
LUVHALANI TO DZANANWA ACCESS ROAD

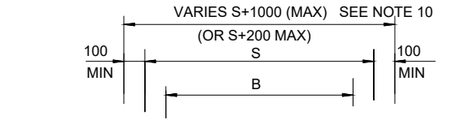
DRAWING TITLE
BEDDING DETAILS FOR PIPE CULVERTS SHEET 2

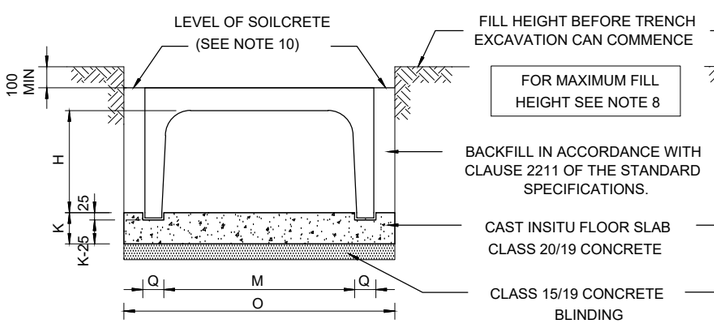
TENDER No.: -

SHEET 2 OF 2

DRAWING No.: TC/MLM/LDAR/DD/02

ORIGINAL ON A1

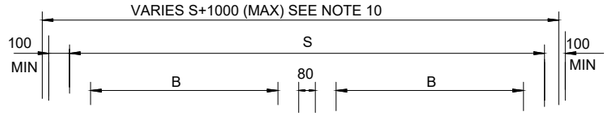


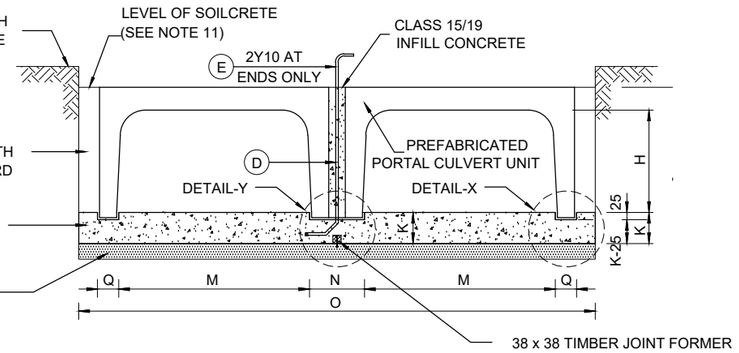


TYPICAL CROSS SECTION OF

SINGLE PORTAL CULVERT UNITS

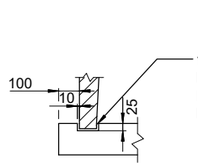
1:20





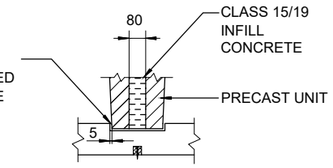
TYPICAL CROSS SECTION OF MULTIPLE PORTAL CULVERT UNITS

1:20



DETAIL-X

1:20



DETAIL-Y

1:20

DIMENSIONS OF BASE SLAB							
B	H	S	O	K	M	N	Q
1 x 600	300	770	970	130	610	240	90
2 x 600	450	1620	1820	130	626	224	82
3 x 600	600	2470	2670	130	640	210	75
1 x 750	450	930	1130	130	772	238	89
2 x 750	600	1940	2140	130	786	224	82
3 x 750	750	2950	3150	130	800	210	75
1 x 900	450	1100	1300	150	914	266	103
2 x 900	600	2280	2480	150	926	254	97
3 x 900	750	3460	3660	150	938	242	91
4 x 900	900	4640	4840	150	950	230	85
1 x 1200	450	1420	1620	190	1212	288	114
2 x 1200	600	2920	3120	190	1224	276	108
3 x 1200	900	4420	4620	190	1246	254	97
4 x 1200	1200	5920	6120	190	1270	230	85
1 x 1500	600	1750	1950	210	1524	306	123
2 x 1500	900	3580	3780	210	1550	280	110
3 x 1500	1200	5410	5610	210	1574	256	98
4 x 1500	1500	7240	7440	210	1600	230	85
1 x 1800	600	2090	2290	225	1824	346	143
2 x 1800	900	4260	4460	225	1850	320	130
3 x 1800	1200	6430	6630	225	1876	294	117
4 x 1800	1500	8600	8800	225	1902	268	104
5 x 1800	1800	10770	10970	225	1930	240	90

NOTES:

1. STRUCTURAL CONCRETE T0 BE CLASS 20/19
2. REINFORCEMENT SHALL COMPLY WITH THE REQUIREMENTS OF SABS 920 TYPE C, CLASS 2, GRADE 1.
3. HIGH YIELD STRESS REINFORCEMENT (Y) YIELD STRESS = 450MPa.
4. MIN CONCRETE COVER TO STEEL IS 40mm ON EXPOSED SURFACES AND 50mm ON SURFACES IN CONTACT WITH SOIL.
5. DESIGN DENSITY OF FILL IS 1900 kg/m^2
6. LOAD FACTOR FOR PROOF LOAD OF SABS 986 = 1,5.
7. PREFABRICATED PORTAL CULVERTS SHALL COMPLY WITH THE REQUIREMENTS OF SABS 986 AS WELL AS ADDITIONAL TEST LOADING AND CRITICAL TEST LOAD COMBINATION FOR THE TEST OF SHEAR RESISTANCE.
8. DIMENSIONS AND REINFORCEMENT DETAILS FOR CAST INSITU FLOOR SLABS ARE VALID IF THE HEIGHT OF FILL IS LESS THAN SPECIFIED BELOW.

DIMENSION B	HEIGHT OF FILL
600mm	5.2m
750mm	5.0m
900mm	4.7m
1200mm	4.7m
1500mm	4.0m
1800mm	3.5m

FOR HEIGHTS OF FILL MARKEDLY LESS THAN THE ABOVE FIGURES, SAVINGS MAY BE POSSIBLE. REQUEST FOR REVISIONS TO DESIGN MUST BE REFERRED TO THE DESIGNERS.

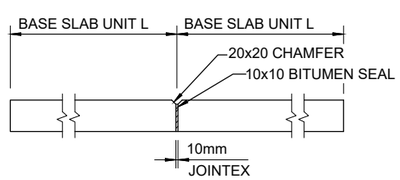
9. MAXIMUM SPACING OF TRANSVERSE JOINTS IN FLOOR SLABS IS 10m. IN THE CASE OF SKEW CULVERTS, THE TRANSVERSE JOINT SHALL BE PARALLEL TO THE SKEW ANGLE AND NOT NECESSARY COINCIDENT WITH THE JOINTS BETWEEN PORTAL CULVERT UNITS.
10. THE EXCAVATION WIDTH MAY BE REDUCED FROM (S+1000) TO (S+200) MINIMUM WHERE SOILCRETE BACKFILL IS USE
11. FOR HANDLING AND INSTALLATION OF CULVERTS REFER TO "CONCRETE PIPE AND PORTAL CULVERT INSTALLATION MANUAL" FROM THE CONCRETE SOCIETY OF SOUTHERN AFRICA.
12. PRECAST UNIT SIZES TO BE CHECKED ON SITE TO ENSURE PROPER FIT TO THE DIMENSIONS GIVEN BEFORE CASTING THE BASE SLAB

13. LOADING:

13.1 ALL PREFABRICATED PORTAL CULVERTS ARE CLASS 100S ACCORDING TO SABS 986.

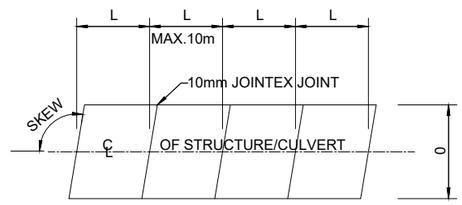
13.2 THE MAXIMUM HEIGHT OF FILL ABOVE PORTAL CULVERTS MAY NOT EXCEED THE VALUES GIVEN IN NOTE 8

13.3 DESIGN LOADING IS IN ACCORDANCE WITH TMH7.



LONGITUDINAL SECTION THROUGH BASE SLAB

1:20



KEY PLAN OF BASE SLAB

N.T.S

No.	DATE	REVISION	REVISED BY	DATE

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DESIGN CHECKED P.M.	..... for CONSULTING ENGINEER DATE:	..... for HEAD OF DEPARTMENT DATE: .....
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SCALE: AS SHOWN

REVISION: 0

CLIENT: MAKHADO LOCAL MUNICIPALITY

TYPE OF PLANNING: TENDER

PROJECT TITLE: LUVHALANI TO DZANANWA ACCESS ROAD

DRAWING TITLE: DETAIL FOR PRECAST BOX CULVERT BASES SHEET 1

TENDER No. -

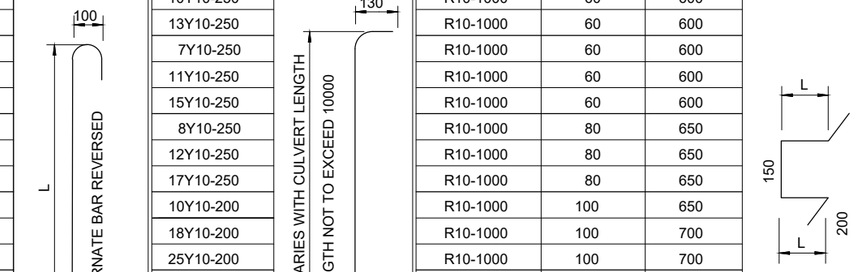
SHEET 1 OF 2

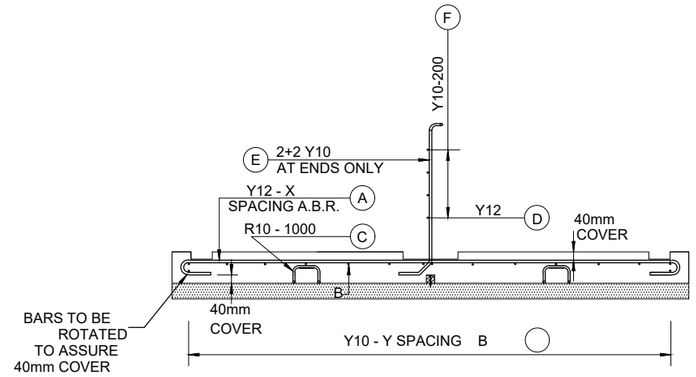
DRAWING No. TC/MLM/LDAR/SD/03

ORIGINAL ON A1

REINFORCEMENT

	BAR A	L	CUT LENGTH	BENDING	BAR B	BENDING	BAR C	L	CUT LENGTH	BENDING
1 x 600	Y12-225	900	1100		6Y10-250		R10-1000	60	600	
2 x 600	Y12-225	1760	2000		10Y10-250		R10-1000	60	600	
3 x 600	Y12-225	2610	2850		13Y10-250		R10-1000	60	600	
1 x 750	Y12-180	1060	1300		7Y10-250		R10-1000	60	600	
2 x 750	Y12-180	2090	2300		11Y10-250		R10-1000	60	600	
3 x 750	Y12-180	3110	3350		15Y10-250		R10-1000	60	600	
1 x 900	Y12-160	1230	1450		8Y10-250		R10-1000	80	650	
2 x 900	Y12-160	2410	2650		12Y10-250		R10-1000	80	650	
3 x 900	Y12-160	3590	3800		17Y10-250		R10-1000	80	650	
1 x 1200	Y12-140	1550	1750		10Y10-200		R10-1000	100	650	
2 x 1200	Y12-140	3050	3250		18Y10-200		R10-1000	100	700	
3 x 1200	Y12-140	4550	4750		25Y10-200		R10-1000	100	700	
1 x 1500	Y16-200	1900	2100		12Y10-200		R10-1000	100	700	
2 x 1500	Y16-200	3750	3950		21Y10-200		R10-1000	100	700	
3 x 1500	Y16-200	5600	5800		31Y10-200		R10-1000	100	700	
1 x 1800	Y16-150	2210	2450		16Y10-180		R10-1000	115	800	
2 x 1800	Y16-150	4360	4600		31Y10-180		R10-1000	115	800	
3 x 1800	Y16-150	6550	6800		46Y10-180		R10-1000	115	800	



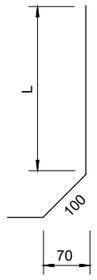


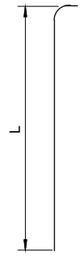
REINFORCING DETAIL - MULTIPLE UNITS

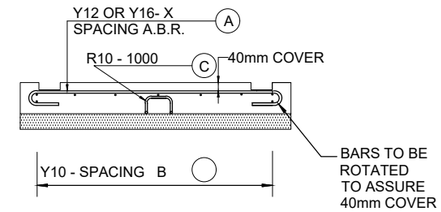
1:20

REINFORCEMENT

	BAR D	L	CUT LENGTH	BENDING	BAR E	L	CUT LENGTH	BENDING	BAR F	BENDING
600 x 300	Y12-225	400	750		Y10-225	550	700		Y10-200	
600 x 450	Y12-225	550	900		Y10-225	700	850		Y10-200	
600 x 600	Y12-225	700	1050		Y10-225	850	1000		Y10-200	
750 x 300	Y12-180	400	750		Y10-180	550	700		Y10-200	
750 x 450	Y12-180	550	900		Y10-180	700	850		Y10-200	
750 x 600	Y12-180	700	1050		Y10-180	850	1000		Y10-200	
900 x 300	Y12-160	400	750		Y10-160	550	700		Y10-200	
900 x 450	Y12-160	550	900		Y10-160	700	850		Y10-200	
900 x 900	Y12-160	1050	1400		Y10-160	1200	1350		Y10-200	
1200 x 450	Y12-160	550	900		Y10-160	700	850		Y10-200	
1200 x 600	Y12-160	700	1050		Y10-160	850	1000		Y10-200	
1200 x 1200	Y12-160	1050	1400		Y10-160	1200	1350		Y10-200	
1500 x 600	Y12-130	700	1050		Y10-130	850	1000		Y10-200	
1500 x 1200	Y12-130	1050	1400		Y10-130	1200	1350		Y10-200	
1500 x 1500	Y12-130	1600	1950		Y10-130	1800	1950		Y10-200	
1800 x 600	Y12-100	700	1050		Y10-100	850	1000		Y10-200	
1800 x 900	Y12-100	1050	1400		Y10-100	1200	1350		Y10-200	
1800 x 1500	Y12-100	1600	1950		Y10-100	1800	1950		Y10-200	
1800 x 1800	Y12-100	1900	2250		Y10-100	2100	2250		Y10-200	







REINFORCING DETAIL - SINGLE UNITS

1:20

No.	DATE	REVISION	REVISED BY	DATE

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REVISION: 0

CLIENT: MAKHADO LOCAL MUNICIPALITY

TYPE OF PLANNING: TENDER

PROJECT TITLE: LUVHALANI TO DZANANWA ACCESS ROAD

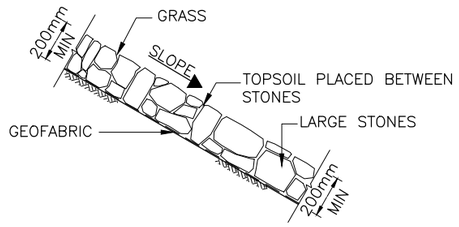
DRAWING TITLE: DETAIL FOR PRECAST BOX CULVERT BASES SHEET 2

TENDER No.: -

SHEET 2 OF 2

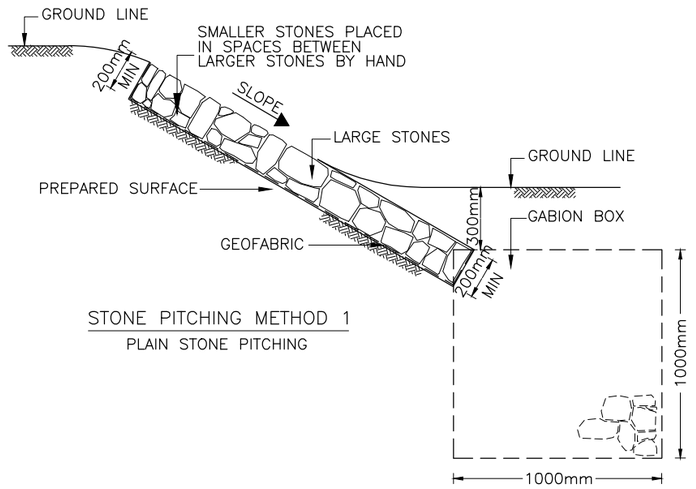
DRAWING No.: TC/MLM/LDAR/SD/04

ORIGINAL ON A1



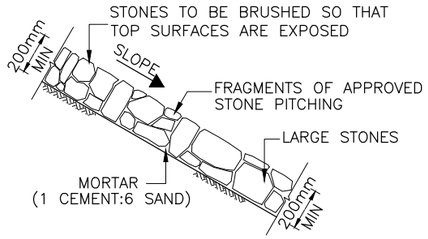
STONE PITCHING METHOD 2

PLAIN STONE PITCHING (WITH TOPSOIL)

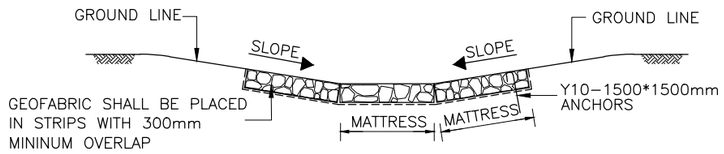


STONE PITCHING METHOD 1

PLAIN STONE PITCHING



GROUTED STONE PITCHING



PROTECTION OF STORMWATER CHANNEL

A. STONE PITCHING METHOD 1

1. STONES WITH APPROXIMATE DIMENSION 200mm TO BE PLACED ON PREPARED SURFACE
2. SPACES BETWEEN LARGER STONES TO BE FILLED WITH SMALLER STONES

B. STONE PITCHING METHOD 2

1. STONES WITH APPROXIMATE DIMENSION 200mm TO BE PLACED ON PREPARED SURFACE
2. SPACES BETWEEN LARGER STONES TO BE FILLED WITH SMALLER STONES
3. TOPSOIL SHALL BE PLACED IN SPACES BETWEEN STONES
4. GRASS CUTTINGS SHALL BE PLACED BY HAND

C. GROUTED STONE PITCHING

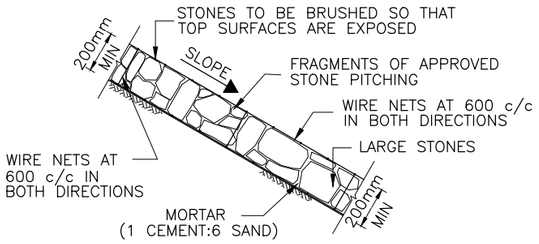
1. STONES WITH APPROXIMATE DIMENSION 200mm TO BE PLACED ON PREPARED SURFACE
2. SPACES BETWEEN STONES TO BE FILLED WITH MORTAR

D. WIRED AND GROUTED STONE PITCHING

1. PLACE BOTTOM WIRE NET
2. ATTACH WIRE TIES TO MESH
3. PLACE PITCHING STONES
4. PLACE TOP WIRE NET AND FIX TO TIES
5. FILL SPACES BETWEEN STONES WITH MORTAR

E. GABIONS

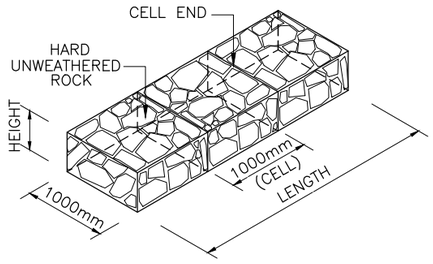
1. ROCK DIMENSION SHALL CONFORM WITH TABLE 5202/1 IN THE SECTION 5200 OF COLTO.
2. BOX SIZE SHALL CONFORM TO CLAUSE 5203 OF COLTO
3. THE MESH SIZE SHALL BE 80mm x 100mm AND WIRE DIAMETER SHALL BE 2,7mm



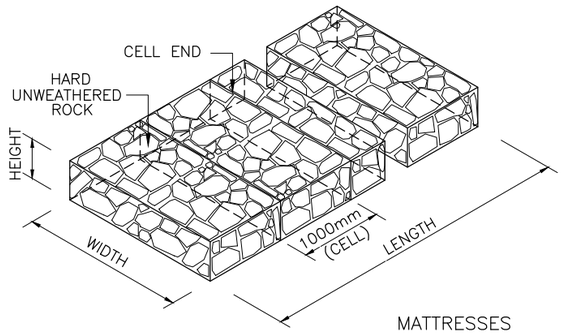
WIRED AND GROUTED STONE PITCHING

STONE PITCHING

SCALE 1:20



BOXES



MATTRESSES

GABIONS

N.T.S.

No.	DATE	REVISION	REVISED BY	DATE

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REVISION: 0

CLIENT: MAKHADO LOCAL MUNICIPALITY

TYPE OF PLANNING: TENDER

PROJECT TITLE: LUVHALANI TO DZANANWA ACCESS ROAD

DRAWING TITLE: STONE PITCHING AND GABION PROTECTION

TENDER No.: -

SHEET 1 OF 1

DRAWING No.: TC/MLM/LDAR/SD/05

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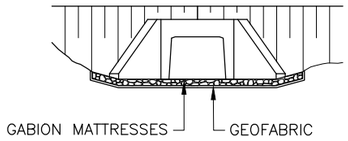
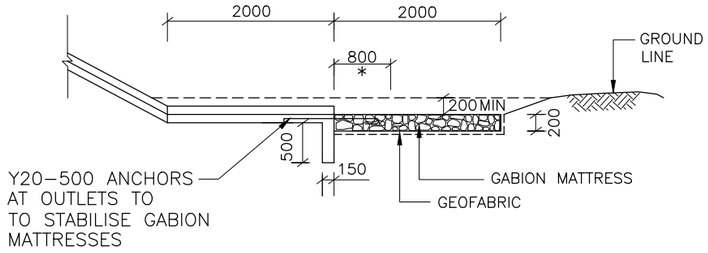


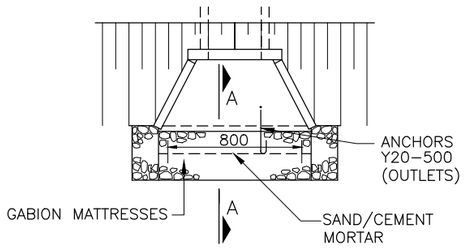
ELEVATION OF CULVERT



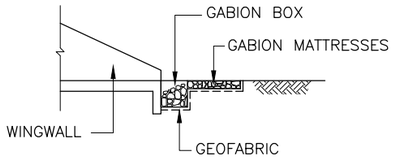
* SAND/CEMENT MORTAR TO SECURE ANCHORS

SECTION A–A

SCALE 1 : 50



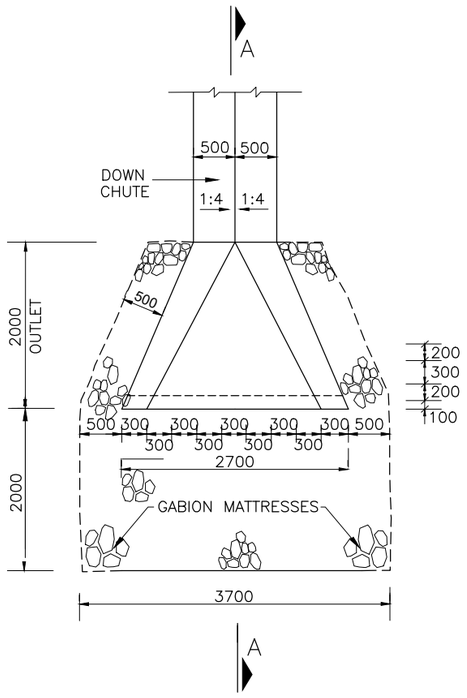
PLAN OF INLET/OUTLET



SECTION A–A

PROTECTION AT CULVERT INLETS AND OUTLETS

(WHERE NECESSARY)



PLAN

PROTECTION AT DOWN CHUTE

SCALE 1 : 50

NOTES:

GABIONS

1. ROCK DIMENSION SHALL CONFORM WITH TABLE 5202/1 IN THE SECTION 5200 OF COLTO.
2. BOX SIZE SHALL CONFORM TO CLAUSE 5203 OF COLTO
3. THE MESH SIZE SHALL BE 80mm x 100mm AND WIRE DIAMETER SHALL BE 2,7mm

No.	DATE	REVISION	REVISED BY	DATE

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for CONSULTING ENGINEER

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SCALE: AS SHOWN

REVISION: 0

CLIENT: MAKHADO LOCAL MUNICIPALITY

TYPE OF PLANNING: TENDER

PROJECT TITLE

LUVHALANI TO DZANANWA ACCESS ROAD

DRAWING TITLE: GABION PROTECTION AT CULVERT OUTLET

TENDER No.: -

SHEET 1 OF 1

DRAWING No.: TC/MLM/LDAR/SD/06

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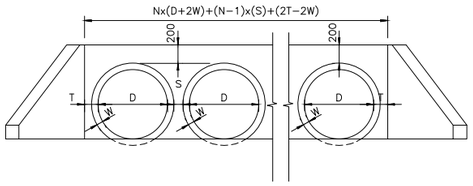
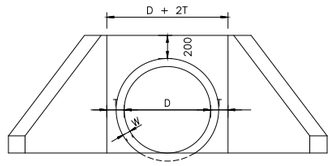
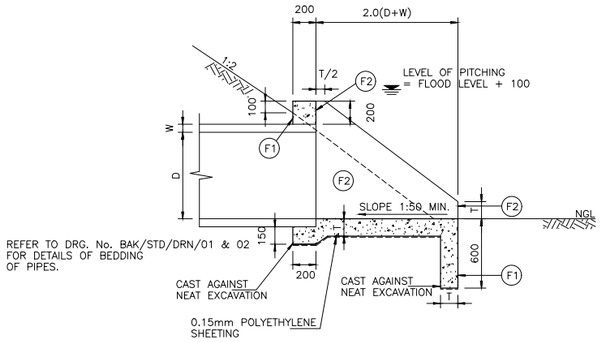


ELEVATION A
1 : 25

NOTE:
1. SPACING (S) BETWEEN PIPES TO BE 100mm ONLY IF SOILCRETE BACKFILLING IS USED.
2. N = NUMBER OF PIPES.



ELEVATION B
1 : 20



SECTION C
1 : 20
(INLET)

NOTES:

CONSTRUCTION

1. ALL EXPOSED CORNERS SHALL BE CHAMFERED 25 x 25
2. CONCRETE COVER TO REINFORCEMENT:–
   FLOOR SLAB & FOOTINGS = 50mm
   WINGWALLS = 40mm
3. CONCRETE FINISH:
   CONCEALED SURFACES = F1
   EXPOSED SURFACES = F2
4. POLYETHYLENE SHEET 0.15mm THICK SHALL BE PLACED UNDER ALL WINGWALL FOOTINGS AND INLET SLAB
5. THIS DRAWING TO BE READ IN CONJUNCTION WITH THE COLTO STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE WORKS FOR STATE ROAD AUTHORITIES AS AMENDED TO DATE
6. THE UPPER LEVEL OF THE FILL ALWAYS PASSES THROUGH A POINT 100mm BELOW THE TOP OF THE HEAD WALL
7. THE MAXIMUM SLOPE OF EARTHWORKS SURROUNDING A CULVERT INLET OR OUTLET SHALL BE 1 : 2

MATERIAL SPECIFICATION:

1. INLET/OUTLET CONCRETE SLABS AND WINGWALLS – CLASS 20/19
   CHARACTERISTIC STRENGTH 20 MPa
   YOUNG'S MODULUS 28 000 MPa
2. REINFORCEMENT (SABS 920 – 1985)
   YIELD STRENGTH TYPE:
   MILD STEEL BARS 250 MPa
   HIGH TENSILE STEEL BARS 450 MPa
   WELDED STEEL FABRIC 450 MPa
3. REINFORCEMENT DETAILS:
   a) FOR 450, 600, 750 & 900 DIA. SEE DRG. No. BAK/STD/HDW/03
   b) FOR 1050 & 1200 DIA. SEE DRG. No. BAK/STD/HDW/04

DESIGN METHOD:

1. LIMIT STATE DESIGN ACCORDING TO TMH7 PART 3 AS AMENDED 1989
2. INLET AND OUTLET STRUCTURES ARE DESIGNED FOR LOADING SPECIFIED IN TMH7 PART 1 AND 2 AS AMENDED 1988 "CODE OF PRACTICE FOR THE DESIGN OF HIGHWAY BRIDGES AND CULVERTS IN S.A."
3. TYPE OF REINFORCEMENT AND SPACING ARE SHOWN ON THE DRAWINGS. THE CONTRACTOR MUST SUBMIT WORKING DRAWINGS AND BENDING SCHEDULES FOR APPROVAL.

FOUNDING MATERIAL:

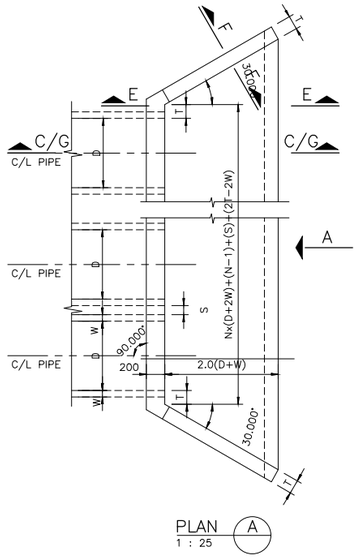
1. MAX. CALCULATED GROUND PRESSURE – 100kPa
2. FOUNDING LEVEL TO BE APPROVED BY THE PROJECT MANAGER.

HYDRAULIC INFORMATION:

1. SEE DRAINAGE SCHEDULE FOR FLOOD LEVELS, OUTLET TYPE AND HYDRAULIC DATA FOR EACH CULVERT.

EROSION PROTECTION:

1. TO BE PROVIDED WHERE OUTLET VELOCITIES AS INDICATED ON DRAINAGE SCHEDULE >2m/s

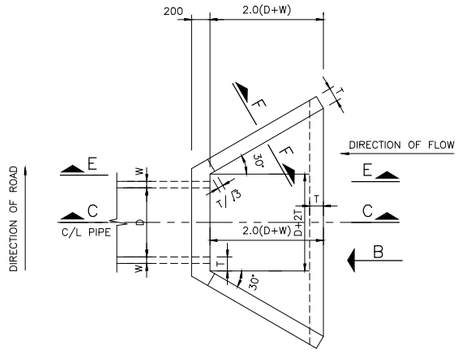


PLAN A
1 : 25

MULTIPLE PIPE CULVERT

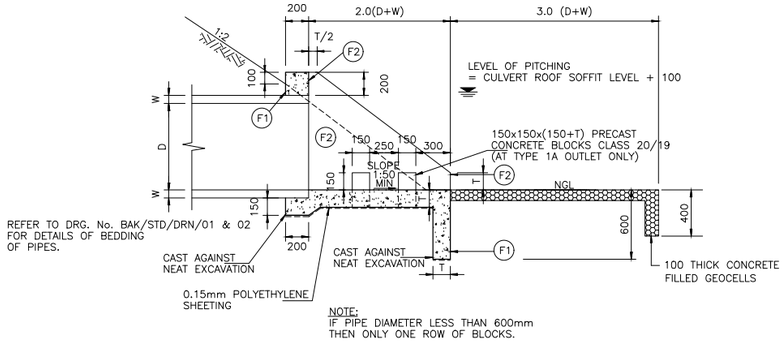
NOTE:
1. SPACING (S) BETWEEN PIPES TO BE 100mm ONLY IF SOILCRETE BACKFILLING IS USED.
2. N = NUMBER OF PIPES.
3. EROSION PROTECTION AND ENERGY BREAKING BLOCKS FOR MULTIPLE PIPE CULVERT SIMILAR TO SINGLE PIPE CULVERT.

INSIDE DIA. PIPE (D)	T (mm)	S (mm)
450	150	300
600	150	300
750	150	375
900	175	450
1050	200	500
1200	200	500



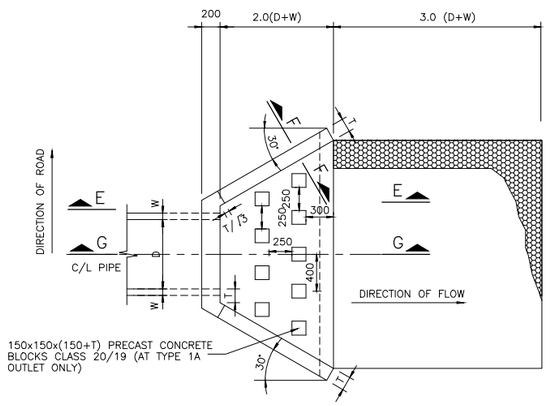
PLAN B
1 : 25

TYPE 1 INLET



NOTE:
IF PIPE DIAMETER LESS THAN 600mm
THEN ONLY ONE ROW OF BLOCKS.

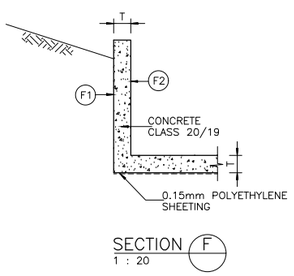
SECTION G
1 : 20
(OUTLET)



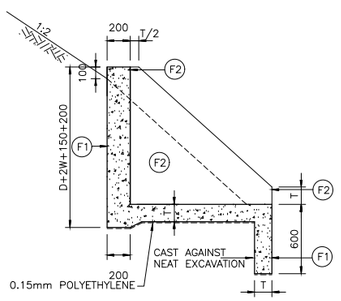
NOTE:
IF PIPE DIAMETER LESS THAN 600mm
THEN ONLY ONE ROW OF BLOCKS.

PLAN B
1 : 25

TYPE 1 AND TYPE 1A OUTLET



SECTION F
1 : 20



SECTION SEC
SCALE REF

No.	DATE	REVISION	REVISED BY	DATE

DESIGNED BY

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19 Gen.Joubert
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DESIGNED P.M.	CONSULTANT	RECOMMENDED	
DESIGN CHECKED P.M.	.....	.....	
DRAWN P.M.	for CONSULTING ENGINEER	for HEAD OF DEPARTMENT	
DRAWING CHECKED P.M.	DATE:	DATE:	

MAKHADO
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MAKHADO
0920
TEL: (015) 519-3000
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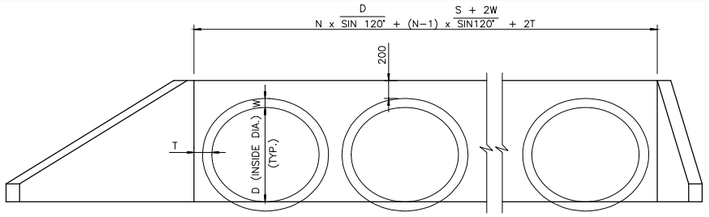
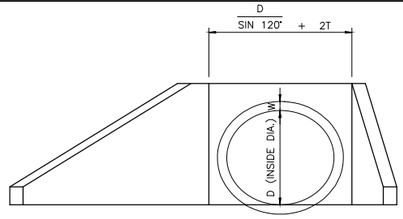
SCALE: AS SHOWN
REVISION: 0

CLIENT: MAKHADO LOCAL MUNICIPALITY
TYPE OF PLANNING: TENDER
TENDER No.: -
PROJECT TITLE: LUVHALANI TO DZANANWA ACCESS ROAD
SHEET 1 OF 1
DRAWING TITLE: PIPE CULVERTS 90° TO ROAD (450 TO 1200 DIA. PIPES) CONCRETE DETAILS
DRAWING No.: TC/MLM/LDAR/SD/07

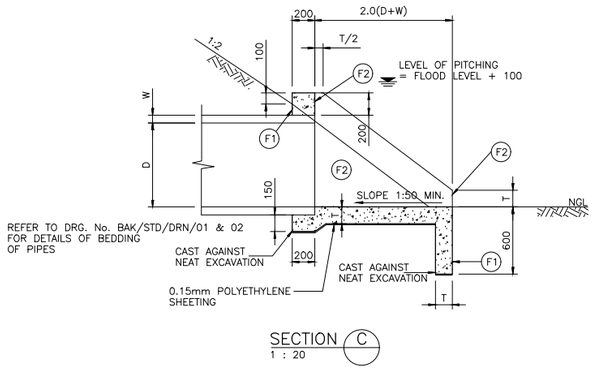
ORIGINAL ON A1



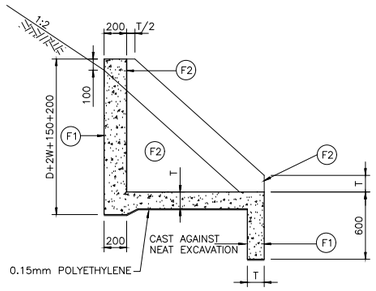
ELEVATION A
1 : 25



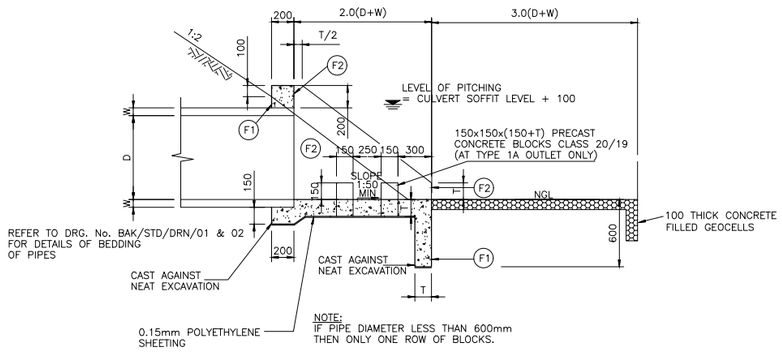
ELEVATION B
1 : 20



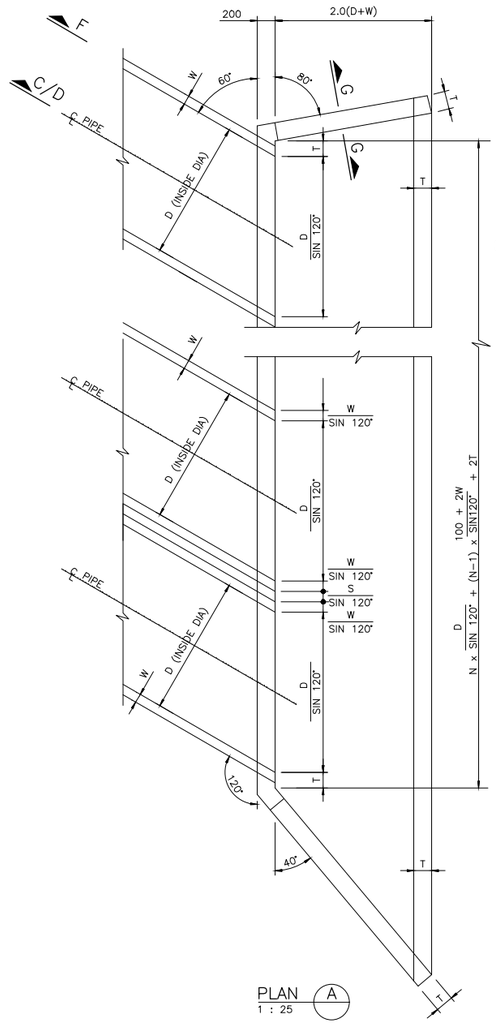
SECTION C
1 : 20
(INLET)



SECTION F
1 : 20



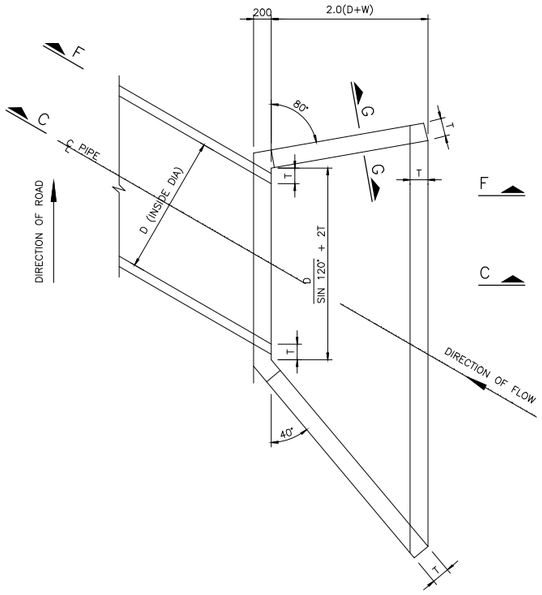
SECTION D
1 : 20
(OUTLET)



PLAN A
1 : 25

TYPICAL INLET AND OUTLET

NOTE:
1. SPACING (S) BETWEEN PIPES TO BE 100mm ONLY IF SOILCRETE BACKFILLING IS USED.
2. N = NUMBER OF PIPES.
3. EROSION PROTECTION AND ENERGY BREAKING BLOCKS FOR MULTIPLE PIPE CULVERT SIMILAR TO SINGLE PIPE CULVERT. (SEE SINGLE PIPE CULVERT)



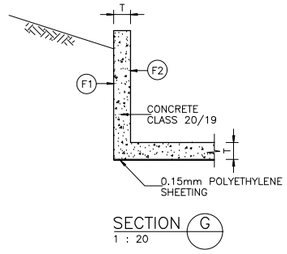
PLAN B
1 : 25

TYPE 1 INLET

INSIDE DIA. PIPE (D)	T (mm)	S (mm)
450	150	300
600	150	300
750	150	375
900	175	450
1050	200	500
1200	200	500

PLAN B
1 : 25

TYPE 1 AND TYPE 1A OUTLET



SECTION G
1 : 20

NOTES:

CONSTRUCTION

1. ALL EXPOSED CORNERS SHALL BE CHAMFERED 25 x 25
2. CONCRETE COVER TO REINFORCEMENT:–
   FLOOR SLAB & FOOTINGS = 50mm
   WINGWALLS = 40mm
3. CONCRETE FINISH:
   CONCEALED SURFACES = F1
   EXPOSED SURFACES = F2
4. POLYETHYLENE SHEET 0.15mm THICK SHALL BE PLACED UNDER ALL WINGWALL FOOTINGS AND INLET SLAB
5. THIS DRAWING TO BE READ IN CONJUNCTION WITH THE COLTO STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE WORKS FOR STATE ROAD AUTHORITIES AS AMENDED TO DATE
6. THE UPPER LEVEL OF THE FILL ALWAYS PASSES THROUGH A POINT 100mm BELOW THE TOP OF THE HEAD WALL
7. THE MAXIMUM SLOPE OF EARTHWORKS SURROUNDING A CULVERT INLET OR OUTLET SHALL BE 1 : 2

MATERIAL SPECIFICATION:

1. INLET/OUTLET CONCRETE SLABS AND WINGWALLS – CLASS 20/19
   CHARACTERISTIC STRENGTH 20 MPa
   YOUNG'S MODULUS 28 000 MPa
2. REINFORCEMENT (SABS 920 – 1985)
   YIELD STRENGTH TYPE:
   MILD STEEL BARS 250 MPa
   HIGH TENSILE STEEL BARS 450 MPa
   WELDED STEEL FABRIC 450 MPa
3. REINFORCEMENT DETAILS:
   a) FOR 450, 600, 750 & 900 DIA. SEE DRG. No. BAK/STD/HDW/03
   b) FOR 1050 & 1200 DIA. SEE DRG. No. BAK/STD/HDW/04

DESIGN METHOD:

1. LIMIT STATE DESIGN ACCORDING TO TMH7 PART 3 AS AMENDED 1989
2. INLET AND OUTLET STRUCTURES ARE DESIGNED FOR LOADING SPECIFIED IN TMH7 PART 1 AND 2 AS AMENDED 1988 "CODE OF PRACTICE FOR THE DESIGN OF HIGHWAY BRIDGES AND CULVERTS IN S.A."
3. TYPE OF REINFORCEMENT AND SPACING ARE SHOWN ON THE DRAWINGS. THE CONTRACTOR MUST SUBMIT WORKING DRAWINGS AND BENDING SCHEDULES FOR APPROVAL.

FOUNDING MATERIAL:

1. MAX. CALCULATED GROUND PRESSURE – 100kPa
2. FOUNDING LEVEL TO BE APPROVED BY THE PROJECT MANAGER.

HYDRAULIC INFORMATION:

1. SEE DRAINAGE SCHEDULE FOR FLOOD LEVELS, OUTLET TYPE AND HYDRAULIC DATA FOR EACH CULVERT.

EROSION PROTECTION:

1. TO BE PROVIDED WHERE OUTLET VELOCITIES AS INDICATED ON DRAINAGE SCHEDULE >2m/s

No.	DATE	REVISION	REVISED BY	DATE

DESIGNED BY

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DESIGNED	P.M.
DESIGN CHECKED	P.M.
DRAWN	P.M.
DRAWING CHECKED	P.M.

CONSULTANT
.....
for CONSULTING ENGINEER
DATE:

RECOMMENDED
.....
for HEAD OF DEPARTMENT
DATE: .....

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MAKHADO
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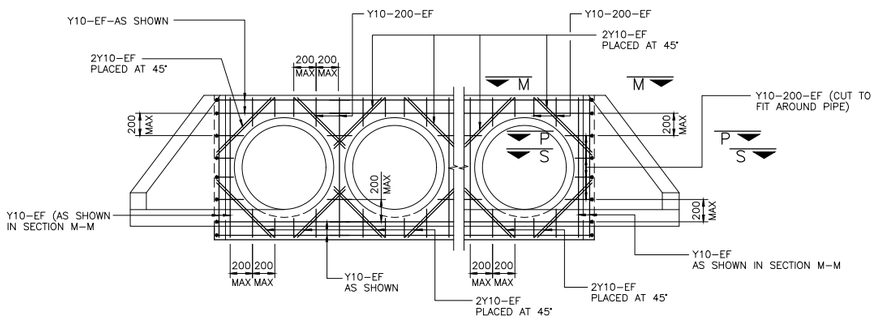
FAX: (015) 516-6145

SCALE: AS SHOWN
REVISION: 0

CLIENT: MAKHADO LOCAL MUNICIPALITY
TYPE OF PLANNING: TENDER
PROJECT TITLE: LUVHALANI TO DZANANWA ACCESS ROAD
DRAWING TITLE: PIPE CULVERTS SKEW TO THE ROAD (450 TO 1200 DIA. PIPES) CONCRETE DETAILS

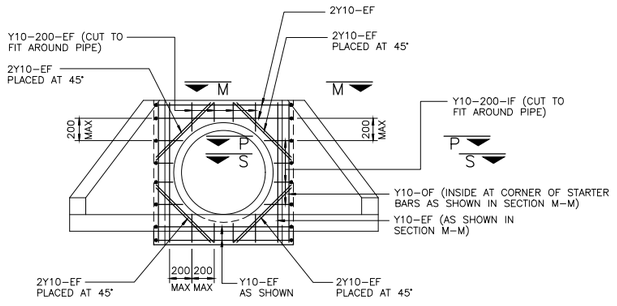
TENDER No.: -
SHEET 1 OF 1
DRAWING No.: TC/MLM/LDAR/SD/08

ORIGINAL ON A1



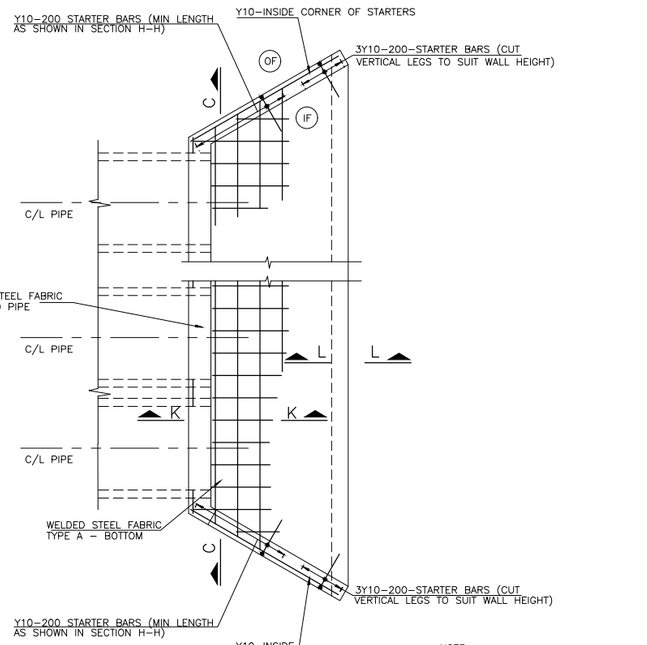
NOTE:
1. STEEL IN WINGWALL AND STARTER BARS NOT SHOWN FOR CLARITY
2. SKEW PIPE CULVERTS SIMILAR
3. COVER TO REINFORCEMENT 40mm

ELEVATION C
1 : 20



NOTE:
1. STEEL IN WINGWALL AND STARTER BARS NOT SHOWN FOR CLARITY
2. SKEW PIPE CULVERTS SIMILAR
3. COVER TO REINFORCEMENT 40mm

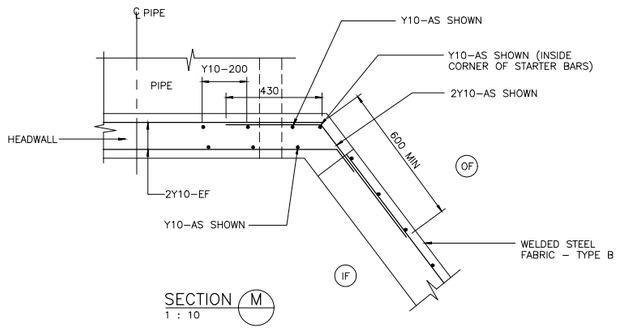
ELEVATION F
1 : 20



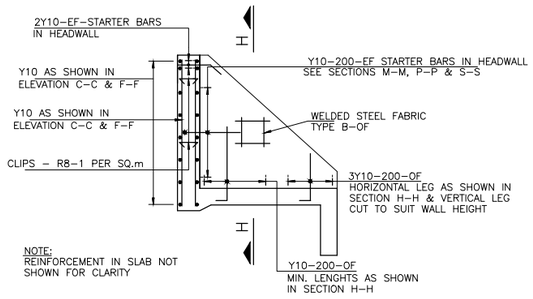
NOTE:
1. WELDED STEEL FABRIC MUST COVER TOTAL AREA OF SLAB
2. SKEW PIPE CULVERTS SIMILAR

PLAN A
1 : 20

FLOOR SLAB - MULTIPLE PIPE CULVERT

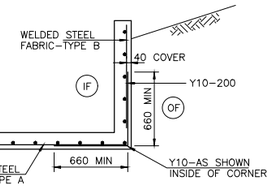


SECTION M
1 : 10

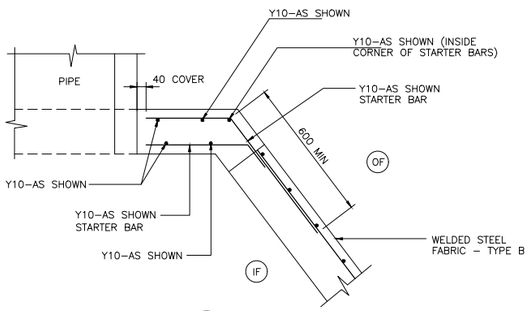


NOTE:
REINFORCEMENT IN SLAB NOT SHOWN FOR CLARITY

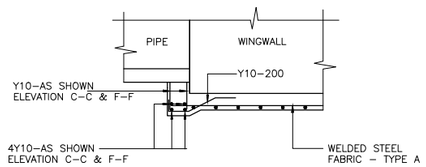
TYPICAL WINGWALL ELEVATION
1:20



SECTION H
1 : 20



SECTION P
1 : 10



SECTION K
1 : 20

INSIDE DIA. PIPE (D)	T	WELDED FABRIC REF No	
		TYPE A	TYPE B
450	150	245	245
600	150	245	245
750	150	395	245
900	175	395	245

LEGEND

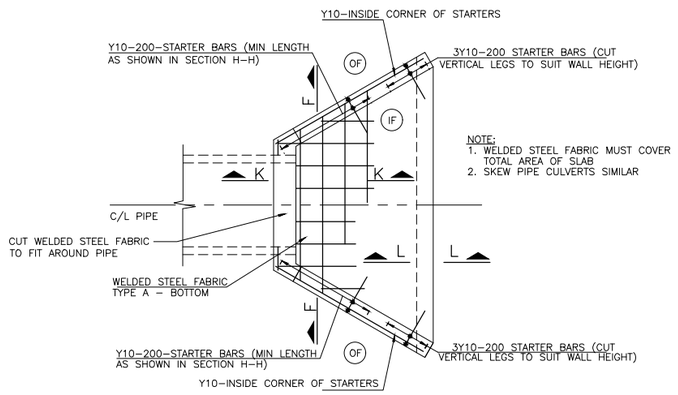
EF = EACH FACE
OF = OUTSIDE FACE
IF = INSIDE FACE

20MPa CONCRETE - BAR LAP LENGTHS

BAR DIA.	10	12
LAP LENGTH	550	660

20MPa CONCRETE - MESH LAP LENGTHS

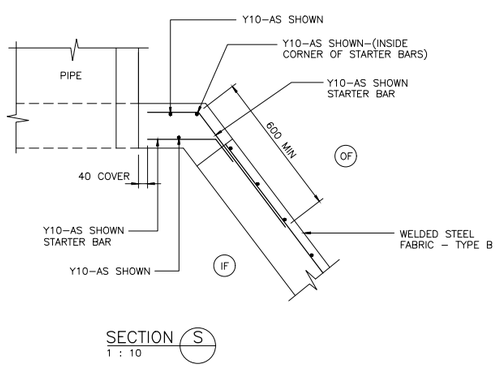
WELDED STEEL FABRIC REF. No.	245	311	395	500	617
MIN LAP LENGTH	450	500	600	650	750



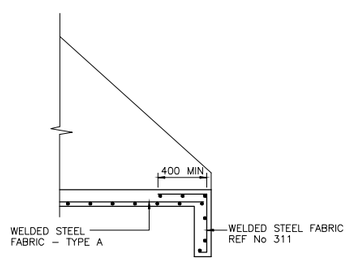
NOTE:
1. WELDED STEEL FABRIC MUST COVER TOTAL AREA OF SLAB
2. SKEW PIPE CULVERTS SIMILAR

PLAN B
1 : 20

FLOOR SLAB - SINGLE PIPE CULVERT



SECTION S
1 : 10



NOTE:
COVER TO REINFORCEMENT 40mm

SECTION L
1 : 20

No.	DATE	REVISION	REVISED BY	DATE

DESIGNED BY

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DESIGNED	CONSULTANT	RECOMMENDED
P.M.		
DESIGN CHECKED P.M.	.....	.....
DRAWN P.M.	for CONSULTING ENGINEER	for HEAD OF DEPARTMENT
DRAWING CHECKED P.M.	DATE:	DATE: .....

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SCALE: AS SHOWN

REVISION: 0

CLIENT: MAKHADO LOCAL MUNICIPALITY

TYPE OF PLANNING: TENDER

PROJECT TITLE

LUVHALANI TO DZANANWA ACCESS ROAD

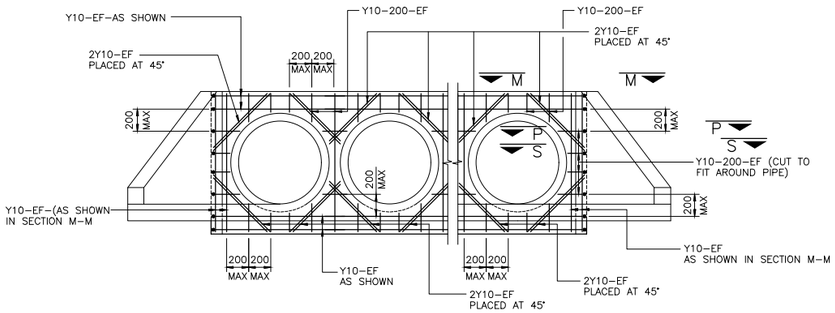
DRAWING TITLE: PIPE CULVERTS - 90° & SKEW TO ROAD (450 TO 900 DIA. PIPES) REINFORCEMENT DETAILS

TENDER No. -

SHEET 1 OF 1

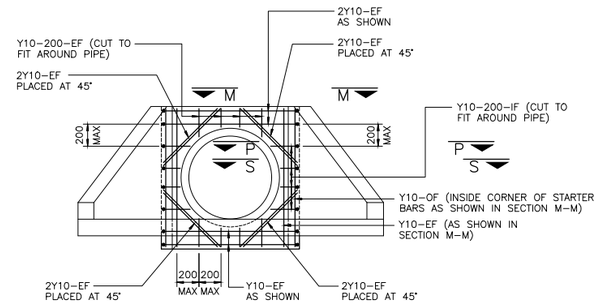
DRAWING No. TC/MLM/LDAR/SD/09

ORIGINAL ON A1



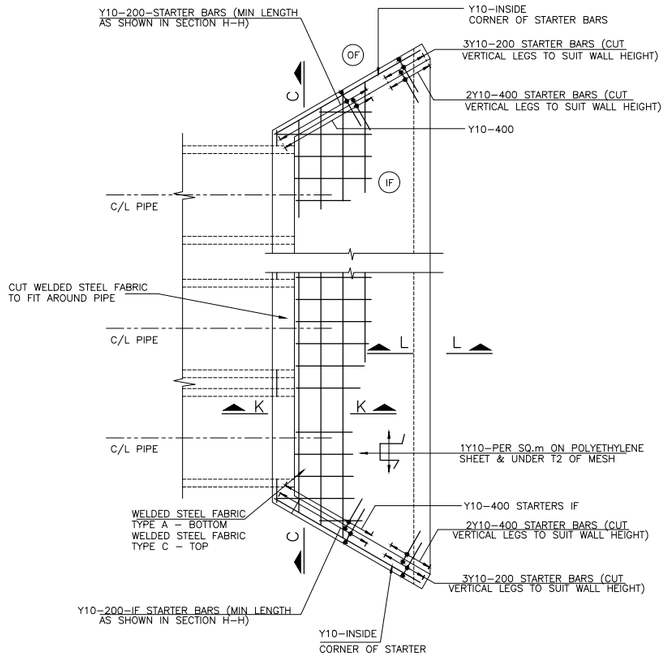
NOTE:
1. STEEL IN WINGWALL AND STARTER BARS NOT SHOWN FOR CLARITY
2. SKEW PIPE CULVERTS SIMILAR
3. COVER TO REINFORCEMENT 40mm

ELEVATION C
1 : 20



NOTE:
1. STEEL IN WINGWALL AND STARTER BARS NOT SHOWN FOR CLARITY
2. SKEW PIPE CULVERTS SIMILAR
3. COVER TO REINFORCEMENT 40mm

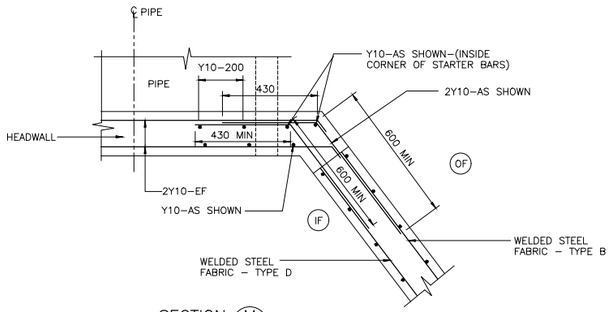
ELEVATION F
1 : 20



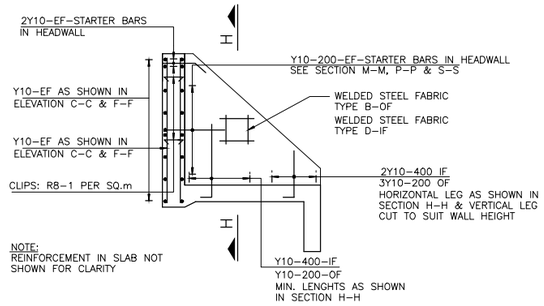
PLAN A
1 : 20

NOTE:
1. WELDED STEEL FABRIC MUST COVER TOTAL AREA OF SLAB
2. SKEW PIPE CULVERTS SIMILAR

FLOOR SLAB - MULTIPLE PIPE CULVERT

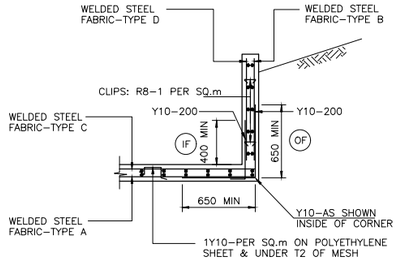


SECTION M
1 : 10



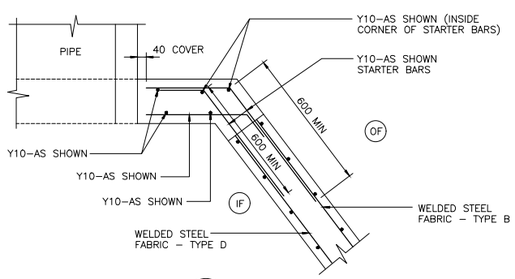
NOTE:
REINFORCEMENT IN SLAB NOT SHOWN FOR CLARITY

TYPICAL WINGWALL ELEVATION
1:20

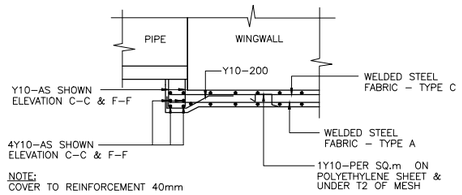


NOTE:
COVER TO REINFORCEMENT 40mm

SECTION H
1 : 20



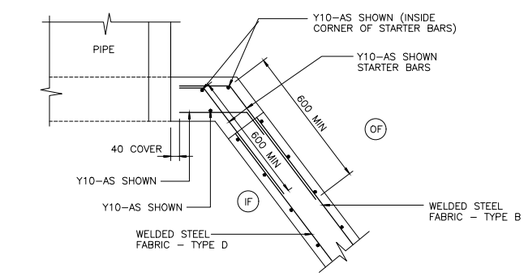
SECTION P
1 : 10



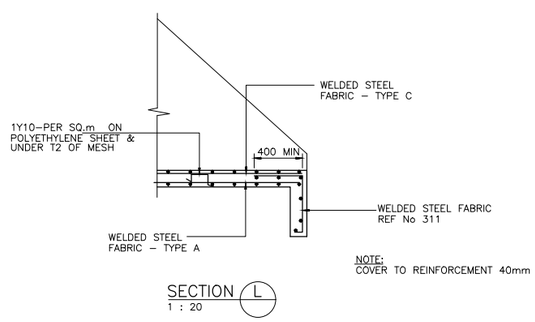
NOTE:
COVER TO REINFORCEMENT 40mm

SECTION K
1 : 20

INSIDE DIA. PIPE (D)	T	WELDED FABRIC REF No			
		TYPE A	TYPE B	TYPE C	TYPE D
1050	200	500	311	245	245
1200	200	617	311	245	245



SECTION S
1 : 10



NOTE:
COVER TO REINFORCEMENT 40mm

SECTION L
1 : 20

LEGEND

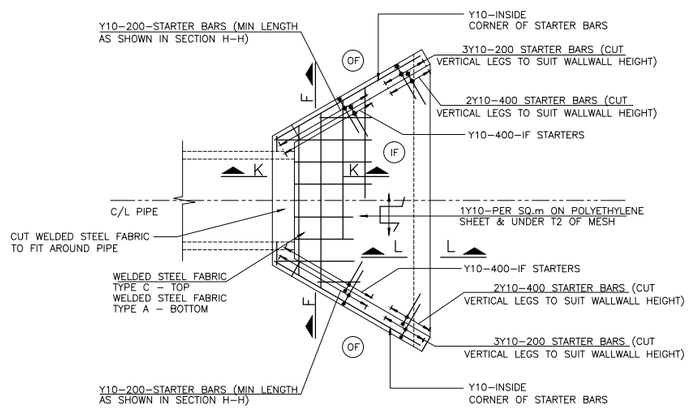
EF = EACH FACE
OF = OUTSIDE FACE
IF = INSIDE FACE

20MPa CONCRETE - BAR LAP LENGTHS

BAR DIA.	10	12
LAP LENGTH	550	660

20MPa CONCRETE - MESH LAP LENGTHS

WELDED STEEL FABRIC REF. No.	245	311	395	500	617
MIN LAP LENGTH	450	500	600	650	750



NOTE:
1. WELDED STEEL FABRIC MUST COVER TOTAL AREA OF SLAB
2. SKEW PIPE CULVERTS SIMILAR

PLAN PLN
SCALE REF

FLOOR SLAB - SINGLE PIPE CULVERT

No.	DATE	REVISION	REVISED BY	DATE

DESIGNED BY

TSHINO CONSULTING ENGINEERS
19 Gen.Joubert
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DESIGNED	CONSULTANT	RECOMMENDED
P.M.		
DESIGN CHECKED P.M.	.....	.....
DRAWN P.M.	for CONSULTING ENGINEER	for HEAD OF DEPARTMENT
DRAWING CHECKED P.M.	DATE:	DATE: .....

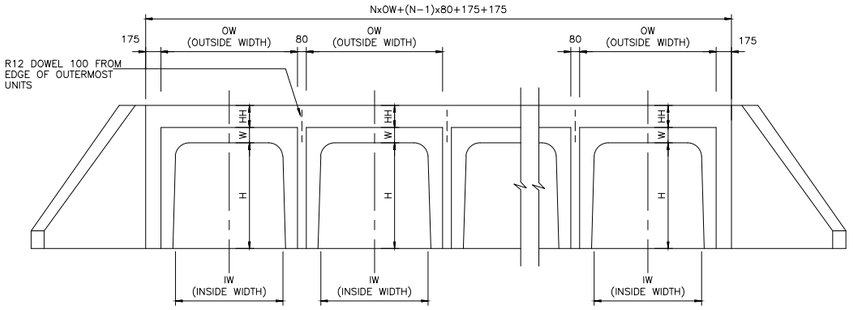
MAKHADO
Private Bag X 2596
MAKHADO
0920
TEL: (015) 519-3000
FAX: (015) 516-6145

SCALE: AS SHOWN
REVISION: 0

CLIENT: MAKHADO LOCAL MUNICIPALITY
TYPE OF PLANNING: TENDER
PROJECT TITLE: LUVHALANI TO DZANANWA ACCESS ROAD
DRAWING TITLE: PIPE CULVERTS 90° & SKEW TO ROAD (1050 & 1200 DIA. PIPES) REINFORCEMENT DETAILS

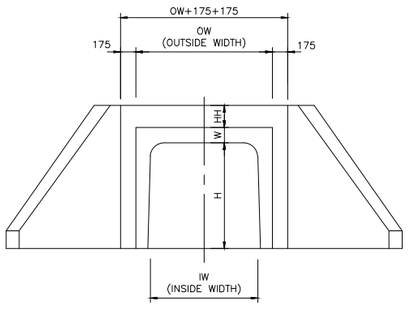
TENDER No. -
SHEET 1 OF 1
DRAWING No. TC/MLM/LDAR/SD/10

ORIGINAL ON A1

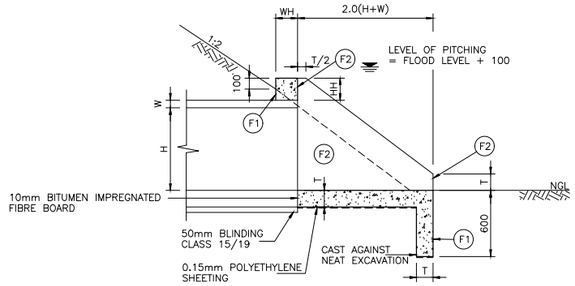


ELEVATION A
1 : 25

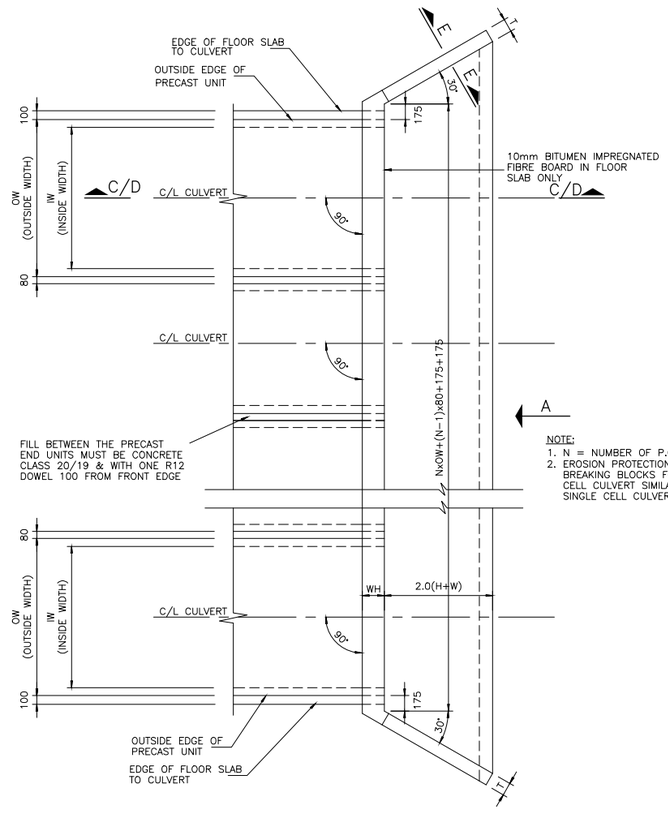
NOTE:
1. N = NUMBER OF P.C. PORTALS.



ELEVATION B
1 : 25



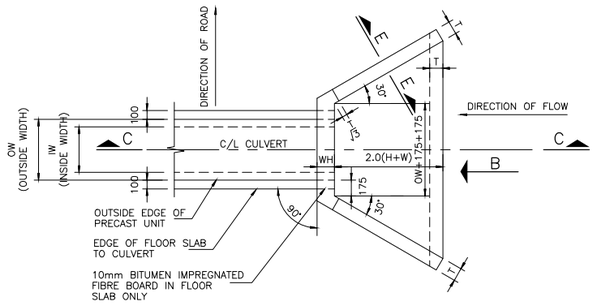
SECTION C
1 : 20
(INLET)



NOTE:
1. N = NUMBER OF P.C. PORTALS
2. EROSION PROTECTION AND ENERGY BREAKING BLOCKS FOR MULTIPLE CELL CULVERT SIMILAR TO SINGLE CELL CULVERT.

PLAN A
1 : 25

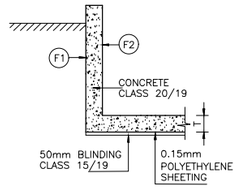
TYPICAL – INLET AND OUTLET
MULTIPLE CELL CULVERT



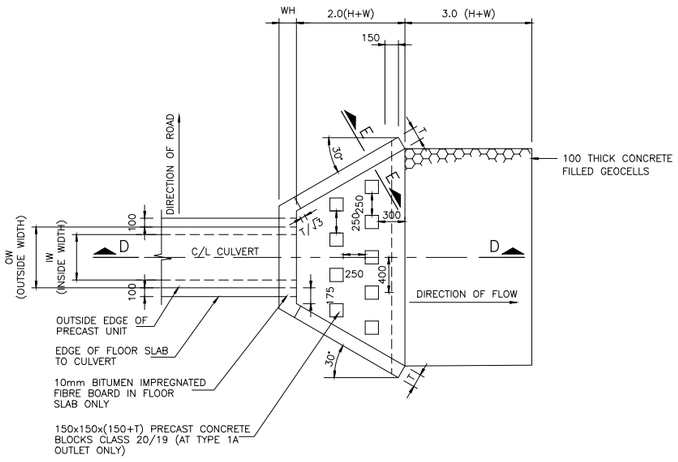
PLAN
SCALE — REF

TYPE 1 INLET

H	T	HH	WH
300	150	150	200
450	150	150	200
600	150	150	200
750	150	150	200
900	175	150	200
1200	200	250	250
1500	200	250	250



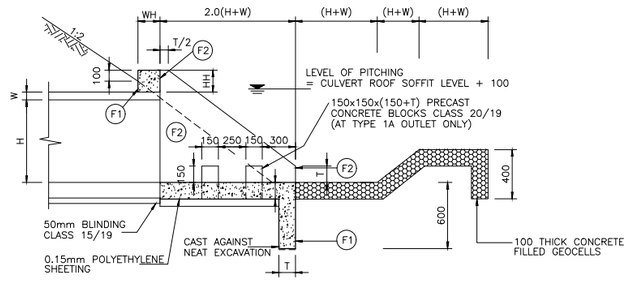
SECTION E
1 : 20



NOTE:
IF INSIDE HEIGHT OF CULVERT IS LESS THAN 600mm THEN ONLY ONE ROW OF BLOCKS REQUIRED.

PLAN
SCALE — REF

TYPE 1 AND TYPE 1A OUTLET



NOTE:
IF INSIDE HEIGHT OF CULVERT LESS THAN 600mm THEN ONLY ONE ROW OF BLOCKS REQUIRED.

SECTION D
1 : 20
(OUTLET)

NOTES:

CONSTRUCTION

1. ALL EXPOSED CORNERS SHALL BE CHAMFERED 25 x 25
2. CONCRETE COVER TO REINFORCEMENT:–
   FLOOR SLAB & FOOTINGS = 50mm
   WINGWALLS = 40mm
3. CONCRETE FINISH:
   CONCEALED SURFACES = F1
   EXPOSED SURFACES = F2
4. POLYETHYLENE SHEET 0.15mm THICK SHALL BE PLACED UNDER ALL WINGWALL FOOTINGS AND INLET SLAB
5. THIS DRAWING TO BE READ IN CONJUNCTION WITH THE COLTO STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE WORKS FOR STATE ROAD AUTHORITIES AS AMENDED TO DATE
6. THE UPPER LEVEL OF THE FILL ALWAYS PASSES THROUGH A POINT 100mm BELOW THE TOP OF THE HEAD WALL
7. THE MAXIMUM SLOPE OF EARTHWORKS SURROUNDING A CULVERT INLET OR OUTLET SHALL BE 1 : 2

MATERIAL SPECIFICATION:

1. INLET/OUTLET CONCRETE SLABS AND WINGWALLS – CLASS 20/19
   CHARACTERISTIC STRENGTH 20 MPa
   YOUNG'S MODULUS 28 000 MPa
2. REINFORCEMENT (SABS 920 – 1985)
   YIELD STRENGTH TYPE:
   MILD STEEL BARS 250 MPa
   HIGH TENSILE STEEL BARS 450 MPa
   WELDED STEEL FABRIC 450 MPa
3. REINFORCEMENT DETAILS:
   a) FOR 300, 450, 600, 750 & 900 PORTALS SEE DRG. No. BAK/STD/HDW/07
   b) FOR 1200 & 1500 PORTALS SEE DRG. No. BAK/STD/HDW/08

DESIGN METHOD:

1. LIMIT STATE DESIGN ACCORDING TO TMH7 PART 3 AS AMENDED 1989
2. INLET AND OUTLET STRUCTURES ARE DESIGNED FOR LOADING SPECIFIED IN TMH7 PART 1 AND 2 AS AMENDED 1988 "CODE OF PRACTICE FOR THE DESIGN OF HIGHWAY BRIDGES AND CULVERTS IN S.A."
3. TYPE OF REINFORCEMENT AND SPACING ARE SHOWN ON THE DRAWINGS. THE CONTRACTOR MUST SUBMIT WORKING DRAWINGS AND BENDING SCHEDULES FOR APPROVAL.

FOUNDING MATERIAL:

1. MAX. CALCULATED GROUND PRESSURE – 100kPa
2. FOUNDING LEVEL TO BE APPROVED BY THE PROJECT MANAGER.

HYDRAULIC INFORMATION:

1. SEE DRAINAGE SCHEDULE FOR FLOOD LEVELS, OUTLET TYPE AND HYDRAULIC DATA FOR EACH CULVERT.

EROSION PROTECTION:

1. TO BE PROVIDED WHERE OUTLET VELOCITIES AS INDICATED ON DRAINAGE SCHEDULE >2m/s

No.	DATE	REVISION	REVISED BY	DATE

DESIGNED BY

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DESIGNED	P.M.
DESIGN CHECKED	P.M.
DRAWN	P.M.
DRAWING CHECKED	P.M.

CONSULTANT
.....
for CONSULTING ENGINEER
DATE:

RECOMMENDED
.....
for HEAD OF DEPARTMENT
DATE: .....

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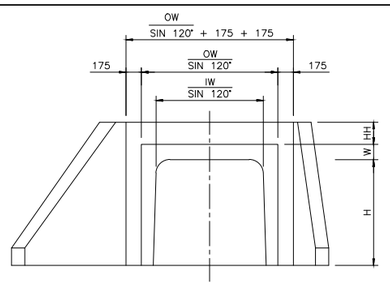
SCALE: AS SHOWN
REVISION: 0

CLIENT: MAKHADO LOCAL MUNICIPALITY
TYPE OF PLANNING: TENDER
PROJECT TITLE: LUVHALANI TO DZANANWA ACCESS ROAD
DRAWING TITLE: PRECAST PORTALS 90 TO ROAD (300 TO 1500 HIGH) CONCRETE DETAILS

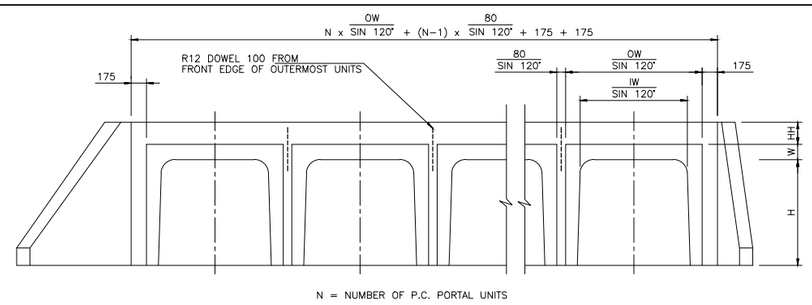
TENDER No. -
SHEET 1 OF 1
DRAWING No. TC/MLM/LDAR/SD/11

ORIGINAL ON A1



ELEVATION A
1 : 25

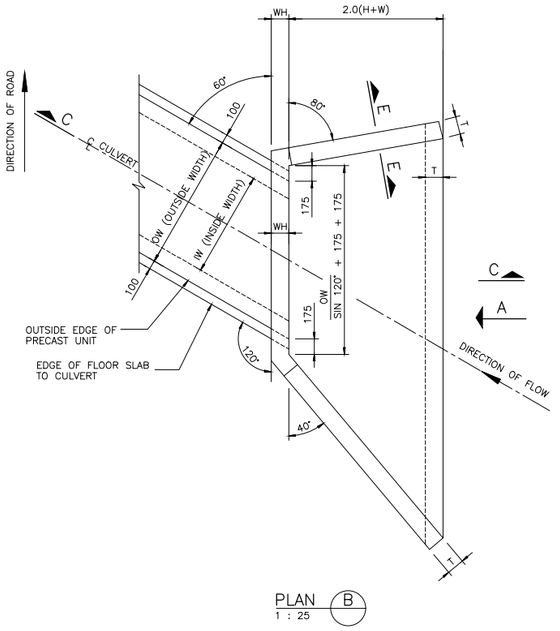
SINGLE CELL CULVERT



N = NUMBER OF P.C. PORTAL UNITS

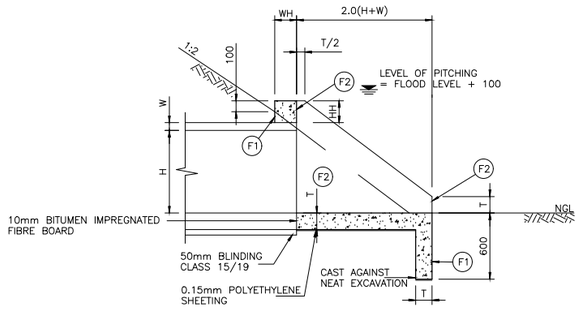
ELEVATION B
1 : 25

MULTI CELL CULVERT



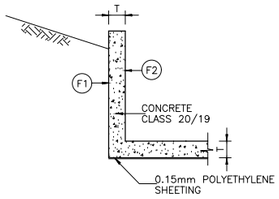
PLAN B
1 : 25

TYPE 1 INLET



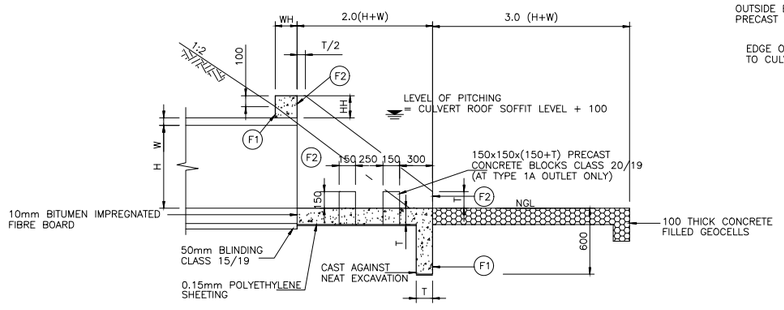
SECTION C
1 : 20

(INLET)



SECTION E
1 : 20

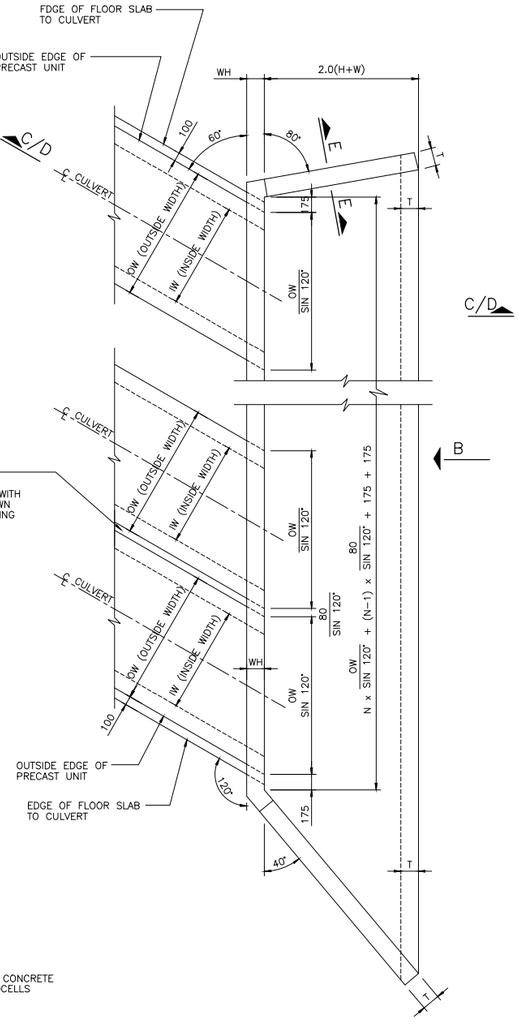
H	T	HH	WH
300	150	150	200
450	150	150	200
600	150	150	200
750	150	150	200
900	175	150	200
1200	200	250	250
1500	200	250	250



NOTE:
IF INSIDE HEIGHT OF CULVERT LESS THAN 600mm
THEN ONLY ONE ROW OF BLOCKS.

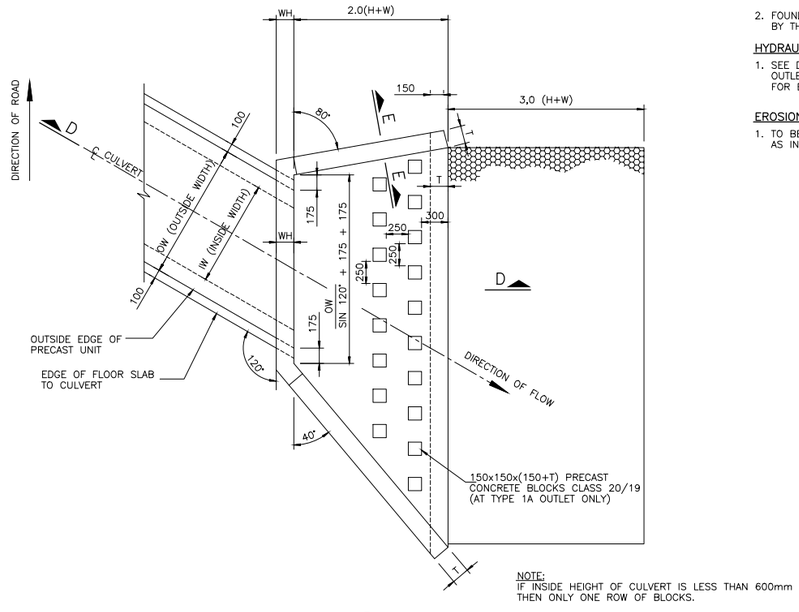
SECTION D
1 : 20

(OUTLET)



PLAN A
1 : 25

TYPICAL INLET AND OUTLET



NOTE:
IF INSIDE HEIGHT OF CULVERT IS LESS THAN 600mm
THEN ONLY ONE ROW OF BLOCKS.

PLAN PLN
SCALE REF

TYPE 1 AND TYPE 1A OUTLET

NOTES:

CONSTRUCTION

1. ALL EXPOSED CORNERS SHALL BE CHAMFERED 25 x 25
2. CONCRETE COVER TO REINFORCEMENT:–
   FLOOR SLAB & FOOTINGS = 50mm
   WINGWALLS = 40mm
3. CONCRETE FINISH:
   CONCEALED SURFACES = F1
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4. POLYETHYLENE SHEET 0.15mm THICK SHALL BE PLACED UNDER ALL WINGWALL FOOTINGS AND INLET SLAB
5. THIS DRAWING TO BE READ IN CONJUNCTION WITH THE COLTO STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE WORKS FOR STATE ROAD AUTHORITIES AS AMENDED TO DATE
6. THE UPPER LEVEL OF THE FILL ALWAYS PASSES THROUGH A POINT 100mm BELOW THE TOP OF THE HEAD WALL
7. THE MAXIMUM SLOPE OF EARTHWORKS SURROUNDING A CULVERT INLET OR OUTLET SHALL BE 1 : 2

MATERIAL SPECIFICATION:

1. INLET/OUTLET CONCRETE SLABS AND WINGWALLS – CLASS 20/19
   CHARACTERISTIC STRENGTH 20 MPa
   YOUNG'S MODULUS 28 000 MPa
2. REINFORCEMENT (SABS 920 – 1985)
   YIELD STRENGTH TYPE:
   MILD STEEL BARS 250 MPa
   HIGH TENSILE STEEL BARS 450 MPa
   WELDED STEEL FABRIC 450 MPa
3. REINFORCEMENT DETAILS:
   a) FOR 300,450, 600, 750 & 900 PORTALS SEE DRG. No. BAK/STD/HDW/07
   b) FOR 1050 & 1200 PORTALS SEE DRG. No. BAK/STD/HDW/08

DESIGN METHOD:

1. LIMIT STATE DESIGN ACCORDING TO TMH7 PART 3 AS AMENDED 1989
2. INLET AND OUTLET STRUCTURES ARE DESIGNED FOR LOADING SPECIFIED IN TMH7 PART 1 AND 2 AS AMENDED 1988 "CODE OF PRACTICE FOR THE DESIGN OF HIGHWAY BRIDGES AND CULVERTS IN S.A."
3. TYPE OF REINFORCEMENT AND SPACING ARE SHOWN ON THE DRAWINGS. THE CONTRACTOR MUST SUBMIT WORKING DRAWINGS AND BENDING SCHEDULES FOR APPROVAL.

FOUNDING MATERIAL:

1. MAX. CALCULATED GROUND PRESSURE – 100kPa
2. FOUNDING LEVEL TO BE APPROVED BY THE PROJECT MANAGER.

HYDRAULIC INFORMATION:

1. SEE DRAINAGE SCHEDULE FOR FLOOD LEVELS, OUTLET TYPE AND HYDRAULIC DATA FOR EACH CULVERT.

EROSION PROTECTION:

1. TO BE PROVIDED WHERE OUTLET VELOCITIES AS INDICATED ON DRAINAGE SCHEDULE >2m/s

No.	DATE	REVISION	REVISED BY	DATE

DESIGNED BY

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19 Gen.Joubert
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Fax: (015) 291-3440
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DESIGNED P.M.	CONSULTANT	RECOMMENDED
DESIGN CHECKED P.M.	..... for CONSULTING ENGINEER	..... for HEAD OF DEPARTMENT
DRAWN P.M.	DATE:	DATE: .....
DRAWING CHECKED P.M.		

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TEL: (015) 519-3000
FAX: (015) 516-6145

SCALE: AS SHOWN
REVISION: 0

CLIENT: MAKHADO LOCAL MUNICIPALITY
TYPE OF PLANNING: TENDER
PROJECT TITLE: LUVHALANI TO DZANANWA ACCESS ROAD
DRAWING TITLE: PRECAST PORTALS SKEW TO ROAD (300 TO 1500 HIGH) CONCRETE DETAILS

TENDER No. -
SHEET 1 OF 1
DRAWING No. TC/MLM/LDAR/SD/12

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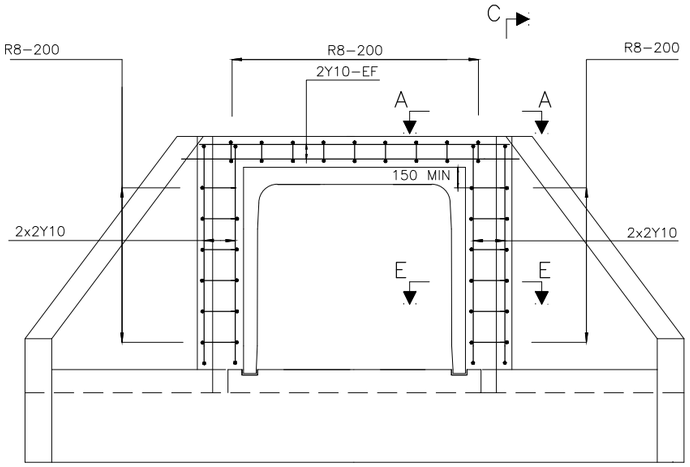
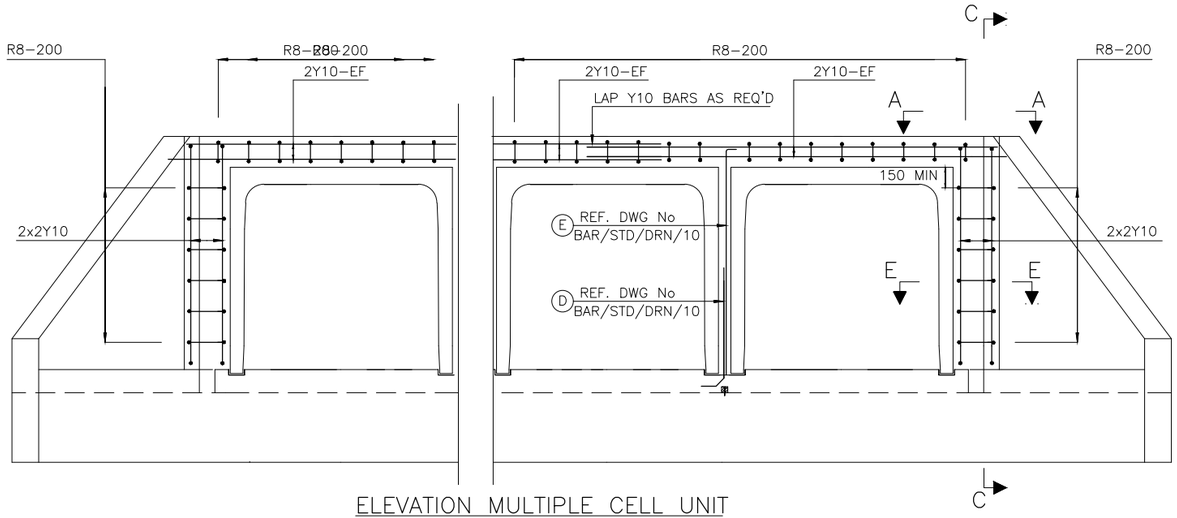


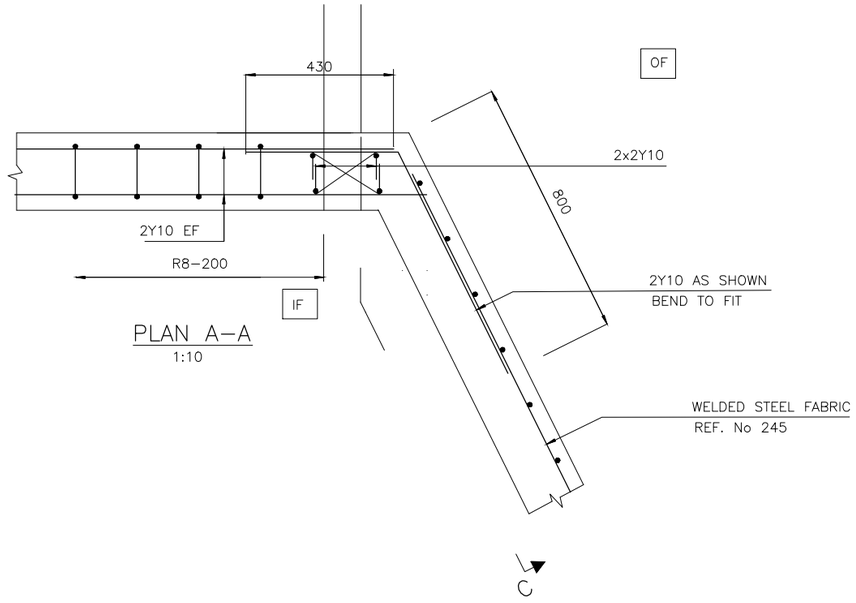
ENDWALL ELEVATION
1:20

NOTE:
1. WINGWALL REINFORCEMENT AND STARTERS BARS NOT SHOWN FOR CLARITY.
2. SKEW CULVERT IS SIMILAR.

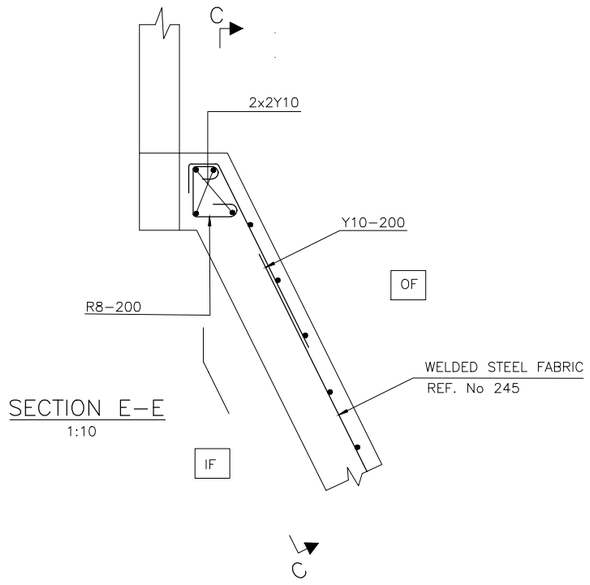


ELEVATION MULTIPLE CELL UNIT
1:20

NOTE:
1. WINGWALL REINFORCEMENT AND STARTERS BARS NOT SHOWN FOR CLARITY.
2. SKEW CULVERT IS SIMILAR.



PLAN A–A
1:10



SECTION E–E
1:10

No.	DATE	REVISION	REVISED BY	DATE

DESIGNED BY

TSHINO CONSULTING ENGINEERS

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0699

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Fax: (015) 291-3440
info@tshino.co.za

DESIGNED P.M.	CONSULTANT	RECOMMENDED
DESIGN CHECKED P.M.	..... for CONSULTING ENGINEER DATE:	..... for HEAD OF DEPARTMENT DATE: .....
DRAWN P.M.		
DRAWING CHECKED P.M.		

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MAKHADO
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TEL: (015) 519-3000
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SCALE: AS SHOWN

REVISION: 0

CLIENT: MAKHADO LOCAL MUNICIPALITY

TYPE OF PLANNING: TENDER

PROJECT TITLE

LUVHALANI TO DZANANWA ACCESS ROAD

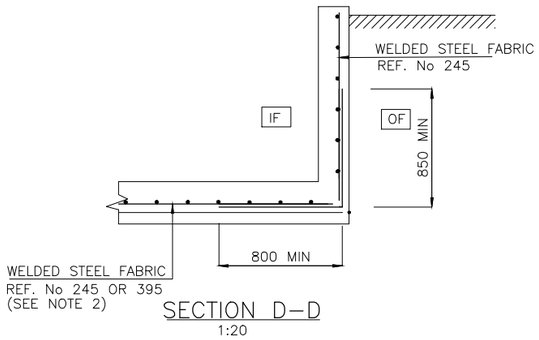
DRAWING TITLE: PRECAST PORTALS 90° AND SKEW TO ROAD (300 TO 900 HIGH) REINFORCEMENT DETAILS SHEET 1

TENDER No.: -

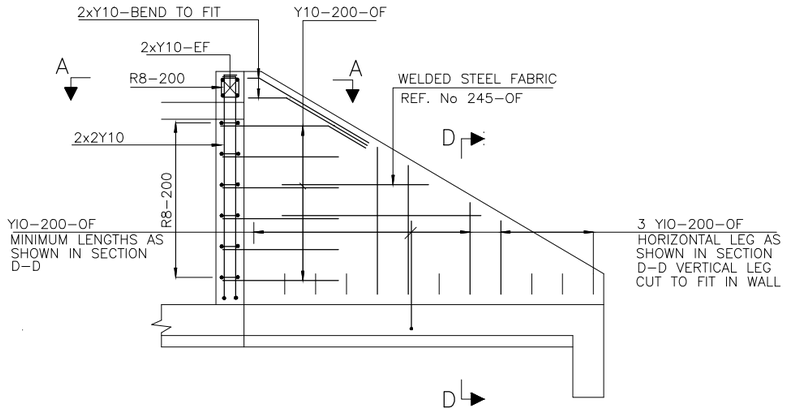
SHEET 1 OF 2

DRAWING No.: TC/MLM/LDAR/SD/13

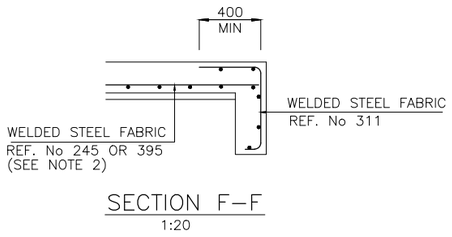
ORIGINAL ON A1



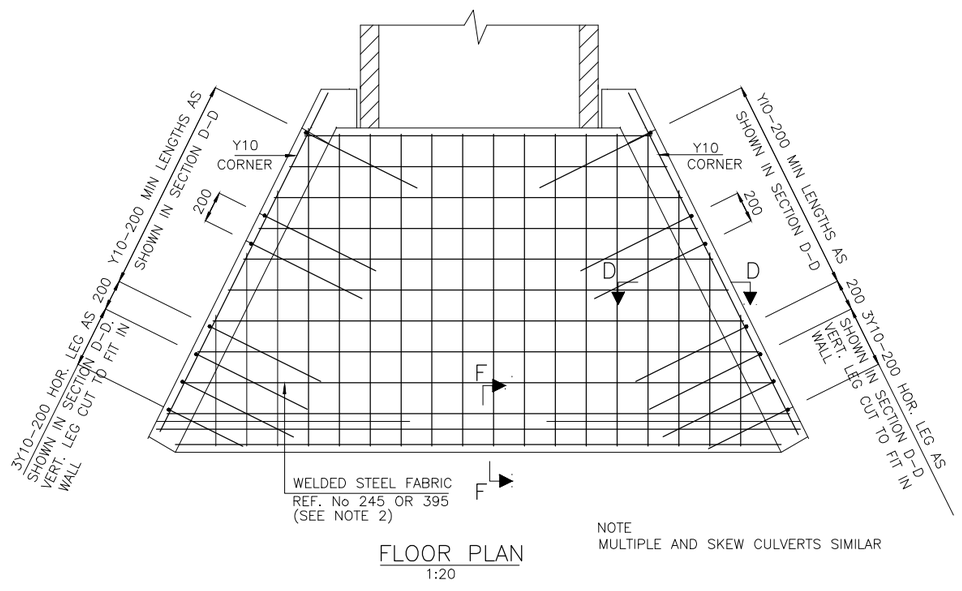
SECTION D–D
1:20



SECTION C–C



SECTION F–F
1:20



FLOOR PLAN
1:20

NOTE
MULTIPLE AND SKEW CULVERTS SIMILAR

NOTES

1. MINIMUM REINFORCEMENT LAP LENGTH TO BE 55 TIMES THE DIAMETER OF SMALLER BAR.
2. PORTAL HEIGHTS OF 750 AND 900 TO HAVE STEEL FABRIC MESH REF. No 395 ONLY
3. MINIMUM LAP LENGTH FOR WELDED STEEL FABRIC TO BE 450mm FOR MESH REF. 245,311 AND 395. 550mm FOR MESH REF. 500 AND 617

LEGEND
EF = EACH FACE
OF = OUTSIDE FACE
IF = INSIDE FACE

No.	DATE	REVISION	REVISED BY	DATE

DESIGNED BY
TSHINO CONSULTING ENGINEERS
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DESIGNED P.M.	CONSULTANT	RECOMMENDED
DESIGN CHECKED P.M.	..... for CONSULTING ENGINEER	..... for HEAD OF DEPARTMENT
DRAWN P.M.	DATE:	DATE: .....
DRAWING CHECKED P.M.		

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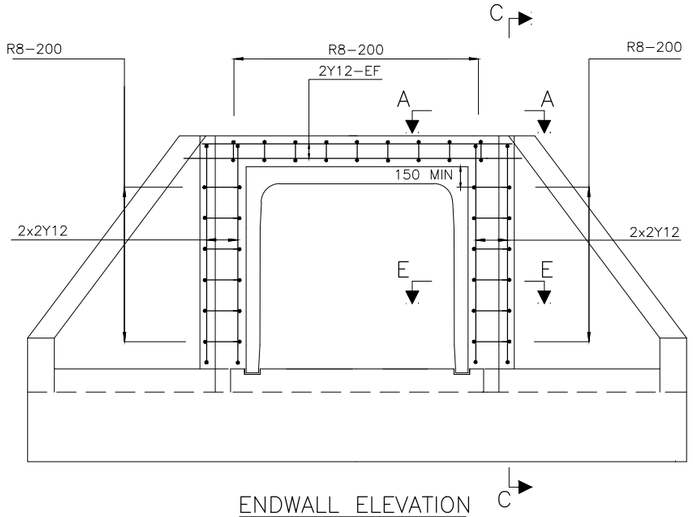
TEL: (015) 519-3000
FAX: (015) 516-6145

SCALE: AS SHOWN
REVISION: 0

CLIENT: MAKHADO LOCAL MUNICIPALITY
TYPE OF PLANNING: TENDER
PROJECT TITLE: LUVHALANI TO DZANANWA ACCESS ROAD
DRAWING TITLE: PRECAST PORTALS 90° AND SKEW TO ROAD (300 TO 900 HIGH) REINFORCEMENT DETAILS SHEET 2

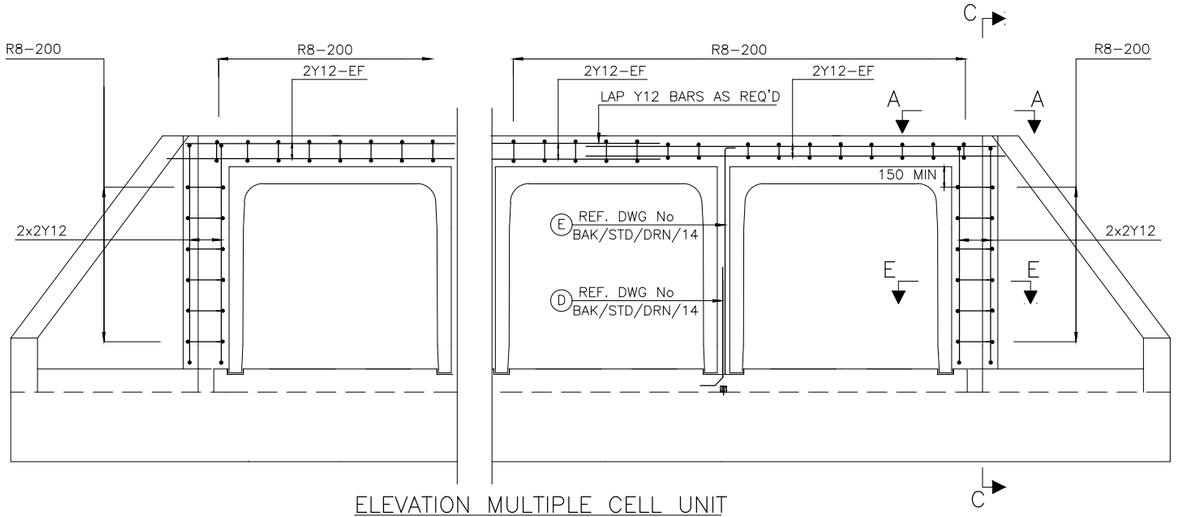
TENDER No.: -
SHEET 2 OF 2
DRAWING No.: TC/MLM/LDAR/SD/14

ORIGINAL ON A1



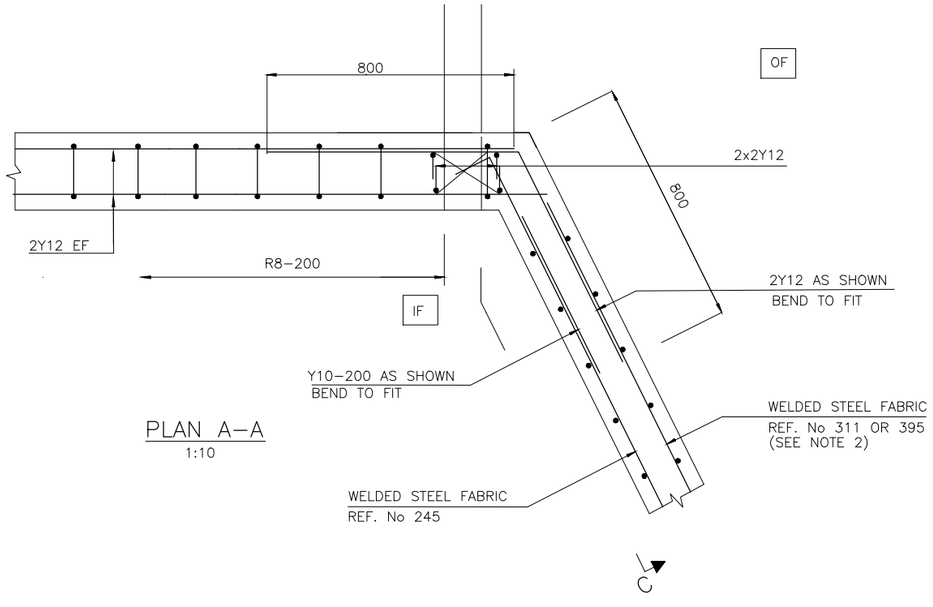
ENDWALL ELEVATION
1:20

NOTE:
1. WINGWALL REINFORCEMENT AND STARTERS BARS NOT SHOWN FOR CLARITY.
2. SKEW CULVERT IS SIMILAR.

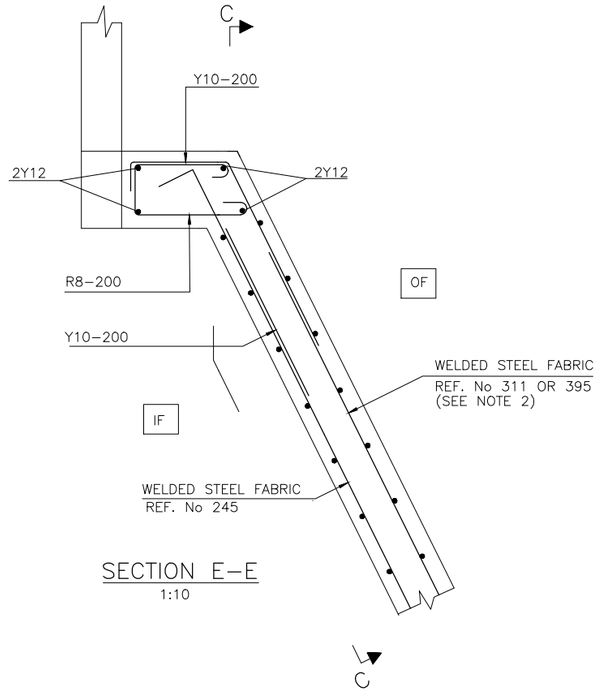


ELEVATION MULTIPLE CELL UNIT
1:20

NOTE:
1. WINGWALL REINFORCEMENT AND STARTERS BARS NOT SHOWN FOR CLARITY.
2. SKEW CULVERT IS SIMILAR.



PLAN A–A
1:10



SECTION E–E
1:10

No.	DATE	REVISION	REVISED BY	DATE

DESIGNED BY

TSHINO CONSULTING ENGINEERS
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Fax: (015) 291-3440
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DESIGN CHECKED	P.M.
DRAWN	P.M.
DRAWING CHECKED	P.M.

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for CONSULTING ENGINEER
DATE:

RECOMMENDED
.....
for HEAD OF DEPARTMENT
DATE: .....

MAKHADO
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0920
TEL: (015) 519-3000
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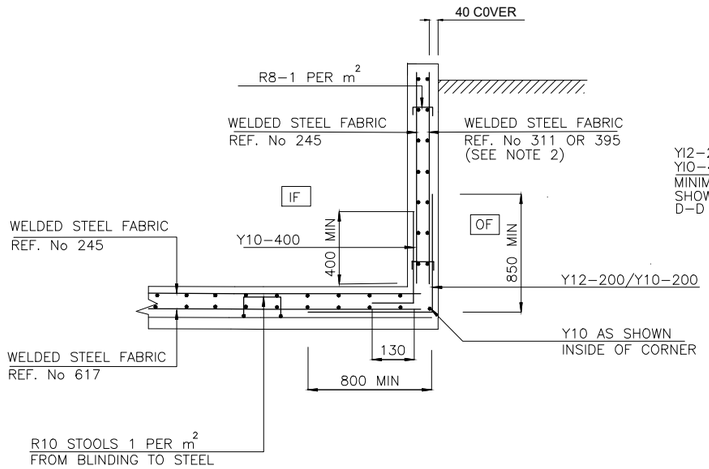
SCALE: AS SHOWN
REVISION: 0

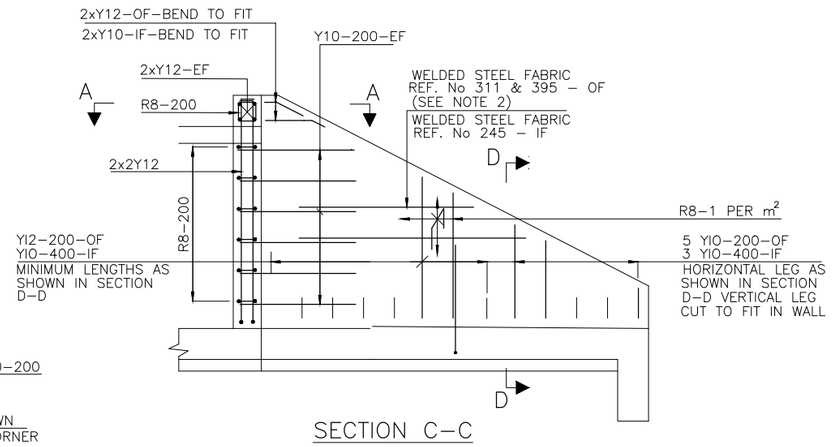
CLIENT: MAKHADO LOCAL MUNICIPALITY
TYPE OF PLANNING: TENDER
PROJECT TITLE: LUVHALANI TO DZANANWA ACCESS ROAD
DRAWING TITLE: PRECAST PORTALS 90° AND SKEW TO ROAD PRECAST PORTALS 90° AND SKEW TO ROAD REINFORCEMENT DETAILS SHEET 1

TENDER No.: -
SHEET 1 OF 2
DRAWING No.: TC/MLM/LDAR/SD/15

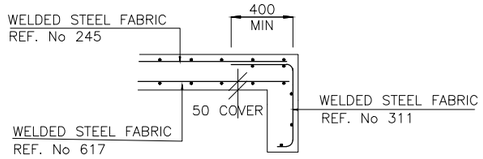
ORIGINAL ON A1



SECTION D–D
1:20



SECTION C–C
1:20



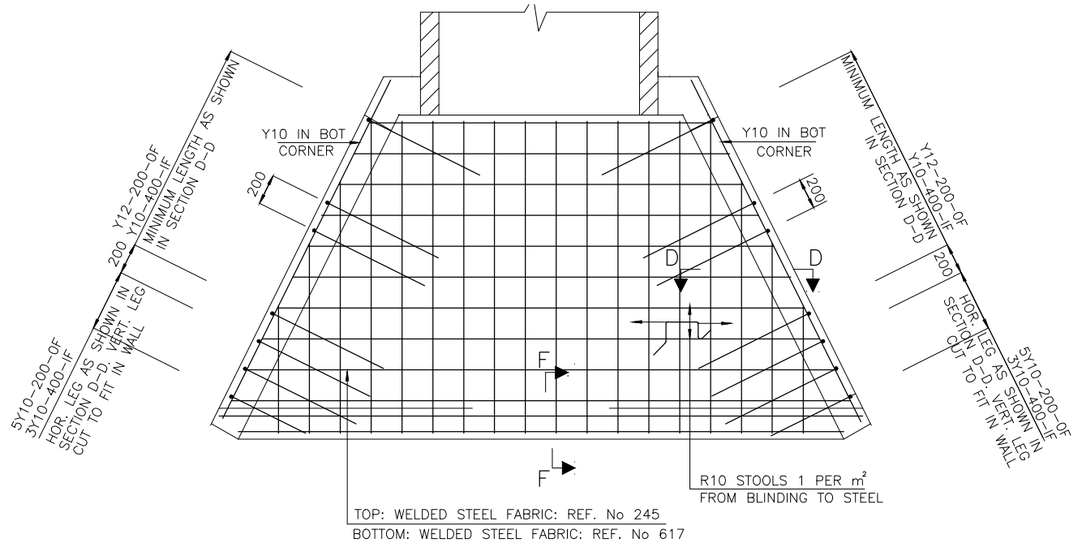
SECTION F–F
1:20

NOTES

1. MINIMUM REINFORCEMENT LAP LENGTH TO BE 55 TIMES THE DIAMETER OF SMALLER BAR.
2. FOR PORTAL HEIGHT OF 1500 USE STEEL FABRIC ME REF. No. 395 IN OUTSIDE FACES OF WALLS ONLY.
3. MINIMUM LAP LENGTH FOR WELDED STEEL FABRIC TO BE 450mm FOR MESH REF. 245,311 AND 395. 550mm FOR MESH REF. 500 AND 617.

LEGEND

EF = EACH FACE
OF = OUTSIDE FACE
IF = INSIDE FACE



FLOOR PLAN
1:20

NOTE
MULTIPLE AND SKEW CULVERTS SIMILAR

No.	DATE	REVISION	REVISED BY	DATE

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DESIGNED	CONSULTANT	RECOMMENDED
P.M.		
DESIGN CHECKED		
P.M.	.....	.....
DRAWN	for CONSULTING ENGINEER	for HEAD OF DEPARTMENT
P.M.		
DRAWING CHECKED	DATE:	DATE: .....
P.M.		

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SCALE: AS SHOWN
REVISION: 0

CLIENT: MAKHADO LOCAL MUNICIPALITY
TYPE OF PLANNING: TENDER
TENDER No.: -
PROJECT TITLE: LUVHALANI TO DZANANWA ACCESS ROAD
SHEET 2 OF 2
DRAWING TITLE: PRECAST PORTALS 90° AND SKEW TO ROAD PRECAST PORTALS 90° AND SKEW TO ROAD REINFORCEMENT DETAILS SHEET 2
DRAWING No.: TC/MLM/LDAR/SD/16